



Robostar Robot Controller
N2 Series
Alarm and Maintenance Manual

Version: N2-AM-E02
Issued Date: May 07, 2020

Robostar

Copyright 2020, ROBOSTAR Co., Ltd. All right reserved.

ROBOSTAR wholly owns a copyright of this manual.

This manual, either wholly or in part, shall not be reproduced or be used for any reason whatsoever without prior written permission form ROBOSTAR.

The specification is subject to change without prior notice.

Warranty Policy

All products from Robostar Co., Ltd. are manufactured under strict quality management and 12 months of warranty from the production date is provided for all products. During the warranty period, Robostar provides free services only for the products failure due to faults of Robostar or problems caused by any defect in design or manufacturing under normal operation.

No free service applies to the following cases.

- (1) Out of warranty period
- (2) Product failures due to unauthorized repair, modification or other mishandling of products without permission from Robostar
- (3) Product failures due to use of wrong components or grease other than specified by Robostar
- (4) Product failures due to force majeure such as fire, calamity, earthquake or damages by storm and flood
- (5) Product failures due to use in terrible circumstances beyond the environmental conditions specified by Robostar such as flooding
- (6) Product failures due to depletion of consumables
- (7) Product failures due to violation of instructions for repair, maintenance & inspection guidelines specified in either the operational manual or maintenance manual
- (8) Damages other than the cost for a robot repair

Address & Contact for Robostar

- HQ & Factory

700, Suin-ro, Sangnok-gu, Ansan-City,
Gyeonggi-do, Republic of South Korea
(15523)

- Request for service or Questions for products

- Sales request
TEL. 031-400-3600
FAX. 031-419-4249
- Service request
TEL. 1588-4428

- Suwon Factory

37, Saneop-ro 155beon-gil,
Gwonseon-gu, Suwon-City,
Gyeonggi-do,
Republic of South Korea (16648)



www.robostar.co.kr

Table of Contents

I. Prior to Startup.....	5
Purpose & Usage.....	5
Prerequisites	5
Chapter 1 Alarm Level & Hazard	6
1. Overview	6
2. Alarm Levels	6
2.1 Level 0 (Warning)	6
2.2 Level 1	7
2.3 Level 2	7
2.4 Level 3	8
Chapter 2 Failure Symptoms & Malfunctions	9
1. Failure Symptoms	9
2. Failures without Alarm Message.....	9
2.1 Startup Failure.....	9
2.2 Controller Unusable	10
2.3 T/P Unusable	10
2.4 All LEDs Off State.....	11
2.5 T/P Communication Error	11
2.6 Irregular Alarm Message	12
2.7 T/P Key Inoperable	12
2.8 Failure in System Software Loading	13
2.9 Robot Collapse in Power Cut-off	14
2.10 Unable to release Brake	15
3. Failures with Alarm Message	16
3.1 Alarm Message Description	16
3.2 Classification & Summary of Alarm List	18
3.3 Alarm Release Method & Solution Strategy	19
3.4 Alarm Log Verification Method	21
Chapter 3 Alarm List.....	22
1. File System (1001~1050)	23
2. Device (1051~1100)	24
3. Protection (1101~1200)	25
4. Runtime (1201~1300)	28
5. Compile (1301~1400)	38
6. Trajectory (1401~1500).....	39
7. Emergency (2101~2200)	45
8. EtherCAT Servo Driver (4001~5000)	48
Chapter 4 Revision.....	72
A. Literature Reference.....	73
B. Hazard Stages & Signs.....	74

I. Prior to Startup

Purpose & Usage

This manual describes information on the problems that can occur in the robot system based on N2 controller and measures to solve the problems with procedures. It also describes the measures for the cases that Teach Pendant (hereafter called T/P) doesn't display error messages.

This manual is for the persons such as;

- Service persons for the mechanics or robot who are qualified to solve basic problems
- Programmers who are qualified to write or alter RRL (Robostar robot language) program
- Specialized service persons who are able to systematically analyze and solve the problems

Prerequisites

In case of conducting repair & maintenance services based on this manual, it is recommended the service person to fulfil the following conditions.

- Experience on problems of industrial electrical & mechanical devices
- Knowledge on the functions of robot system
- Experience on installation of actual robot system and its peripherals

Chapter 1 Alarm Level & Hazard

1. Overview

This chapter states alarm Levels that appeared in this manual and all hazards that can occur when performing the relevant works described.

2. Alarm Levels

Controller creates 4 different alarm levels and each level acts differently as below.

Alarm Level	Description	Robot motion	Threads	Motor power
Level 0 (Warning)	Minor error. This is the stage that there is No influence on robot operation at the moment but a long-term neglect may cause problems.	Normal	Normal	ON
Level 1	This is the stage that a recovery via measures for alarms including alarm reset can be possible.	Pause	Normal /Stop	OFF
Level 2	This is the stage that the controller must restart.	Stop	Stop	OFF
Level 3	This is the critical stage that may require a replacement of components.	Stop	Stop	OFF

2.1 Level 0 (Warning)

Level 0 Alarm (Warning) indicates a minor error. It has no influence on robot operation but may cause problems if ignored for long time. All works are valid without recovery of this alarm.

Description	Minor Error (Warning)
Robot motion	Normal
Background thread	Normal
Threads	Normal
Motor power	Normal
Small T/P display	Pop-up of error message window, Blinking of Alarm LED
Error log	Logged
Etc.	This can be set as Level 1 Alarm in the parameter setting.

2.2 Level 1

Level 1 Alarm indicates errors that can be recovered via simple measures without alarm reset of T/P or power cut-off. When background thread was activated, this alarm level doesn't influence on the background thread. If this alarm level continues, it may require the following measures.

Description	Abnormal situation occurs. This can be recovered via simple measures such as alarm reset.
Robot motion	Pause
Background thread	Normal
Threads	Stop
Motor power	Stop
Small T/P display	Pop-up window for error messages, Alarm LED ON
Error log	Logged
Etc.	-

2.3 Level 2

Level 2 Alarm indicates errors on abnormal situations that require power restart. Robot doesn't move and all threads stop. Robot or JOB program cannot be started until error recovery is completed. If the alarm continues, it may require the following measures.

Description	Alarms that require a restart of controller.
Robot motion	Stop
Background thread	Stop
Threads	Stop
Motor power	Stop
Small T/P display	Pop-up window for error messages, Alarm LED ON
Error log	Logged
Etc.	-

2.4 Level 3

Level 3 Alarm indicates errors that require a replacement of certain parts or components used in the robot system. This alarm level may cause a destruction of the robot system. Robotor JOB program cannot be started until error recovery is completed.

Description	This indicates the critical alarms that require a replacement of certain parts or components.
Robot motion	Stop
Background thread	Stop
Threads	Stop
Motor power	Stop
Small T/P display	Pop-up window for error messages, Alarm LED ON
Error log	Logged
Etc.	-

Chapter 2 Failure Symptoms & Malfunctions

1. Failure Symptoms

Failure of the robot system includes following symptoms.

- **Event Alarm Message**
- Mechanical errors or the system that doesn't properly operate
- Unable to start the system or showing abnormal status
- Displaying via hardware such as LEDs
- **Other symptoms**

2. Failures without Alarm Message

If the symptoms are not met the criteria including symptoms, causes and measures described in this section, make sure to contact the representatives or Robostar.

2.1 Startup Failure

Status	System doesn't start or doesn't properly operate.
Symptoms & Causes	<ul style="list-style-type: none"> • No LED is on. • Error in Power source or power connection • T/P failure • T/P is operated but no response to the input • Unable to load the system software • Disk failure of the system software
Measures recommended	
<ol style="list-style-type: none"> 1) Check if the main power supply for the robot system exists and is within the allowed limitation. 2) Check if the main power supply cable is properly connected to the controller power supply. If there are damages on the cable, immediately replace the cable. 3) Check if the main switch is on state. 4) Check the LED of power supply module. If all LEDs are off state, refer to 2.4 All LEDs Off State. 5) If it is determined that the system is completely dead, refer to 2.2 Controller Unusable. 6) If it is determined that the T/P failed, refer to 2.3 T/P Unusable. 7) If it is determined that the system software has troubles, refer to 2.8 Failure in System Software Loading. 	
Reference Literature	Installation & Handling Manual, Operation manual


2.2 Controller Unusable

Status	Controller is completely or intermittently dead. NO LED is on and no action is available. T/P cannot be used.
Symptoms & Causes	<ul style="list-style-type: none"> • Errors in applying the controller power • Power module failure • Disconnection between control module and power module
Measures recommended	
<ol style="list-style-type: none"> 1) Check if the main power supply for the robot system exists and voltage level is in line with the requirements of the controller. 2) Check if the main power supply cable is properly connected to the controller power supply. If there are damages on the cable, immediately replace the cable. 3) Check the LED of power supply module. If all LEDs are off state, replace the power module. 	
Reference Literature	Installation & Handling Manual

2.3 T/P Unusable

Status	Controller T/P was completely or intermittently dead. No input is available and nothing can be used. If nothing appears on the screen although T/P was started, move to 2.5 T/P Communication Error .
Symptoms & Causes	<ul style="list-style-type: none"> • Errors in applying the controller power • T/P was not connected to the controller. • Damages in T/P cable or connector • T/P failure • Interface board failure
Measures recommended	
<ol style="list-style-type: none"> 1) Check if the system is on and T/P is connected to the controller. 2) Check visually if T/P cable was damaged and check if connector was damaged. If possible, directly test T/P in another controller. 3) If any defect in T/P is discovered, replace the T/P. 4) Check the status of the interface board that communicates with the main board after applying the power to T/P. If there is any defect on the interface board, replace it. 	
Reference Literature	Installation & Handling Manual

2.4 All LEDs Off State

Status	LEDs in all boards including power module are off. System may not work or may not even start.
Symptoms & Causes	<ul style="list-style-type: none"> • Errors in applying the controller power • Circuit cut-off function • Defect in power module
Measures recommended	
<ol style="list-style-type: none"> 1) Check if main switch was on. 2)  Measure the main voltage using a voltage meter if power is supplied to the system. 3) Check if the circuit cut-off function was used. 4) If LEDs are still off even though the voltage stays at 220VAC, replace the power module. 	
Reference Literature	Installation & Handling Manual

