MITSUBISHI ELECTRIC
Changes for the Better

Automating the World
MELSEC iQ-R series

DataNavigateApp
Introduction Guide

BCN-89999-9913-C

TERM OF USE

Use the applications and files upon agreement on the items below.

(1) These applications and files are available to customers currently using or considering the use of our products.

(2) The intellectual property rights of the files provided by our company shall belong to our company.

(3) Alteration, reproduction, transfer, or sales of the files provided by our company is prohibited.
However, the above shall not apply when a part of or all of the contents are used in the devices manufactured by the customer or our products in a system. Also, the above shall not apply to reproduction, duplication, quotation, or layout change in documents such as specifications, design specifications, and instruction manuals for built-in products, created by customers using our products.

(4) Our company does not compensate for any damage caused by using the files provided by our company and the data extracted from those files. Use them at your own responsibility.

(5) If any usage conditions are appended to the files provided by our company, those conditions must be observed.

(6) The specifications described in this document may be changed without prior notice.

(7) The function descriptions or screen images described in this document may differ from those of the actual product.

(8) While every effort is made to ensure the contents of this manual are updated to follow the revisions of software and hardware, there may be cases where synchronization cannot be achieved.

PRECAUTIONS FOR USING DataNavigateApp

(1) Shut down the application before turning off the power.

If the C intelligent function module is powered off without shutting down DataNavigateApp, a file system error or similar issues may occur. Always shut down DataNavigateApp before powering off the C intelligent function module. For the procedure, refer to "5 TERMINATION PROCEDURE".

(2) Do not change any I/O signal or buffer memory area of the C intelligent function module.

When DataNavigateApp is used, data cannot be written to any I/O signal or buffer memory area of the C intelligent function module. If a value is written, the module may not operate correctly.

(3) Check carefully when turning on any device with functions such as the alarm notification.

DataNavigateApp has a function that changes the values of pre-specified devices when an alarm occurs. Before setting this function, thoroughly check the security such as ensuring that the equipment does not operate unexpectedly due to the control of the specified device by DataNavigateApp.

(4) This application cannot be used in conjunction with user programs of the C intelligent function module.

When DataNavigateApp is used, user-created programs cannot be implemented on the C intelligent function module.

(5) Starting DataNavigateApp may take some time.

Depending on the amount of saved data and usage conditions, it may take time to fully start DataNavigateApp. In addition, device values cannot be collected until DataNavigateApp is fully started. Therefore, turn on the power with sufficient time before the desired collection start timing.

(6) Precautions for when the time in the terminal used and the clock setting of the CPU module do not match

Various data counted by DataNavigateApp are timestamped based on the clock setting of the CPU module. On the other hand, the current date and time information displayed in each window of DataNavigateApp (such as the time displayed at the top of each window) uses the clock setting of the terminal (such as the personal computer) displaying windows of DataNavigateApp. Therefore, if the time in the terminal used and the CPU module do not match, the window may not be correctly displayed.

(7) Changing the clock setting of the CPU module may cause issues.

Take sufficient precautions not to change the time to a past time unintentionally, such as during CPU module battery replacement.

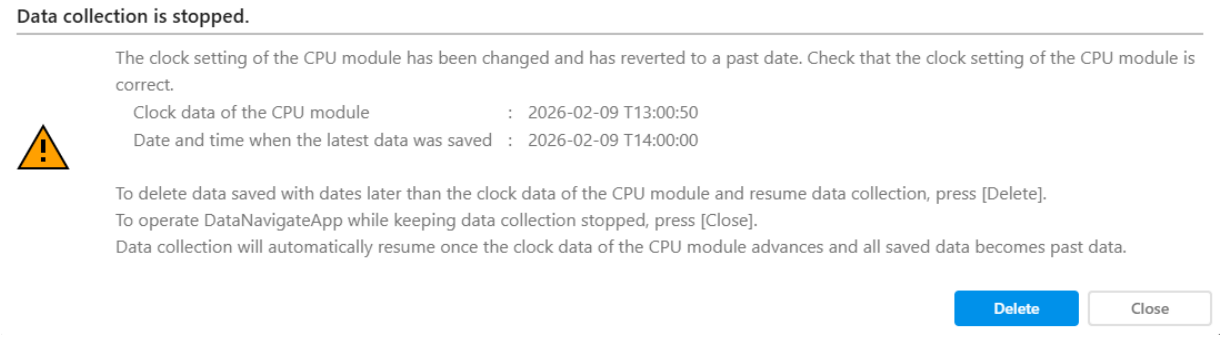
If time of the CPU module is changed to a past time, data collection will stop. and the following dialog will appear.

When the date and time before the change have passed, data collection will resume automatically.

(Example: When the time is changed from 14:00 to 13:00, data collection stops for 60 minutes until it reaches 14:00 again.)

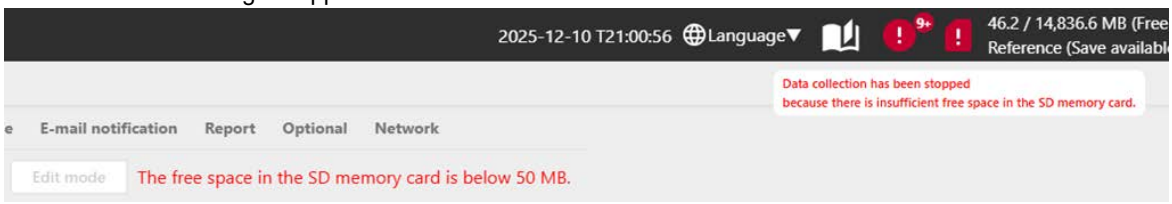
If the daylight saving time setting is enabled in the CPU module, the time will be changed to a past time when daylight saving time ends; thus, data collection in DataNavigateApp will stop and the following dialog will appear.

To delete the future data while data collection is stopped, click [Delete] in the following dialog.



(8) If free space in the SD memory card is insufficient, data and logs may not be saved.

Collected and counted data is stored in the SD memory card. If the free space in the SD memory card falls to 50 MB or below, data collection will stop. If data collection stops, a notification will be displayed in the upper right corner of the Data Navigate App screen.



(9) If an SMTP server cannot be configured, the e-mail and daily report functions will not be available.

To use the e-mail and daily report functions, setting an SMTP server is required. If the SMTP server is not set correctly, the e-mail and daily report functions cannot be used.

(10) Depending on the settings, DataNavigateApp may not detect the device status correctly.

The data collection cycle may become longer depending on the settings. If the collection cycle becomes longer and the device value changes in a cycle shorter than the collection cycle, the value change may not be detected.

* The maximum value for the data collection cycle of each equipment can be checked on the Performance window of DataNavigateApp.

(11) Please build and operate a secure FA system according to your usage environment.

For details, refer to "FA SYSTEM SECURITY GUIDELINE" in the MITSUBISHI ELECTRIC Factory Automation website.

https://www.mitsubishielectric.com/fa/about-us/security/pdf/FA_SecGuidelineEN.pdf

RELEVANT MANUALS

Manuals relevant to the content of this guide are as follows:

No.	Manual No.	Description
1	SH-081222	MELSEC iQ-R Module Configuration Manual
2	SH-081564	MELSEC iQ-R C Intelligent Function Module User's Manual (Application)

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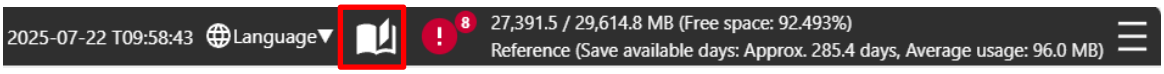
1. OVERVIEW

This document is an introduction guide for DataNavigateApp.

Follow the procedures described in this document to introduce DataNavigateApp.

For the operational method after introduction, refer to Help*1 of DataNavigateApp.