2.5 T/P Communication Error

Status	T/P starts but nothing is displayed. No input is available and nothing can be used. T/P was not completely unusable yet. If T/P becomes completely unusable, refer to 2.3 T/P Unusable .
Symptoms & Causes	<ul style="list-style-type: none"> • In case that the controller was not restarted after changing from small T/P to graphic T/P, or vice versa • In case that a problem occurs in loading the system software
Measures recommended	
<ol style="list-style-type: none"> 1) Restart the controller after changing from small T/P to graphic T/P, or vice versa. 2) Verify the failed T/P by connecting the normally working T/P in another controller to this controller and applying a power. 3) If any defect in T/P is discovered, replace the T/P. 4) If the normally working T/P in another controller shows same problem, check the status of a main board 5) If a power is not applied to the main board, replace it. 6) If it is determined that system software caused problems because power is normally supplied to the main board, refer to 2.8 Failure in System Software Loading. 	
Reference Literature	Installation & Handling Manual

2.6 Irregular Alarm Message

Status	It is thought that alarm messages to T/P are irregular and do not match actual malfunction of the robot. Various types of messages are likely to be displayed wrongly. The most significant reason for this type is that an operator disassembles or reassembles without authorization.
Symptoms & Causes	<ul style="list-style-type: none"> • In case that cable was not properly connected. • Defect in connector • Damages in cable insulating materials
Measures recommended	
<ol style="list-style-type: none"> 1) Check the all internal operation cables, especially the cables recently reconnected during repair works. Re-connect all cables as stated in the robot manual. 2) Check if all cable connectors were tightened. 3) Check if any damage occurred in all cables. Replace all damaged cables by referring to the instructions in the robot manual. 	
Reference Literature	Installation & Handling Manual


2.7 T/P Key Inoperable

Status	After starting the system, T/P screen is displayed but key is not input.
Symptoms & Causes	<ul style="list-style-type: none"> • T/P is wrongly connected or cable was damaged. • T/P internal cable was not connected or connector was damaged. • Defect in T/P components
Measures recommended	
<ol style="list-style-type: none"> 1) Check if there are problems in T/P status changing switch or emergency key function. In case of any problem, replace the T/P. 2) Check if Buzzer sound is out when input the T/P key. If a key with no Buzzer sound exists or all keys have a problem, replace the T/P. 3) Check if T/P was properly connected to the controller. 4) Check if T/P cable was damaged. 5) Check if controller power supply and interface board work properly. 6) Check if T/P is usable or not. 7) Replace the T/P if no other ways. 	
Reference Literature	Installation & Handling Manual

2.8 Failure in System Software Loading

Status	Unable to operate the controller due to failure in booting the controller system. The most significant reason for this type is that an operator altered the system software or disk was damaged due to main power failure or forced stop by an operator.
Symptoms & Causes	<ul style="list-style-type: none"> • The screen is stopped at T/P logo display and is not moved to the next screen although no problem in the controller. • System software delete and errors
Measures recommended	
<ol style="list-style-type: none"> 1) Check if the main switch was on and the system can be operated using LEDs on the controller. 2) Inspect any damage on the T/P cables visually and check damages in the connector. Directly test T/P at another controller if possible. 3) In case that no fault was discovered in T/P, there is highly likely to be failed in loading the controller system software. 4) After turning the main power off and inserting the USB memory for installation & recovery that was separately provided by the manufacturer, restart the controller. 5) Check if the booting is possible using the USB memory for installation & recovery. If booting is not possible, replace the controller main board. 6) In case of successful booting with the USB memory for installation & recovery, restore the system as a guidance. 7) After restoring the system, remove the USB memory and check if the controller can be normally used. 	
Reference Literature	Installation & Handling Manual, Operation Manual

2.9 Robot Collapse in Power Cut-off

<p>Status</p>	<p> When a motor on state, the robot can normally move, but the motor can collapse due to its own weight in off state. A fixed brake imbedded in each motor needs to be checked. This failure may cause serious damages or even death to works near the system and may seriously damage to a console or surrounding devices.</p>
<p>Symptoms & Causes</p>	<ul style="list-style-type: none"> • Failed Brake system • Defect in Brake Power supply
<p>Measures recommended</p>	
<ol style="list-style-type: none"> 1) Select a motor that is suspected as a root cause of robot collapse. 2) Check the brake power that is supplied to the selected motor under the motor off state. 3) Check if there is oil leakage in the motor. If yes, replace the motor immediately. 4) Separate the motor from a transmission and check the motor from driving side. If any problem is found, replace the motor immediately. 	
<p>Reference Literature</p>	<p>Installation & Handling Manual</p>

2.10 Unable to release Brake

Status	When a robot starts to operate or is jogging, an internal brake needs to be released. If a brake is not released, the robot cannot move and many alarm messages are created.
Symptoms & Causes	<ul style="list-style-type: none"> • Brake interface doesn't operate correctly. • The system is not switched to the motor on state properly. • Defected brake in robot side • Failure in brake power (24V)
Measures recommended	
<ol style="list-style-type: none"> 1) Check the brake cable connection. 2) Check the brake signal and cable. 3) Only one brake failed, check other brakes nearby. Any one of brakes doesn't operate, no usable brake power of 24V may not exist. 4) Inspect the power supply of driver module in order to check if the 24V brake voltage is within normal range. 5) The brake may work continuously due to various failures in other components of the system. Check the Alarm message log by referring to the Operation Manual. 	
Reference Literature	Installation & Handling Manual, Operation Manual

3. Failures with Alarm Message

Each failure or error is detected as a symptom in advance with or without displaying an alarm log message. Then, the system provides an operator with a message for the problem that causes the specified symptom and explains about the causes.

3.1 Alarm Message Description

When an alarm occurs at the controller, the system displays an alarm message window on the T/P screen.

1) Small T/P

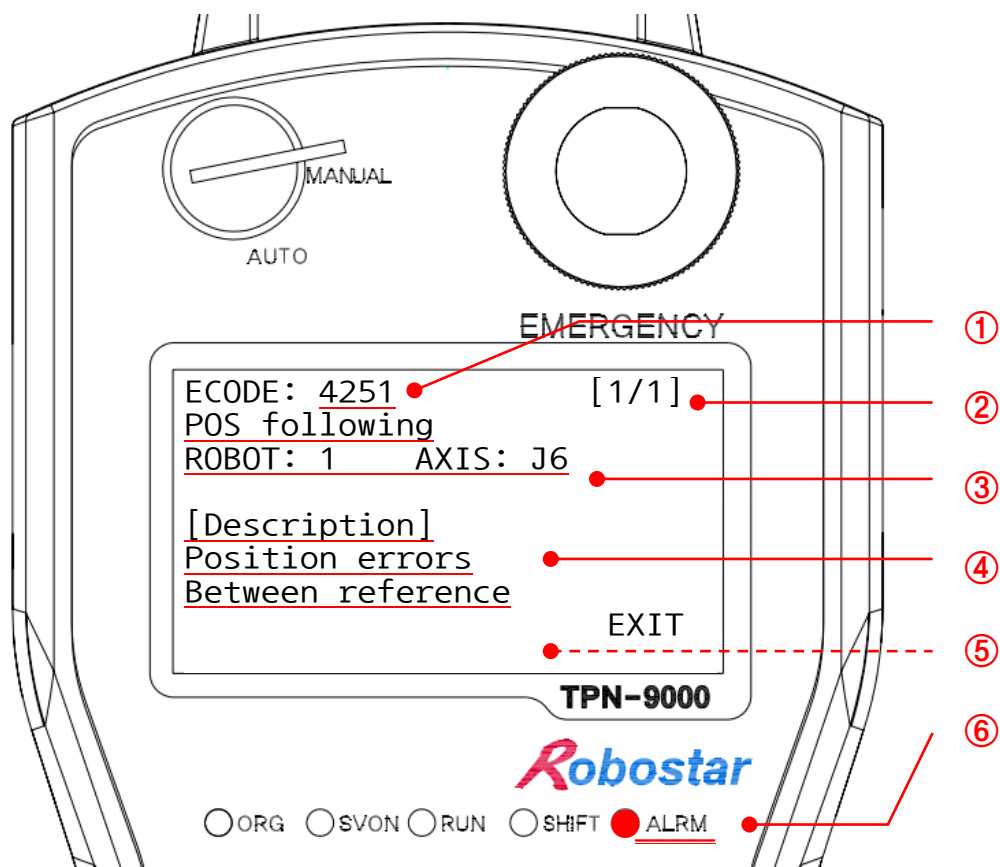




Figure 2-1 Screen of Small T/P

No.	Classification	Description
①	Alarm Code	This indicates the specified number for the alarm currently occurred.
②	Alarm Page	[Current Alarm Page No / Total Number of Alarm Pages] When changing the page, current alarm page no is changed as well. The Page up or down buttons as below can change the page. <div style="display: flex; justify-content: center; gap: 10px;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">Pg Up</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">Pg Dn</div> </div>

③	Alarm Message	<p>This indicates the detail of currently occurred alarm. Additional message as below can be displayed depending on the alarm status.</p> <p>[Format] ROBOT: ① AXIS:② [Detail] Alarm occurred at ② axis of ① robot</p> <p>The message window can be closed by pressing F4 or ESC key. Alarm List key below allows to check the alarm message again.</p> 
④	Alarm Details	<p>This displays the information of currently occurred alarm. This sometimes displays a part of information on brief causes and measures.</p>
⑤	Alarm Measures	<p>This briefly displays solutions for the alarm currently occurred. This may not contain relevant solutions.</p>
⑥	Alarm LED	<p>The corresponding LED becomes on once an alarm occurs. In case of warning situation, the LED blinks.</p>
⑦	Others	<p>Pressing the Up or Down key as below allow to check all messages.</p> 

3.2 Classification & Summary of Alarm List

The below classifies alarm codes that occur in the controller. For more detail alarm list, refer to [Chapter 3 Alarm List](#).

1) File System (1001~1050)

- This specifies the alarms that occur largely in the file system such as memory errors or JOB program file errors. For more detail, refer to [Chapter 3 Section 1 File System\(1001~1050\)](#)

-

2) Device (1051~1100)

- This specifies the alarms on other devices except for a driver. For more detail, refer to [Chapter 3 Section 2. Device \(1051~1100\)](#).

3) Protection (1101~1200)

- This specifies the alarms on the damage prevention or motion limitation of controller or robot. For more detail, refer to [Chapter 3 Section 3. Protection \(1101~1200\)](#).

4) Runtime (1201~1300)

- This specifies the alarms that can occur during JOB program execution. For more detail, refer to [Chapter 3 Section 4. Runtime \(1201~1300\)](#).

5) Compile (1301~1400)

- This specifies the alarms on errors of JOB program. For more detail, refer to [Chapter 3 Section 5. Compile \(1301~1400\)](#).

6) Trajectory (1401~1500)

- This specifies the alarms that can occur during motion creation or motion execution. For more detail, refer to [Chapter 3 Section 6. Trajectory \(1401~1500\)](#).

-

7) Emergency (2101~2200)

- This specifies the alarms on errors that can occur during emergency situation. For more detail, refer to [Chapter 3 Section 7. Emergency \(2101~2200\)](#).

8) EtherCAT Servo Driver (4001~5000)

- This specifies the alarms on errors that were detected by EtherCAT Servo Driver. For more detail, refer to [Chapter 3 Section 8. EtherCAT Servo Driver \(4001~5000\)](#).

-

9) Graphic T/P (5001~5100)

- This specifies the alarms that can occur in communication with the Graphic T/P. For more detail, refer to [Chapter 3 Section 9. Graphic T/P \(5001~5100\)](#).

3.3 Alarm Release Method & Solution Strategy

This briefly mentions the methods to release alarms occurred and to find the causes of alarms through a systematic approach. For more detail alarm list and measures, refer to [Chapter 3. Alarm List](#).

1) Release Method of Alarms & Warnings

When the alarms are released by simple actions without stopping the controller, the alarms are released by following procedure.

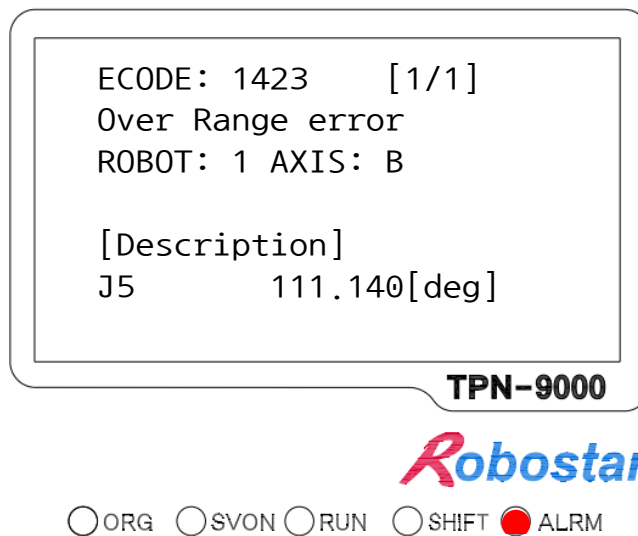


Figure 2-2 Example of Over Range Alarm

- ① When Alarm LED is on or blinking, check the entire messages for alarms or errors by using Up or Down key.
- ② Take necessary measures after finding out the causes of the alarm by referring to the Chapter 3 Alarm List.
- ③ Pop up the Alarm Message window by pressing Alarm List Key. This key has a priority action in most of screens.



- ④ After re-checking the details of alarm or error, press the reset button to release the alarm or warning.



- ⑤ The alarms unreleased show again in alarm format.
- ⑥ If the alarm was completely released, the alarm message window disappear and the alarm LED goes off, then the robot connected to the controller can be resumed to normal operation.

2) Strategy to resolve Alarms

The causes of alarms are analyzed to solve by referring to procedures and methods below.

① **Check Alarm Message or Alarm Log.**

A big effort has been invested to create alarm log messages as much as other technical literature. This can provide an important clue to solve the problem even if it is incomplete. In addition, the alarm log message is consistently upgraded.

② **Identify the basic structure of the system by reading a product description.**

A product description was specified in [A. Literature Reference](#). This contains useful and essential information to solve the problems.

③ **Read the Log Information.**

Other than alarm log messages, there may be lots of information on malfunctions detected by the system such as the controller system log, JOB program log.

④ **Check the LEDs of each electronic device.**

If the alarm was caused by the electronic components, LEDs either on the front or the board can lead to the causes of the alarm.

⑤ **Eliminate the elements that cause defect.**

All failures can create various symptoms such as displaying an alarm log message window. In order to effectively solve the failure, it is important to separate the cause symptom from the subsequent symptom.

⑥ **Identify the causes of failure by dividing them into two parts.**

It is recommended to separate the causes of failure into two areas. Once identifying the overall causes, then determine the specific area of the failure. Afterwards, the same concept is applied by dividing the area into two parts. Eventually this can identify single component that has a defect.

⑦ **Check the communication parameters and cables.**

The causes for majority of errors in the serial communication are confirmed to be cable defects, transmission speed, wrongly set data bandwidth.

⑧ **Check the software version.**

Check if the system software and other software are correct versions.

A certain version may not be compatible with a specific hardware. Record the software version because it can be useful information when asking to the agent or manufacturer.

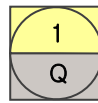
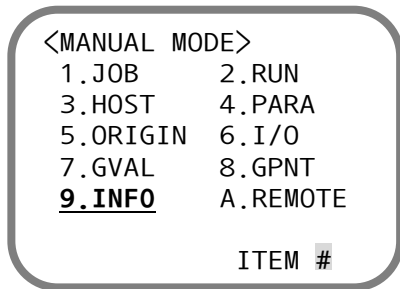


- 1) Do not replace components without authorization. It is important to determine the unit by identifying the cause of failure to replace before replacing all.
- 2) Replace one at a time.
- 3) Confirm if the problem was solved by testing the system after replacing the components.

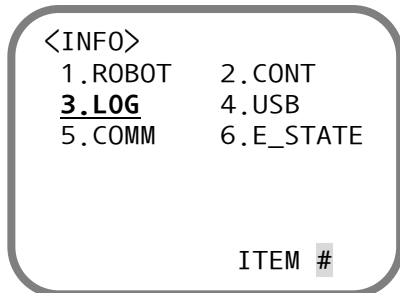
3.4 Alarm Log Verification Method

When verifying the information on the controller alarms that occurred before, it is possible to confirm the alarms through the alarm log menu. Most recent 100 alarm logs can be verified. For more detail, refer to the Operation Manual.

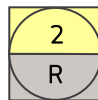
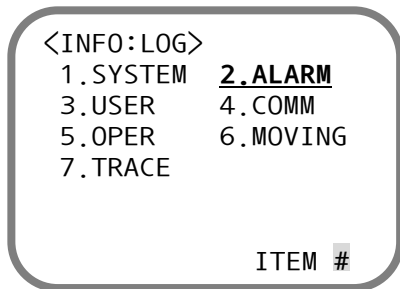
In case of aiming to verify entire alarm logs, those can be downloaded by the Uni-host program or by inserting an USB memory into the controller. When trying to download the log file, refer to the Uni-host Manual and the Operation Manual.



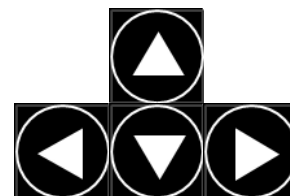
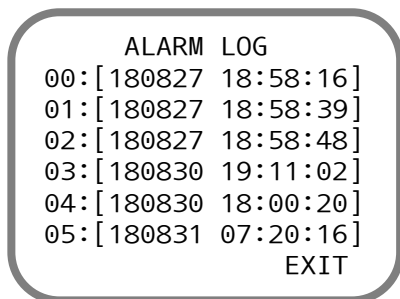
Press the 9 key in main screen of manual mode to move to 9. INFO



Press the 3 key at INFO screen to move to 3. LOG screen.



Press the 3 key at LOG screen to move to 2. ALARM screen. Alarm Log can be verified..



Pressing the arrow keys enables to check the entire messages.



Pressing the Page Up/Down keys enables to check the entire logs.

Chapter 3 Alarm List

This chapter describes various alarms that can occur when using the controller. In addition, the root cause for the alarm is presented and the measures are briefly explained.

When the situations below occur, contact to the agent or the manufacturer.

- In case that the alarm not described in this manual occurs
- In case that the presented cause and measures are not satisfied

1) Alarm List Item

Alarm is presented as a table form shown below.


In the table, the code number appears first to easily find out the error messages. It is able to get additional information on the error and measures by referring to this number.

Corresponding information is divided into code, message, description, monitoring, influence, alarm level, cause and measures. The implication for each information is described in the table presented.

Code	<Code No.>	Message	<Message being output in T/P> <Robot CH><Axis No.>	
Description	<Description of alarm meaning>			
Monitoring	<Situation or cycle that monitors the corresponding alarm occurrence>		Alarm Level	<Level Value>
Influence	<Influence that the corresponding alarm gives to the controller>			
Causes		Measures		
<Causes for alarm occurrence>		<Measures for the alarm>		

1. File System (1001~1050)


Code	1003	Message	Out of Memory	
Description	Memory Allocation Error Prevention			
Monitoring	When loading JOB program file		Alarm Level	2
Influence	Failure in JOB program load and execution			
Causes		Measures		
Failure in memory allocation for controller internal program		1) Check if the alarm is cleared after turning off the controller power and restart the system. 2) When the alarm consistently occurred <ul style="list-style-type: none"> • Reinstall or replace the RAM in main board 		

	1) When the alarm above occurs, the stored JOB program data may be lost.
---	--


Code	1021	Message	Job step info error	
Description	Mismatch in the number of lines of JOB program			
Monitoring	When loading JOB program file		Alarm Level	1
Influence	Failure in JOB program load and execution			
Causes		Measures		
When loading the JOB program into memory, it occurs if actual line number in the JOB and recorded line number are different.		1) Re-write after deleting the JOB file that an error occurs.		

2. Device (1051~1100)

Code	1091	Message	FAN error
Description	FAN failure occurred		
Monitoring	Periodical inspection	Alarm Level	0
Influence	None		
Causes		Measures	
FAN failure or FAN cable failure		1) Clear the alarm by pressing the reset button. 2) When the alarm stays consistently; A. Inspect FAN B. Verify FAN connector contact status C. Replace FAN	

	1) If not restoring the warning above, the controller system is internally over-heated, resulting in damages on the entire system.
---	--

Code	1092	Message	FBUS Mismatch error
Description	In case that field bus type is not in line with the parameter value		
Monitoring	Periodical inspection	Alarm Level	0
Influence	None		
Causes		Measures	
Received filed type doesn't match to the parameter value of the controller.		1) After altering the filed bus type setting correctly, press the reset button to clear the alarm. 2) When the alarm consistently occurs; A. Inspect the field bus board B. Replace the field bus board	

	1) If not restoring the warning above, the functions related to the field bus board cannot be used.
---	---

3. Protection (1101~1200)

Code	1104	Message	Servo On Error	ROBOT: Ⓐ AXIS: Ⓑ
Description	Transition failure to servo on state			
Monitoring	In case of servo on		Alarm Level	2
Influence	Unable to operate the robot			
Causes		Measures		
Problem in applying power to servo module Defect on cable or connector		1) Inspect the power supply system and electrical modules.		
Error status in servo driver		1) Check servo driver status and connection status with a motor. 2) Inspect running status of servo driver.		
Error status in controller		1) Check if there is no problem on parameter setting between servo driver and motor. 2) Adjust gain in servo parameter.		