*1: Help can be opened with the icon in the red frame in the screenshot below.



1.1. What Is DataNavigateApp?

DataNavigateApp refers to a dedicated application for the MELSEC iQ-R series C intelligent function module.
This application is designed for specific functions such as "visualization" and "analysis" in production sites.

■Features

(1) Simple settings

Initial setup and setting changes can be performed intuitively.

Settings can be configured without specialized knowledge of programming (ladder and C language).

(2) Monitoring from anywhere

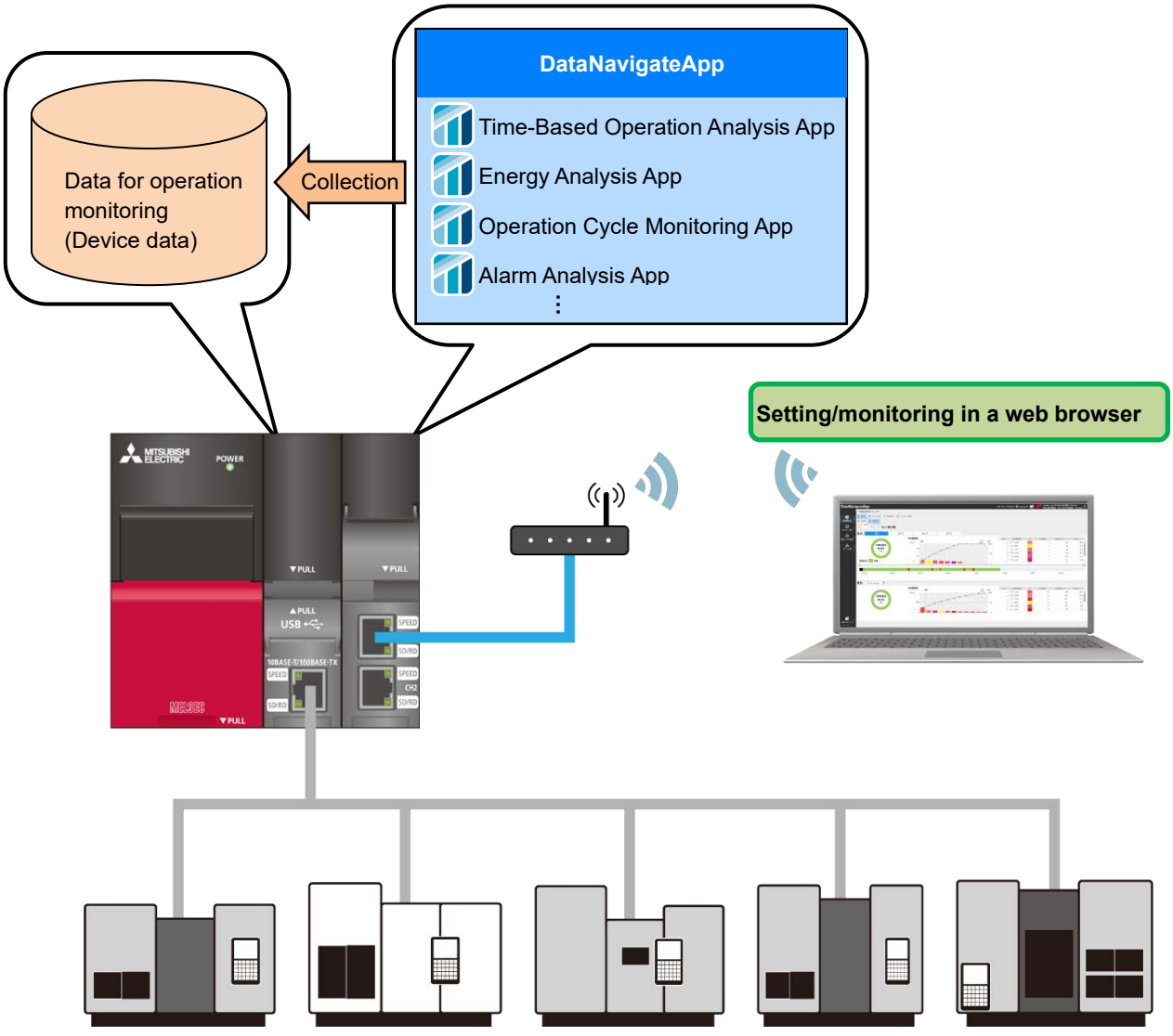
Monitoring can be performed in a web browser on a tablet or personal computer without using a dedicated device such as a display unit.