Code	1105	Message	Servo Off Error	ROBOT: Ⓐ AXIS: Ⓑ
Description	Transition failure to servo off state			
Monitoring	In case of servo off		Alarm Level	2
Influence	Unable to operate the robot			
Causes		Measures		
Problem in applying power to servo module Defect on cable or connector		1) Inspect the power supply system and electrical modules.		
Error status in servo driver		1) Check servo driver status and connection status with a motor. 2) Inspect running status of servo driver.		
Error status in controller		1) Check if there is no problem on parameter setting between servo driver and motor. 2) Adjust gain in servo parameter.		

Code	1107	Message	ORIGIN FAIL	ROBOT: @	AXIS: ⑥
Description	Origin Work Failure Alarm				
Monitoring	Origin Work In Progress			Alarm Level	1
Influence	Unable to Verify Origin Position, Position Data Error				
Causes			Measures		
It occurs in case that functional execution was failed with the set Origin work method.			<ol style="list-style-type: none"> 1) Check if Origin work method is correct. 2) In case that the alarm consistently occurs <ol style="list-style-type: none"> A. Check if input of limit sensor is normal range. 		

Code	1108	Message	Not Completed Org	ROBOT: @	AXIS: ⑥
Description	It occurs when conducting other works during Origin work.				
Monitoring	Origin Work In Progress			Alarm Level	1
Influence	Position Data Error, Unable to execute JOB program				
Causes			Measures		
It occurs when executing JOB program before completing Origin work.			<ol style="list-style-type: none"> 1) Perform Origin work. 2) In case of an absolute type motor, perform Zero offset Calibration. 		

Code	1178	Message	MC OFF error		
Description	MC (Magnetic Contact) Alarm				
Monitoring	Periodical inspection			Alarm Level	1
Influence	Position Data Error, Unable to execute JOB program				
Causes			Measures		
It occurs when MC is on under emergency stop status. (MC must be off in alarm status)			<ol style="list-style-type: none"> 1) Press a reset button to clear the alarm. 2) When the alarm stays consistently; <ol style="list-style-type: none"> A. Check MC cable wiring. B. Replace the module if MC module has a problem. C. Replace the module if Safety PLC module has a problem. D. Replace the module if Interface and Safety board have a problem. 		

Code	1179	Message	Safety relay fault	
Description	The relay of Safety module were not in contact.			
Monitoring	Periodical inspection	Alarm Level	1	
Influence	Unable to operate the robot			
Causes		Measures		
The relay of Safety module were not in contact.		1) The relay of Safety module were not normally in contact when alarm release timing doesn't match. Press the reset key to clear the alarm.		
Safety module problem		1) When this alarm stays consistently under no other external alarms, replace the Safety module.		
Code	1186	Message	In range error	ROBOT: @ AXIS: ⑥
Description	Exceed the robot's range			
Monitoring	Periodical inspection	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
It occurs when the axis position exceeds the specified range (In Range).		1) Check if the robot is currently in specified range (In Range) and move it to allowed range. 2) Adjust the teaching point of corresponding axis or specified range(In Range).		
Code	1199	Message	DEADMAN error	
Description	Dead Man switch was not in contact when operating the robot in the manual mode			
Monitoring	In case of jogging	Alarm Level	0	
Influence	Stopping robot operation			
Causes		Measures		
It occurs when Dead Man switch was not in contact during the robot operation.		1) If this alarm occurs when Dead Man switch became not in contact during the manual operation of robot, reattach the contacts after clearing it.		
Dead Man switch problem		1) Replace T/P.		

4. Runtime (1201~1300)

Code	1204	Message	Not Teaching Point	ROBOT: ①
Description	It occurs when using the point that teaching was not performed.			
Monitoring	When conducting a motion		Alarm Level	1
Influence	Robot operation stopping, No motion available			
Causes		Measures		
Use of the point that teaching was not performed in case of using the commands related to robot movement.		<ol style="list-style-type: none"> 1) Check in JOB program if the point that teaching was not performed was used or check if the using point was performed with a teaching. 2) Complete the point teaching by referring to the Operation Manual. 		

Code	1219	Message	Range Over error	ROBOT: ① AXIS: ②
Description	It occurs when the teaching point exceeded to the maximum movable distance.			
Monitoring	When conducting a motion		Alarm Level	1
Influence	Robot operation stopping, No motion available			
Causes		Measures		
Teaching point value exceeded the defined range.		<ol style="list-style-type: none"> 1) Check if the teaching point value is within the range. 2) Adjust the teaching point value to be in the range. 		
Inappropriate setting in the system parameters (RANGE)		<ol style="list-style-type: none"> 1) Check the system parameters. 2) Alter and store the system parameters. 		

Code	1236	Message	Interpreter error	
Description	It occurs when having problems in the command interpretation during execution of JOB program.			
Monitoring	When execution of JOB program		Alarm Level	1
Influence	Robot operation stopping			
Causes		Measures		
It occurs when the controller cannot understand an execution command during JOB program operation or when the controller is about to execute a wrong command.		<ol style="list-style-type: none"> 1) Check the line number and message contents displayed in the alarm message. 2) Repeat the work after revising corresponding JOB program or altering the value with referring to the interpreter alarm detail and its causes. 		

※ Interpreter Alarm Messages & Causes

No.	Alarm Message (Description)
	Causes of Alarm
1	'(' is needed
	In case that there is no input for "(" after a command
2)' is needed
	In case that there is no input for ")" after a command
3	[<Execution Mode>:<Thread No>] function call depth is over 100.
	In case that a depth of function call exceeds 100 in <Thread No> of <Execution Mode>.
4	[<Execution Mode>:<Thread No>] binaryExpr ==> not define operand[<Operator No>]
	In case that undefined operator was used in <Thread No> of <Execution Mode>.
5	[<Execution Mode>:<Thread No>] factor ==> not define command[<Command No>]
	In case that undefined command was used in <Thread No> of <Execution Mode>
6	[<Input Value>] Tool parameter is not assigned.
	In case that the tool coordinate system with incomplete setting was selected.
7	[<Input Value>] User parameter is not assigned.
	In case that the user coordinate system with incomplete setting was selected.
8	~ operation only int
	In case that the target using the "~" mark as the first character is not an integer type.
9	<JOB Name> JOB Point index = <No> is not teaching point.
	In case that uninitialized program position variable (P) was attempted to use.
10	<Command> index [<Input Value>] is out of range (<Minimum Value>-<Maximum Value>).
	In case that Input Value exceeds the input tolerance.
11	<Command> instruction must be used only position variable.
	In case that the type of input value is not a position type but other types.
12	<Command> must be used only in the servo off state.
	In case that the commands only for servo off state were used in servo on state.
13	<Command>(<Index>) error or <Command>[<Index>] error
	In case that Index value inputted exceeds the tolerance range.
14	<Command>[<Input Value>]: value range is (<Minimum Value>-<Maximum Value>).
	In case that Input Value exceeds the input tolerance.
15	<Motion Command> execute error[<Return Value>]
	In case that <Motion Command> execution was failed.
16	<Motion Command>: Error to convert to <Type> position
	In case of a failure in conversion process that converts the input position value into the position value of <Type> that is required for the command of corresponding motion.
17	<Index> subscript is out of range (range:0-<Maximum Value>)
	In case that input index exceeds the selection range arrangement.

No.	Alarm Message (Description)
	Causes of Alarm
18	<Variable Name> : Uninitialized variable has been used.
	In case that uninitialized variables were attempted to use.
19	<Logic or Bit Operator> d1, d2 data type is only integer.
	In case that the type of two terms are not an integer form when using a logic and a bit operators
20	<General digital input and output commands> failed. If index [<No>] is valid, check IO board.
	In case that use of general digital input and output commands was failed
21	<Input & Output Command><Index> = <Input Value> error
	In case that Index value exceeds the input tolerance range when using input & output commands
22	<Axis No> AXIS <Motion Command> range over
	In case that axis of <Axis No> was beyond the allowed distance
23	<Field Bus Input & Output Command> failed. If index [<No>] is valid, check cclink board.
	In case that use of Field Bus Input & Output Command was failed
24	<Command> parameter p_id /t_id value [<Input Value>] is not correct.
	In case that <Input Value> exceeded the input tolerance range when using a Command
25	ac ==>[<Current Character String No>] string data memory over
	In case that total character strings exceeded the input tolerance count (1000)
26	ACC: value[<Input Value >] range is (<Minimum Value>-< Maximum Value>).
	In case that the input value for acceleration time exceeded the input tolerance range
27	Cannot call main function.
	In case that a thread was attempted to dually assign to the main thread
28	Cannot assign different type position variable.
	In case that other type variable was attempted to substitute
29	Cannot find the job file[<File Name>.JOB]
	In case that the JOB program of inputted file name doesn't exist when using PSEL command
30	Cannot use <Auto Mode Dedicated Command> at foretask.
	In case that Auto Mode Dedicated Command was used in Manual Mode
31	Create thread error
	In case that thread creation was failed when using CTHREAD command
32	d2 data is zero.
	In case that the second term is 0 when using the remainder sign (%) of division
33	d2 data type is wrong.
	In case that the type of second term is different from the first term when using addition (+), subtraction (-), multiplication (*), division (/) signs
34	Data field only assigns integer or float data.
	In case that the substitute value is not the integer or the real number when substituting a value for the individual element of a position variable.

No.	Alarm Message (Description)
	Causes of Alarm
35	Data stored in the global integer/float must be integer type or float type.
	In case that the Input Value is not the integer nor the real number when substituting a value for global integer variable (I) or global real number variable (F)
36	Data type is not specified nor void.
	In case that the variable to be stored is VOID type or doesn't exist
37	DEC: value[<Input Value>] range is (<Minimum Value>-< Maximum Value>).
	In case that the Input Value for deceleration time exceeded the input tolerance range
38	divide by 0
	In case that the second term is 0 when using the division (/) and remainder sign (%)
39	ELSEIF or ELSE should execute after IF instruction.
	In case that ELSEIF or ELSE statement was executed without IF statement
40	EXIT Instruction
	In case that EXIT command was used
41	Fail to clear serial data.
	In case that use of FLUSH command was failed
42	FOS: value[<Input Value>] range is (<Minimum Value>-< Maximum Value>).
	In case that FOS Input Value exceeded the input tolerance range
43	Function id[<No>] is invalid.
	In case of trying to assign the function with a transfer factor to a thread when using CTHREAD command
44	Global Point field only assign integer or float data.
	In case that the substituting value for individual element of global position variable (GP) is not an integer nor real number
45	Global Point index = <No> is not teaching point.
	In case that uninitialized global position variable (GP) was attempted to use
46	Global Point only assign position data.
	In case that the input value substituting for global position variable (GP) is not the joint position type
47	HERE/HERE_REF index range(1 - < Minimum Value >) input = < Input Value >
	In case that the input value exceeded the input tolerance range when using HERE/HERE_REF function
48	Incorrect loop condition in IF/ELSEIF/WHILE loop - not integer type or float type.
	In case that the result of conditional expression of IF/ELSEIF/WHILE statement is not an integer nor a real number
49	Limit : Minimum and maximum values have been reversed.[index : <No>, min: <Minimum Value>, max: <Maximum Value>]
	In case that Minimum Value is larger than Maximum Value when using LIMT command

No.	Alarm Message (Description)
	Causes of Alarm
50	Load job err
	In case that JOB program loading was failed due to a program error
51	Minus operation only int, float
	In case that the target using the "-" mark as the first character is not an integer type or a real number
52	needed variable name: <Variable Name>
	In case that a variable of undefined type was attempted to call
53	No need any factor.
	In case that unnecessary element is followed to a command
54	not integer type or float type
	In case that the input data are not integers nor real numbers
55	Not operation only int, float
	In case that the target using the "!" mark as the first character is not an integer type or a real number
56	Plus/Minus d1, d2 data type mismatch.
	In case that the type of input value is not allowed to conduct addition (+) or subtraction (-) operation
57	robot id mismatch[<Execution Mode>:<Thread No>]
	1) In case that the robot number stored in JOB program file was wrong
	2) In case that the robot number inputted by a user was wrong
58	servo is off!!!
	In case that a command for servo on was used in servo off state
59	SMID : The start position of characters to be extracted is too big.
	In case that the start position for character string extraction is larger than the target character string when using SMID function
60	SMID : The number of characters to be extracted is too big.
	In case that the end position for character string extraction is larger than the target character string when using SMID function
61	Subscript must be unsigned integer.
	1) In case that an integer value was not input when selecting the Index of program position variable (P) or global position variable (GP)
	2) In case that an integer value was not input when selecting the Index of global integer variable (I)
	3) In case that an integer value was not input when selecting the Index of global real variable (F)
	4) In case that an integer value was not input when selecting the Index of array variable
62	Take robot first.
	In case that robot was not selected
63	The <Function Name> function argument type is invalid.
	In case that a transfer factor type of a function is not correct
64	The field value[<Axis No>] of point is out of range(1 - <Axis Max No>). Global point field[<Axis No>] is out of range(1 - <Axis Max No>).
	In case that the Input Axis No exceeded Axis Max No when reading the individual element value of a position variable

No.	Alarm Message (Description)
	Causes of Alarm
65	The first index value[<Input Value>] of <Command> function is out of range(0 - <Maximum Value>).
	In case that the first Input Value of a command exceeded the input tolerance range
66	The first parameter should be used only integer type.
	In case that the first Input Value of a command is not an integer type
67	The first parameter type of <Command> function must be <Type> position type.
	In case that the first Input Value of a command is not a position type of <Type>
68	The first parameter type of <Command> function must be <Data Type>.
	In case that the first Input Value of a command is not a <Data Type>.
69	The first parameter value [<Input Value>] of <Command> function/instruction is out of range (<Minimum Value> - <Maximum Value>)
	In case that the first Input Value of a command exceeded the input tolerance range
70	The first parameter value [<Input Value>] of <Command> function must be <Value>.
	In case that the first Input Value of a command is not <Value>
71	The index of global point must be integer.
	In case that a different value other than an integer was inputted when selecting the Index of global position variable (GP)
72	The index of job point must be integer.
	In case that a different value other than an integer was inputted when selecting the Index of program position variable (P)
73	The index value [<Index>] of <Arrangement Variable> is out of range (0 - < Maximum Value >).
	In case that the Input Index value exceeded the selectable range
74	The parameter value [<Input Value>] of <Command> function is out of range (0 - <Maximum Value>)
	In case that the Input value exceeded the selectable range of input tolerance range
75	The input value [<Input Value >] of <Command> is out of range (0 - <Maximum Value>).
	In case that the Input value exceeded the selectable range of input tolerance range
76	The left side is not position variable.
	In case of trying to substitute a position value for not position variable
77	The left side is position constant.
	In case of trying to substitute a value for an integer
78	The maximum length plus two strings must be <Character String Max Length> characters or less.
	In case that the length of a combined string is longer than <Character String Max Length>
79	The number [<No>] of <Function Name> function arguments are invalid.
	In case that the number of transfer factor in a function doesn't match the definition of the function
80	The parameter count of SETERR instruction is 2.
	In case that the number of input factors exceeded 2 when using SETERR command
81	The parameter type of <Command> function must be <Data Type>.
	In case that Input value of a command is not <Data Type>

No.	Alarm Message (Description)
	Causes of Alarm
82	The parameter value of SVAL function must include numeric character.
	In case that no number is included in the input character string when using SVAL command
83	The parameter value [<Input Value>] of <Command> instruction is out of range (<Minimum Value> - <Maximum Value>).
	In case that Input Value range of a command exceeded the input tolerance range
84	The pulse width[<Input Value 1>] should be less than the pulse period[<Input Value 2>].
	In case that a pulse width of <Input Value 1> is larger than that of < Input Value 2>
85	The right side is not position variable.
	In case of trying to substitute a non-position value for a position variable
86	The right side is string type.
	In case of trying to substitute a character string for a non-character string variable
87	The robot [<No>] is disabled, or its type is not defined.
	In case of the robot not being used or no robot type was set
88	The second index value [<Input Value>] of <Command> function is out of range (0-<Maximum Value>)
	In case that the second input value of a command exceeded the input tolerance range
89	The second parameter should be used only integer type.
	In case that the second input value of a command is not the integer type
90	The second parameter type of <Command> function must be <Type> position type.
	In case that the second input value of a command is not the position type of <Type>
91	The second parameter type of <Command> function must be <Data Type>.
	In case that the second input value of a command is not the <Data Type>
92	The second parameter value [<Input Value>] of <Command> function is less than <Minimum Value>.
	In case that the second input value of a command is smaller than the Minimum Value
93	The second parameter value [<Input Value>] of <Command> function/instruction is out of range (<Minimum Value> - <Maximum Value>).
	In case that the second input value of a command exceeded the input tolerance range
94	The second parameter value [<Input Value>] of <Command> function must be bigger than <Minimum Value>.
	In case that the second input value of a command is smaller than the Minimum Value
95	The third parameter should be used only integer type.
	In case that the third input value of a command is not the integer type
96	The third parameter type of <Command> function must be <Data Type>.
	In case that the third input value of a command is not <Data Type>
97	The third parameter type of <Command> function must be only position type.
	In case that the third input value of a command is not a joint position type
98	The third parameter value [<Input Value>] of <Command> function is less than <Minimum Value>.
	In case that the third input value of a command is smaller than the Minimum Value

No.	Alarm Message (Description)
	Causes of Alarm
99	The third parameter value[<Input Value>] of <Command> function is less than <Minimum Value>.
	In case that the third input value of a command is smaller than the Minimum Value
100	The third parameter value[<Input Value>] of <Command> function/instruction is out of range(<Minimum Value> - <Maximum Value>).
	In case that the third input value of a command exceeded the input tolerance range
101	The tool number[<Input Value >] of position variable is out of range(0 - < Maximum Value >).
	In case that, among the individual elements of position variable, the value inputted into the Tool No exceeded the input tolerance range
102	The used value[<Input Value>] of position variable is out of range(0 - 1).
	In case that, among the individual elements of position variable, the value inputted into the Variable Initialization exceeded the input tolerance range
103	The user number[<Input Value>] of position variable is out of range(0 - <Maximum Value>).
	In case that, among the individual elements of position variable, the value inputted into the User No exceeded the input tolerance range
104	The variable type is not integer or float.
	In case that STEP input value is not an integer nor a real number when executing FOR statement
105	Thread function cannot have arguments.
	In case of trying to assign the function with a transfer factor to thread
106	Thread id[<No>] is invalid.
	In case that the selected thread number exceeded the input tolerance range when using a multi-tasking command
107	Thread id[<No>] is used.
	In case that the selected thread has already been used when using CTHREAD command
108	Undefined ARM form[<Value>]
	In case that, among the individual elements of position variable, the value not defined in the robot posture was entered
109	Undefined variable
	In case of calling the undeclared variable
110	User_number: value[<Input Value>] range is (<Minimum Value>-<Maximum Value>).
	In case that the input value exceeded the input tolerance range when selecting a user coordinate system
111	Using uninitialized POS variable
	In case of using the position variable that was not initialized
112	VEL: value[<Input Value >] range is (<Minimum Value >-< Maximum Value >).
	In case that the speed input value exceeded the input tolerance range
113	Wrong argument number[<Factor No>]
	In case that the input transfer factors were input more than the input tolerance number

No.	Alarm Message (Description)
	Causes of Alarm
114	Wrong description: < Command or Sign>
	In case of entering wrong command or using not defined command
115	Wrong file input [BGTD/BGTF.JOB]
	In case of trying to use the unusable JOB program when using PSEL command
116	Wrong local robot[<Robot No>].. Robot ID error!!!
	1) In case of problem in the Robot No stored in JOB program file
	2) In case that a wrong Robot No was entered by a user
117	Wrong parameter value
	In case that the value not in allowed range was entered

Code	1237	Message	Invalid ThreadID	
Description	It occurs in case of Thread ID allocation error in JOB program			
Monitoring	When executing JOB program		Alarm Level	1
Influence	Unable to execute the program			
Causes		Measures		
It occurs when Threads with same ID are used.		1) Check if Threads having same ID are simultaneously used in JOB program. 2) Execute again after altering JOB.		

5. Compile (1301~1400)

Code	1315	Message	Compile error	
Description	JOB Program Syntax Error			
Monitoring	When loading a JOB program before execution		Alarm Level	1
Influence	Unable to execute the program			
Causes			Measures	
It occurs when the controller cannot understand the commands in the robot program that was written by a user or the commands were poorly written.			1) Check the line number and detail messages displayed in the alarm message. 2) Execute the program again by altering corresponding JOB after checking the message.	