The operational status of equipment can be checked even from remote locations.

(3) Easy data collection

If data is available in the CPU module, it can be visualized immediately.

This feature can also be used for existing equipment by combining it with the communication function of the CPU module or the like.



1.2. List of Provided Items

The following table lists the items provided with DataNavigateApp.

No.	Provided item	File name	Outline
1	Software license agreement	End-UserSoftwareLicenseAgreement_ソフトウェア使用契約書(BCN-P5999-1775_BCN-P5999-1776).pdf	A software license agreement for DataNavigateApp. Read this agreement before using the software.
2	Image file for installing DataNavigateApp	DataNavigateApp_v***.ddi *1	An image file for installing DataNavigateApp to a C intelligent function module
3	File for updating DataNavigateApp	DataNavigateApp_UpdateFile_v***.pkg	A file for updating DataNavigateApp using the support tool
4	Introduction guide (Japanese)	bcn899999912***_introductionguide_j.pdf *1	An introduction guide for DataNavigateApp (Japanese)
5	Introduction guide (English) (This guide)	bcn899999913***_introductionguide_e.pdf *1	An introduction guide for DataNavigateApp (English)
6	OSS license file	DataNavigateApp_License_v***.txt	A file containing license information of OSS used for DataNavigateApp
7	Support tool OSS license file	DataNavigateApp_SupportTool_License_v***.txt	A file containing license information of OSS used for the DataNavigateApp support tool
8	Support tool	DataNavigateApp_SupportTool_v***.exe *1	A support tool for performing maintenance of DataNavigateApp

*1: The "***" part indicates the version.

2. SYSTEM CONFIGURATION

2.1. Recommended Hardware

The following table lists the recommended hardware.

Type	Name	Description
MELSEC iQ-R series	CPU module	R04CPU or a CPU module with more capacity*1*2
	C intelligent function module	RD55UP12-V (Firmware version 06 or later)*3
	SD memory card	An industrial SD memory card that satisfies the following conditions is recommended. • Capacity: 16 GB or more • NAND type: SLC or pSLC • Speed class: Class 10 or higher*4 Do not use SD memory cards that are not for industrial purposes (such as those for OA purposes).*5*6
	Other modules	Select them as necessary.*7
Supported web browser		Microsoft Edge®*8
		Google Chrome®*9

*1: R00CPU, R01CPU, and R02CPU cannot be used.

*2: Use a CPU module compatible with RD55UP12-V. (Refer to MELSEC iQ-R Module Configuration Manual.)

*3: RD55UP06-V cannot be used.

*4: If the speed class is low, data reading and writing may be delayed, potentially affecting the overall performance of DataNavigateApp.

*5: An SD memory card is required because data is accumulated by constructing a database in the SD memory card. The larger the capacity of the SD memory card, the longer the period for which the data can be stored.

*6: The operation has been checked with the following SD memory cards. As operation may differ depending on your usage environment, use this information as a reference.

Manufacturer name	Model	NAND type	Capacity
HAGIWARA Solutions Co., Ltd.	NSDB-032GK(S01SLS NSDB-032GK(S01SLI NSDB-032GS(V02JLS	pSLC	32GB
	NSDB-064GK(S01SLS D520S3SNN064G00BS	pSLC	64GB
	D520S3SNN128G00BS	pSLC	128GB
	D520S3SNN256G00BS	pSLC	256GB
TDK Corporation	MMRD4016GVJBWA00AAA0 MMRD4032GVJBWA00AAA0	pSLC	16GB 32GB

*7: Select and add modules such as an analog input module and network module as necessary.