6. Trajectory (1401~1500)

Code	1414	Message	ik isnan error	ROBOT: Ⓐ AXIS: Ⓑ
Description	In case that the calculated result is not the number, when interpreting the inverse kinematics of robot.			
Monitoring	Prior to motion execution	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
Errors in teaching point or trajectory when using CP motion		1) Check the information of axis that has problems by referring to the alarm message. 2) Check the teaching point of the line that the program execution was stopped or the trajectory according to the operation condition. 3) Execute again after completing the point modification.		
Errors in the value of used variable when using CP motion		1) Check the value of point variable in the line that program execution was stopped. 2) Execute again after point modification.		

Code	1415	Message	ik position error	ROBOT: Ⓐ AXIS: Ⓑ
Description	Coordinate conversion error occurs when interpreting the inverse kinematics of robot.			
Monitoring	During the motion execution	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
Error occurs when the data conversion from Base coordinate system to Joint coordinate system.		1) Check the teaching point of the line that program execution was stopped. 2) Execute again after point modification.		

Code	1422	Message	Time Sched. error	ROBOT: @	AXIS: ⑥
Description	Failure in time plan for motion command				
Monitoring	Prior to motion execution			Alarm Level	1
Influence	Program execution stopping, Unable to execute the motion				
Causes			Measures		
In case that time plan was failed during creating a motion path.			<ol style="list-style-type: none"> 1) Check and adjust the motion parameters. 2) Check the setting values if speed or acceleration and deceleration were used. 3) Check the teaching point and adjust it if necessary. 4) Check and adjust the setting value after using FOS commands. 		

Code	1423	Message	Over Range error	ROBOT: @	AXIS: ⑥
Description	In case that a position command exceeds RANG(SW-Limit) setting range				
Monitoring	Periodically checking			Alarm Level	1
Influence	Robot operation stopping				
Causes			Measures		
In case that moving position of the axis exceeds the allowed range			<ol style="list-style-type: none"> 1) Check if the robot is within the allowed range and move the robot to the allowed range. 2) Adjust the teaching point of corresponding axis. 		
In case that the parameter setting (RANG) is inappropriate			<ol style="list-style-type: none"> 1) Check the parameter settings. 2) Execute again after adjusting the parameter settings. 		
In case that the moving path is beyond the allowed range even if the teaching point is within the allowed range			<ol style="list-style-type: none"> 1) Check the teaching point. 2) Check and adjust the RANG (SW Limit) parameter value, or adjust the teaching point. 3) Adjust FOS setting to be small if it occurred in the situation of using FOS command. 4) Check the settings of TOOL or USER coordinate systems. 		

Code	1424	Message	Over Speed error	ROBOT: ③ AXIS: ⑥
Description	In case that the speed command exceeds the allowed range			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case that moving speed of the axis exceeds the allowed range		<ol style="list-style-type: none"> 1) Check the parameter settings (JONT, LINR). 2) Execute again after adjusting the parameter settings. 		
In case that the parameter setting (OVS) is inappropriate		<ol style="list-style-type: none"> 1) Check the over-speed conditions (OVS). 2) Execute again after adjusting the parameter settings. 		
Robot Command Error		<ol style="list-style-type: none"> 1) Check the command and motion conditions (VEL, ACC, DEC, FOS) if using the combined JOB command when executing a motion. 2) Check the relevancy of teaching point. 		
In case of passing through the singularity		<ol style="list-style-type: none"> 1) Check if the robot passes through the singularity. 2) Execute again after adjusting the teaching point. 		

Code	1425	Message	Over Accel. error	ROBOT: ① AXIS: ②
Description	In case that the acceleration command exceeds the allowed range			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case that moving acceleration of the axis exceeds the allowed range		1) Check the parameter settings (JONT, LINR). 2) Execute again after adjusting the parameter settings.		
In case that the parameter setting (OVA) is inappropriate		1) Check the over-acceleration conditions (OVA). 2) Execute again after adjusting the parameter settings.		
Robot Command Error		1) Check the command and motion conditions (VEL, ACC, DEC, FOS) if using the combined JOB command when executing a motion. 2) Check the relevancy of teaching point.		
In case of passing through the singularity		1) Check if the robot passes through the singularity. 2) Execute again after adjusting the teaching point.		

Code	1426	Message	Inposition error	ROBOT: ① AXIS: ②
Description	In case of exceeding the position error tolerance range			
Monitoring	When Motion ends	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case that a motor doesn't satisfy the allowed range (IPA) within the allowed time (IPE) after completing a motion command		1) Check the parameter related to In-position. 2) Execute again after increasing both IPE and IPA values. 3) Check and adjust the robot status and motor gain if consistently occurred after adjustment.		

Code	1427	Message	TG TimeOut error	
Description	In case that the calculation time of a position command exceeds the execution cycle time.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case that the calculation time of a position command exceeds the defined time		1) Check if there is any overload situation in the system.		

Code	1428	Message	TG Mode error	
Description	It occurs in case of violation in trajectory status transition			
Monitoring	the calculation time of a position command exceeds	Alarm Level	1	
Influence	Servo forcedly off			
Causes		Measures		
In case trying to change to the parameter editing screen with staying at servo on state		1) Move to parameter editing screen after servo off.		

Code	1429	Message	ENC Count error	ROBOT: Ⓐ AXIS: Ⓑ
Description	It occurs when the variation of a feedback pulse exceeds the allowed range.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case that the variation of encoder data that was periodically entered from servo exceeds the allowed range		1) Check if it consistently occurs. 2) Check the encoder cables, harness and servo board. Replace the relevant component showing a problem.		
In case of performing multi-turn clear		1) Check if it consistently occurs.		

Code	1430	Message	REF Count error	ROBOT: @	AXIS: ⑥
Description	It occurs when the variation of a command pulse exceeds the allowed range.				
Monitoring	Periodically checking			Alarm Level	1
Influence	Robot operation stopping				
Causes			Measures		
In case that the variation of position command data that was periodically output to servo exceeds the allowed range			1) Check if it consistently occurs. 2) Check if there is a problem on inputting encoder pulse value.		
In case that the power was not initialized after altering the axis information in parameters			1) Check if the alarm occurs after applying power again.		

Code	1431	Message	Servo ON/OFF TimeOut	ROBOT: @	
Description	It occurs when the status of servo doesn't match.				
Monitoring	Periodically checking			Alarm Level	1
Influence	Robot operation stopping				
Causes			Measures		
In case that the number of axis being used doesn't match with that of completing the servo on/off			1) Check if the alarm consistently occurs. 2) Check motor, driver and cable.		

Code	1434	Message	Over Trq error	ROBOT: @	AXIS: ⑥
Description	It occurs when the defined torque limit value was exceeded.				
Monitoring	In case that a TRQ command was used when executing JOB program under servo on state			Alarm Level	1
Influence	Robot operation stopping				
Causes			Measures		
In case that the torque value in real time exceeded the defined torque limit value			1) Check if the alarm consistently occurs. 2) Adjust the teaching point of corresponding axis. 3) Alter the torque limit value within the range that do not give a damage to a robot or surrounding devices.		

7. Emergency (2101~2200)

Code	2101	Message	T/P emergency	
Description	It occurs when the T/P stops by an emergency stop switch.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case that T/P emergency stop switch was pressed		1) Check if T/P emergency stop switch was pressed. 2) Clear the alarm after releasing the emergency stop switch.		
In case that the systems in T/P emergency stop switch have a problem		1) Check if T/P emergency stop switch was pressed. 2) Check if T/P switch was connected to the controller. 3) Repair or replace the T/P when there is a problem.		

Code	2102	Message	Front emergency	
Description	It occurs when the system is in emergency stop state by an emergency stop switch on the front panel.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case that an emergency stop switch on the front panel was pressed		1) Check if an emergency stop switch on the front panel was pressed. 2) Clear the alarm after releasing the emergency stop switch.		
In case that the systems in an emergency stop switch on the front panel have a problem		1) Replace the emergency stop switch.		


Code	2103	Message	System emergency
Description	It occurs when the system was in emergency stop due to system I/O operation.		
Monitoring	Periodically checking	Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program		
Causes		Measures	
System emergency stop by a user		1) Clear the controller alarm after releasing the emergency stop situation.	
Problem in the system emergency stop lines		1) Check if 24V power is normally being applied to two contacts of the system I/O. 2) Check if Safety Input cable was cut and replace it if there is a problem.	

Code	2104	Message	Auto emergency
Description	It occurs when any one of contacts in Interlock A was disconnected in Auto Mode.		
Monitoring	Periodically checking	Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program		
Causes		Measures	
In case that an contact of Interlock A was disconnected in Auto Mode because of a user or any other reasons		1) Check if 24V power is normally being applied to the contacts of Interlock A. 2) Check the causes of disconnection. 3) Check if Safety Input cable was cut and replace it if there is a problem.	

Code	2105	Message	Manual emergency
Description	It occurs when any of contacts in Interlock M was disconnected in Manual Mode.		
Monitoring	Periodically checking	Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program		
Causes		Measures	
In case that an contact of Interlock M was disconnected in Manual Mode because of a user or any other reasons		1) Check if 24V power is normally being applied to the contacts of Interlock M. 2) Check the causes of disconnection. 3) Check if Safety Input cable was cut and replace it if there is a problem.	

Code	2108	Message	Mode mismatch error	
Description	It occurs when the Safety Input Signals in pair were being entered differently.			
Monitoring	Periodically checking		Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case that the Input states of Safety Inputs in pair are not same; <ul style="list-style-type: none"> • System Emergency • Interlock A • Interlock M • T/P Emergency • T/P Open • T/P Mode 		1) Check the causes of disconnection. 2) Check if Safety Input cable was cut and replace it if there is a problem. 3) Check the status of Interface & Safety boards.		

Code	2115	Message	Main Board Tmp error	
Description	It occurs when the temperature of main board was higher than the set temperature.			
Monitoring	Periodically checking		Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case that the temperature of main board became higher than the set temperature		1) Stop to use the controller if possible and lower the temperature. 2) Check the cause of over-heating in the main board. 3) Check the fan and replace it if there is a problem. 4) Check the fixed status of the heat sink.		

	1) Caution is required for burning accident by over-heating in case of the alarm above.
---	---

8. EtherCAT Servo Driver (4001~5000)



- 1) This information is limited to the driver Alarm.
- 2) When checking the alarms described in this section at the driver, these are marked at the last two digits.

Code	4210	Message	IPM fault	ROBOT: ① AXIS: ②
Description	It occurs when an over-current (HW) flows in IPM.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in a motor or an encoder cable		<ul style="list-style-type: none"> 1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder. 		
Wrong parameter setting related to a motor or an encoder		<ul style="list-style-type: none"> 1) Check the defined values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match the Controller information. 		
Problems in motor phase resistance		<ul style="list-style-type: none"> 1) Check the resistance between phases of motor. (the resistance of U-V, V-W, W-U is less than several Ω) 2) Replace the motor when identifying the problems such an unbalance in resistance between phases. 		
Abnormal status in mechanical parts		<ul style="list-style-type: none"> 1) Check if there exists a collision or a constraint of devices. 2) Restore the system into normal state by checking the mechanical part. 		
Problems in driver		<ul style="list-style-type: none"> 1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, it is possible for driver to have a problem. Thus, replace the driver. 		
Problems caused by noises		<ul style="list-style-type: none"> 1) Check the FG wiring status. 2) Alter the size of FG wirings to the wiring size of main circuit of the driver. 		

Code	4211	Message	IPM temperature	ROBOT: ③ AXIS: ⑥
Description	It occurs when IPM is over-heated.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Under the status that the ambient temperature is high.		<ol style="list-style-type: none"> 1) Check if the ambient temperature exceeds 50°C. 2) Improve the ambient temperature of the driver and cooling conditions. 		
Over-heating alarm occurs continuously.		<ol style="list-style-type: none"> 1) Check if the accumulated operation overload rate [0x2603] among driver parameters is less than 100%. 2) Check if the load is less than 100% by verifying the motor temperature [0x261D] among driver parameters. 3) Adjust the gain of motor. 4) Alter the capacity of driver and motor. 		
Problem in driver		<ol style="list-style-type: none"> 1) Check if the alarm continuously occurs by applying a power again. 2) When the alarm continuously occurs, it is possible for driver to have a problem. Thus, replace the driver. 		



- 1) Caution is required for burning accident by over-heating in case of the alarm above.

Code	4214	Message	Over current	ROBOT: Ⓐ AXIS: Ⓑ
Description	It occurs when an over-current flows.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of motor or encoder		1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Error in parameter setting related to motor or encoder		1) Check the defined values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match the controller information.		
Problems in motor phase resistance		1) Check the resistance between phases of motor. (the resistance of U-V, V-W, W-U is less than several Ω) 2) Replace the motor when identifying the problems such an unbalance in resistance between phases.		
Abnormal status in mechanical parts		1) Check if there exists a collision or a constraint of devices. 2) Restore the system into normal state by checking the mechanical part.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, it is possible for driver to have a problem. Thus, replace the driver.		
Problems caused by noises		1) Check the FG wiring status. 2) Alter the size of FG wirings to the wiring size of main circuit of the driver.		

Code	4215	Message	Current offset		ROBOT: ③ AXIS: ④
Description	Current Offset error occurs				
Monitoring	Periodically checking			Alarm Level	1
Influence	Robot operation stopping				
Causes			Measures		
The offset margin for phase current of U, V, W in motor was excessively set.			1) Check if the offset margin for phase current of U/V/W [0x2015]~[0x2017] among driver parameters is more than 5% of the rated current.		
Problem occurred in driver.			1) When the alarm consistently occurs after adjusting the offset for phase current, it is possible for driver to have a problem. Thus, replace the driver.		

Code	4216	Message	Current limit exceed	ROBOT: @	AXIS: ⑥
Description	It occurs when the Current limit value was exceeded.				
Monitoring	Periodically checking			Alarm Level	2
Influence	Robot operation stopping, Unable to both handle JOG and execute program				
Causes			Measures		
Defect in cables of motor or encoder			1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Error in parameter setting related to motor or encoder			1) Check the defined values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match the Controller information.		
Problems in motor phase resistance			1) Check the resistance between phases of motor. (the resistance of U-V, V-W, W-U is less than several Ω) 2) Replace the motor when identifying the problems such an unbalance in resistance between phases.		
Abnormal status in mechanical parts			1) Check if there exists a collision or a constraint of devices. 2) Restore the system into normal state by checking the mechanical part.		
Problems in driver			1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, it is possible for driver to have a problem. Thus, replace the driver.		
Problems caused by noises			1) Check the FG wiring status. 2) Alter the size of FG wirings to the wiring size of main circuit of the driver.		

Code	4221	Message	Continuous overload	ROBOT: ③ AXIS: ④
Description	It occurs in case of continuous overload.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case of continuous operation with overload		1) Check if the accumulated operation overload rate [0x2603] among driver parameters is less than 100%. 2) Adjust the gain of motor. 3) Alter the capacity of driver and motor.		
Abnormal status in motor Brake		1) Check if motor Brake was opened in servo on. 2) Check if power is well applied to motor brake.		
Error in parameter setting related to motor or encoder		1) Check the setting values by moving to the parameters related to motor. 2) Execute again after modification if the parameters 3) Do not match with the controller information.		
In case of errors in basic load rate setting for overload detection among driver parameters		1) Check the basic overload rate setting for overload detection [0x200F] among driver parameters. 2) Execute again after adjusting with an appropriate value.		
Defect in cables of motor or encoder		1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Abnormal status in mechanical parts		1) Check if there exists a collision or a constraint of devices. 2) Check if a normal operation is possible by verifying the mechanical part.		

Code	4222	Message	Driver temperature 1	ROBOT: @	AXIS: ⑥
Description	It occurs in case of driver over-heating1.				
Monitoring	Periodically checking			Alarm Level	2
Influence	Robot operation stopping, Unable to both handle JOG and execute program				
Causes			Measures		
Under the status that the ambient temperature is high.			<ol style="list-style-type: none"> 1) Check if the ambient temperature exceeds 50℃. 2) Improve ambient temperature and cooling conditions of the driver. 		
Problems in driver			<ol style="list-style-type: none"> 1) Check if value of the driver temperature 1 [0x260B] is displayed differently from the ambient temperature under normal state. 2) Replace a driver. 		



- 1) Caution is required for burning accident by over-heating in case of the alarm above.


Code	4223	Message	Regeneration overload	ROBOT: ③ AXIS: ④
Description	It occurs in case of Regeneration overload.			
Monitoring	Periodically checking		Alarm Level	2
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case that high frequency or continuous operations occurred in the regeneration driving.		<ol style="list-style-type: none"> 1) Check the accumulated regeneration overload rate [0x2606] among driver parameters. 2) Check the connection of an external regeneration resistor, alter the capacity of the resistor if it has been already connected and make a connection if not. 		
Error in parameter setting related to the regeneration resistor among driver parameters		<ol style="list-style-type: none"> 1) Check the parameter setting related to the regeneration resistor [0x2009] ~ [0x200E] among driver parameters. 2) Execute again after adjusting with an appropriate value. 		
Errors in Input voltage of main power		<ol style="list-style-type: none"> 1) Check if the input voltage of main power is 544VAC. 2) Check the power source again. 		
Problems in driver		<ol style="list-style-type: none"> 1) Check if there is a heat on the regeneration resistor with no operation. 2) Replace a driver if the alarm occurs with no verification of heat. 		



- 1) Caution is required for electric shock when checking the supply voltage due to the alarm above.

Code	4224	Message	Motor cable open	ROBOT: ① AXIS: ②
Description	It occurs when motor cable was disconnected.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Error in parameter setting of phase current of U, V, W among driver parameters		1) Check the offset value setting for phase current of U/V/W [0x2015]~[0x2017] among driver parameters.		
Defect in motor cable		1) Check the wiring status or short status of cables. 2) Replace cables of motor.		
In case of a short circuit among U, V, W phases within a motor		1) Check if a short circuit among U, V, W occurred within a motor. 2) Replace a motor if case of a problem.		
Problems in driver		1) Check if the corresponding alarm consistently occurs under servo on. 2) If the alarm is consistent, replace the driver.		

Code	4225	Message	Driver temperature 2	ROBOT: ① AXIS: ②
Description	It occurs in case of driver over-heating2.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Under the status that the ambient temperature is high.		1) Check if the ambient temperature exceeds 50℃. 2) Improve the driver ambient temperature and cooling conditions.		
Problems in driver		1) Check if the temperature 2 value [0x260C] of driver among driver parameters is displayed differently from the ambient temperature under normal state. 2) Replace a driver.		

	1) Caution is required for burning accident by over-heating in case of the alarm above.
---	---

Code	4226	Message	Encoder temperature	ROBOT: ③ AXIS: ⑥
Description	Encoder over-heat			
Monitoring	Periodically checking		Alarm Level	2
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case of high temperature of encoder inside		1) Check if the internal temperature display of encoder [0x260D] is different from the ambient temperature.		
Problems in encoder		1) Replace the encoder.		

Code	4227	Message	Motor temperature	ROBOT: ③ AXIS: ⑥
Description	Motor over-heat			
Monitoring	Periodically checking		Alarm Level	2
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case of continuous operation with excessive higher load than the rated		1) Check if the accumulated operation overload rate [0x2603] is less than 100%. 2) Adjust the gain of motor. 3) Alter the capacity of driver and motor.		
Abnormal status in motor brake		1) Check if motor brake was released in servo on. 2) Check if power is well supplied to motor brake.		
Error in parameter setting related to motor or encoder		1) Check the setting values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match with the controller information.		
Errors in thermal time constant setting of motor among driver parameters		1) Check the thermal time constant of the 3 rd Party motor. 2) Execute again after adjusting with an appropriate value.		
Abnormal status in mechanical parts		1) Check if there exists a collision or a constraint of devices. 2) Check if a normal operation is possible by verifying the mechanical part.		



1) Caution is required for burning accident by over-heating in case of the alarm above.

Code	4230	Message	Encoder comm err	ROBOT: @ AXIS: ⑥
Description	Encoder Communication Error			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defects in encoder cable		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Error in parameter setting related to motor or encoder		1) Check the setting values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match with the controller information.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4231	Message	Encoder cable open	ROBOT: Ⓐ AXIS: Ⓑ
Description	It occurs when encoder cable was cut.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in encoder cable		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Error in parameter setting related to motor or encoder		1) Check the setting values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match with the Controller information.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4232	Message	Encoder data err	ROBOT: ① AXIS: ②
Description	In case of encoder data error			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in encoder cable		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Error in parameter setting related to motor or encoder		1) Check the setting values by moving to the parameters related to motor. 2) Execute again after modification if the parameters do not match with the Controller information.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4233	Message	Motor ID setting	ROBOT: ① AXIS: ②
Description	In case of wrong setting in Motor ID			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Errors in Motor ID (WATT) setting		1) Check the setting values by moving to the parameters related to Motor ID (WATT). 2) Execute again after modification if the parameters do not match with the Controller information		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4234	Message	Z phase open err	ROBOT: ③ AXIS: ⑥
Description	It occurs when the Motor Z phase was opened.			
Monitoring	Periodically checking	Alarm Level	3	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of motor or encoder		1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		
Code	4235	Message	Low battery err	ROBOT: ③ AXIS: ⑥
Description	It occurs when the encoder battery became low voltage state.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
Errors in encoder parameter setting		1) Check the value by moving to encoder type (ENCTY) parameter. 2) Modify the value if it doesn't match with that of the Controller information. 3) Apply the power again.		
Poor connection or miss connection of battery		1) Check the battery connection status. 2) Properly connect the battery once verifying wrong connection. 3) Perform Multi-Turn Clear and Calibration. 4) Apply the power again.		
In case of low battery voltage		1) Check if the battery voltage is over 3.3V. 2) Replace the battery if the voltage is lower than the reference. 3) Perform Multi-Turn Clear and Calibration. 4) Apply the power again.		

Code	4236	Message	Sin ENC amplitude	ROBOT: ① AXIS: ②
Description	In case of errors in the amplitude of encoder sine waves			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of encoder		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Errors in parameter setting for Encoder type among driver parameters		1) Check the setting value of Encoder type parameter [0x2001] among driver parameters. 2) Modify the value if it doesn't match with that of the Controller information.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4237	Message	Sin ENC frequency	ROBOT: ③ AXIS: ⑥
Description	In case of errors in the frequency of encoder sine waves			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of encoder		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Errors in parameter setting for Encoder type among driver parameters		1) Check the setting value of Encoder type parameter [0x2001] among driver parameters. 2) Modify the value if it doesn't match with that of the controller information.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4238	Message	Encoder setting	ROBOT: ③ AXIS: ⑥
Description	In case of errors in encoder setting			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Errors in combining driver and motor		1) Check the brand label and code of driver and motor.		
Defect in cables of encoder		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4239	Message	Encoder Over Current	ROBOT: (a) AXIS: (b)
Description	It occurs when the over-current flows in encoder			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of encoder		1) Check the wiring status or short status of cables. 2) Replace cables of encoder.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4240	Message	Under voltage	ROBOT: (a) AXIS: (b)
Description	It occurs in case of low voltage			
Monitoring	Periodically checking	Alarm Level	3	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Problems in Input voltage of main power source		1) Check if main power voltage is over about 134VAC. 2) Check the power again.		
In case that DC link voltage is below the reference		1) Check if DC link voltage [0x2605] of driver parameter is over 165VDC under normal supply status of main power. 2) Replace driver if the problem is verified.		
In case of frequent accelerations		1) Adjust acceleration/deceleration time.		
In case that the voltage of main power source drops		1) Check the wiring of main power source. 2) Check if there was an instantaneous power failure in factory. 3) Check the supply voltage		

Code	4241	Message	Over voltage	ROBOT: ③ AXIS: ⑥
Description	It occurs when the over-current flows.			
Monitoring	Periodically checking	Alarm Level	3	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Problems in Input voltage of main power source		<ol style="list-style-type: none"> 1) Check if main power voltage is over about 286VAC. 2) Check the power again. 		
In case that DC link voltage is over the reference		<ol style="list-style-type: none"> 1) Check if DC link voltage [0x2605] of driver parameter is over 405VDC under normal supply status of main power. 2) Replace driver if the problem is verified. 		
In case of big external regeneration resistance		<ol style="list-style-type: none"> 1) Check the operation conditions & external regeneration resistance. 2) Review the regeneration resistance value again in considering the operation conditions & load. 		
In case of frequent accelerations		<ol style="list-style-type: none"> 1) Adjust acceleration/deceleration time. 		
Problems in driver		<ol style="list-style-type: none"> 1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver. 		



1) Caution is required for electric shock when checking the supply voltage due to the alarm above.

Code	4242	Message	Main power fail	ROBOT: @	AXIS: ⑥
Description	Problem occurs in main power source.				
Monitoring	Periodically checking	Alarm Level	2		
Influence	Robot operation stopping, Unable to both handle JOG and execute program				
Causes			Measures		
Errors in Input voltage of main power			1) Check the power again.		
In case that the input state of main power doesn't match with the input mode setting value of main power among driver parameters			1) Check the input mode setting value [0x2006] of main power among driver parameters.		
In case of an instantaneous power failure			1) Check the setting value of phase check time [0x2007] in the main power or the source of power supply.		
Problems in driver			1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4243	Message	Control power fail	ROBOT: @	AXIS: ⑥
Description	It occurs in case of the control power source.				
Monitoring	Periodically checking	Alarm Level	2		
Influence	Robot operation stopping, Unable to both handle JOG and execute program				
Causes			Measures		
Errors in Input voltage of main power			1) Check the power again.		
Problems in driver			1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4244	Message	DC Fan Trip	ROBOT: ③ AXIS: ⑥
Description	It occurs when driver Fan doesn't operate.			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Problems in Fan		1) Check the cable connection status of Fan. 2) Replace a Fan if it doesn't operate.		
Problems in driver		1) Replace a driver when the alarm consistently occurs after replacing the driver Fan because there is a possibility of problems in driver.		

Code	4250	Message	Over speed limit	ROBOT: ③ AXIS: ⑥
Description	It occurs in case of over speed.			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
Defect in cables of motor or encoder		1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Problems in parameter setting		1) Check the parameters for Motor ID(WATT), Encoder type (ENCTY), Encoder resolution (ENC). 2) Check the GEAR ratio setting. 3) Modify any item that is inconsistent with the Controller specification for the above parameters if any. 4) Check the motor gain parameter and adjust the gain according to the operation conditions.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4251	Message	POS following ROBOT: @ AXIS: ⑥	
Description	It occurs in case of significant position error			
Monitoring	Periodically checking		Alarm Level	1
Influence	Robot operation stopping			
Causes		Measures		
Problems in parameter setting		1) Check if the GEAR ratio setting is in line with the specification and modify it if is not. 2) Check the position error range (FOW) setting and adjust it again according to the operation conditions.		
In case that motor gain is too low		1) Check the motor gain parameter and adjust it again according to operation condition.		
Abnormal status in mechanical parts		1) Check if there exists a collision or a constraint of devices. 2) Restore the system into normal state by checking the mechanical part.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4253	Message	Excessive deviation	ROBOT: ③ AXIS: ⑥
Description	In case that a significant speed error occurred			
Monitoring	Periodically checking		Alarm Level	1
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
Defect in cables of motor or encoder		1) Check the wiring status or short status of cables. 2) Replace cables of motor or encoder.		
Problems in parameter setting		1) Check the parameters for Motor ID (WATT), Encoder type (ENCTY), Encoder resolution (ENC). 2) Check the GEAR ratio setting. 3) Modify any item that is inconsistent with the Controller specification for the above parameters if any.		
In case that motor gain is too high or too low		1) Check the motor gain parameter and adjust the gain according to the operation conditions.		
Abnormal status in mechanical parts		1) Check if there exists a collision or a constraint of devices. 2) Restore the system into normal state by checking the mechanical part.		
Problems in encoder		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the motor.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4263	Message	Parameter checksum	ROBOT: ① AXIS: ②
Description	It occurs when there is a problem in driver parameter data.			
Monitoring	When transmitting driver parameter	Alarm Level	1	
Influence	Robot operation stopping			
Causes		Measures		
In case of changing driver OS		1) Check if there is any parameter that was set as the max value in a variable type by verifying the driver parameter setting. 2) Return to the initial driver parameter. 3) After returning to the initial driver parameter, set the parameter according to the Controller specification that was used before the operation.		
Problems in driver		1) Check if the alarm consistently occurs by applying the power again. 2) When the alarm consistently occurs, replace the driver.		

Code	4271	Message	Factory setting	ROBOT: ① AXIS: ②
Description	Abnormal value in factory setting			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
In case of parameter setting error		1) Set the driver capacity again or download the O/S again. 2) Replace the driver if the alarm consistently occurs after applying the power again.		

Code	4501	Message	EtherCAT stop	ROBOT: ③ AXIS: ⑥
Description	In case of complete loss in EtherCAT communication			
Monitoring	Periodically checking	Alarm Level	2	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
XML File Error		1) Check if the XML file according to the Controller specification was used. 2) If it was not properly set, execute the Controller again after modifying the XML file.		
LAN Cable Error		1) Check the LAN cable between main board and driver. 2) Insert a LAN cable properly and replace a cable in case of defects.		
Code	4502	Message	EtherCAT Comm fail	ROBOT: ③ AXIS: ⑥
Description	In case of error during EtherCAT communication			
Monitoring	Periodically checking	Alarm Level	1	
Influence	Robot operation stopping, Unable to both handle JOG and execute program			
Causes		Measures		
LAN Cable Error		1) Check if the alarm consistently occurs. 2) Check the LAN cable between main board and driver. 3) Insert a LAN cable properly and replace a cable in case of defects.		

Chapter 4 Revision

Revision	Date	Revision Detail
1	2019-01-10	Initial Distribution
2	2020-05-07	Add detail Information

A. Literature Reference

All the literature, which are required for performing services, repair or installation of all robot system that uses this product, are specified in this chapter.

In the ID of all literature, the very first word indicates the Controller name and the second word means the abbreviation of corresponding literature. The last indicates language and its version.







Language is marked according to the rules below.

- Korean: K
- English: E
- Chinese: C
- Vietnam: V

Document ID	Description
N2-IM-E□□	Installation and handling manual This explains the Controller structure and installation as well as the methods to interface with external devices.
N2-OM-E□□	Operation manual This explains the method to use the Controller and Teach Pendant, parameter setting, JOB program editing and additional functions.
N2-PM-E□□	Programming manual This explains the method to create RRL (Robostar robot language) that is the Robostar Robot program and describes the commands.
N2-HM-E□□	Unihost manual This explains about Unihost that is Robostar on-line PC program.
N2-AM-E□□	Alarm and maintenance manual This explains the information on problems occurred in the Controller-based Robot system as well as solutions and procedure for the problems.

B. Hazard Stages & Signs

The table below defines signs that indicate hazard stages used throughout this manual.

Sign	Designation	Meaning
	DANGER	This warns that deadly and serious injuries or serious product damages can be caused from the accidents unless complying the guidelines.
	WARNING	This warns that accidents may occur unless complying the guidelines and it leads to deadly and serious injuries or serious product damages can be caused from the accidents.
	CAUTION	This warns that accidents may occur unless complying the guidelines and it leads to serious product damages can be caused from the accidents.
	ELECTRICAL SHOCK	This sign indicates a hazard on electric shock which may lead to serious or deadly injuries.
	NOTE	This sign notices important facts and conditions.
	PROHIBITION	This sign notices the prohibitions for normal operation.

N2 Series Controller

UNI-HOST Manual

Second edition, May 07, 2020

ROBOSTAR CO., LTD.
ROBOT R&D CENTER

Robostar