*8: The operation of DataNavigateApp has been confirmed with Microsoft Edge® version 138.

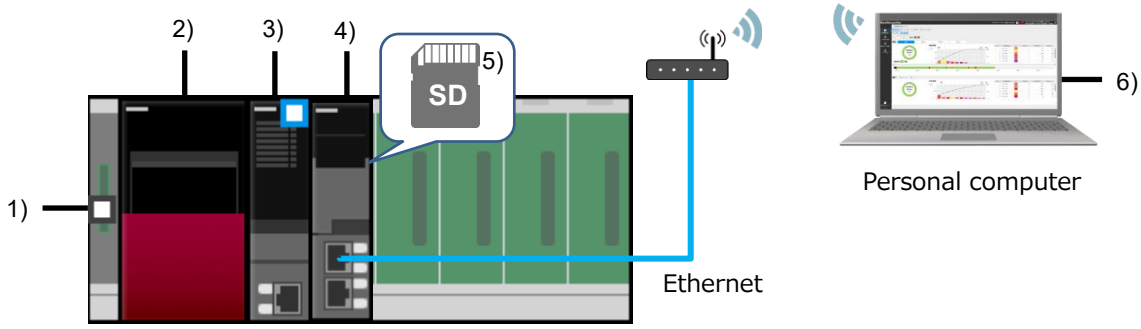
*9: The operation of DataNavigateApp has been confirmed with Google Chrome® version 138.

2.1.1. Display resolution

For the resolution of the monitor, 1920 × 1080 (full HD) is recommended.
When the resolution is higher than this, the entire application window can be displayed by adjusting the display scaling.
This application can be displayed even on a monitor with a resolution lower than the recommended one, but the text may lose clarity.

2.2. System Configuration Example

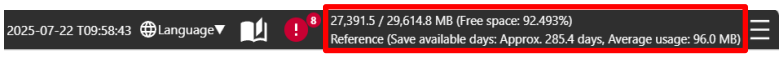
The following shows a system configuration example for this sample project.



No.	Name	Model
1)	Base unit	R35B
2)	Power supply module	R61P
3)	CPU module	R32CPU
4)	C intelligent function module	RD55UP12-V
5)	SD memory card	NSDB-032GK(S01SLI
6)	Personal computer (Web browser)	-

3. APPLICATION OUTLINE

The following shows the overall specifications of this application.

Item		Specifications	Remarks
Number of monitored equipment		Up to 16*1	The data storage period increases/decreases depending on the number of equipment and applications used. When the number of equipment or applications is large, prepare an SD memory card with a larger capacity. The period for which the data can be stored can be checked on the top right of the window (area in the red frame in the screenshot below). 
Data storage period		Depends on the SD memory card capacity and settings.	
Number of time frames		Up to 100	-
Number of product types		Up to 1000	-
Number of favorite page registrations		Up to 10	-
Number of clients that can be simultaneously connected		Up to 8	Increasing the number of connected clients may slow down screen refresh rate.
Data collection target		Devices of the management CPU module	When collecting data from other equipment, use a network module or the like to collect data as necessary.
Collectable device type	Bit	X, Y, M, B, F, SB, V, CS, CC, C/CN, TS, TC, T/TN, D, W, SW, L, SM, SD, ZR, RD	When specifying a word device by bit, set a bit No.
	Word	C/CN, T/TN, D, W, SW, SD, ZR, RD	
Data output function		-	Outputs a part of the information displayed on the screen of DataNavigateApp to the buffer memory in the C intelligent function module. For details, refer to "Appendix 1 BUFFER MEMORY OUTPUT FUNCTION".

*1: The maximum number of equipment depends on the application.
The maximum number of equipment for each application is as follows:

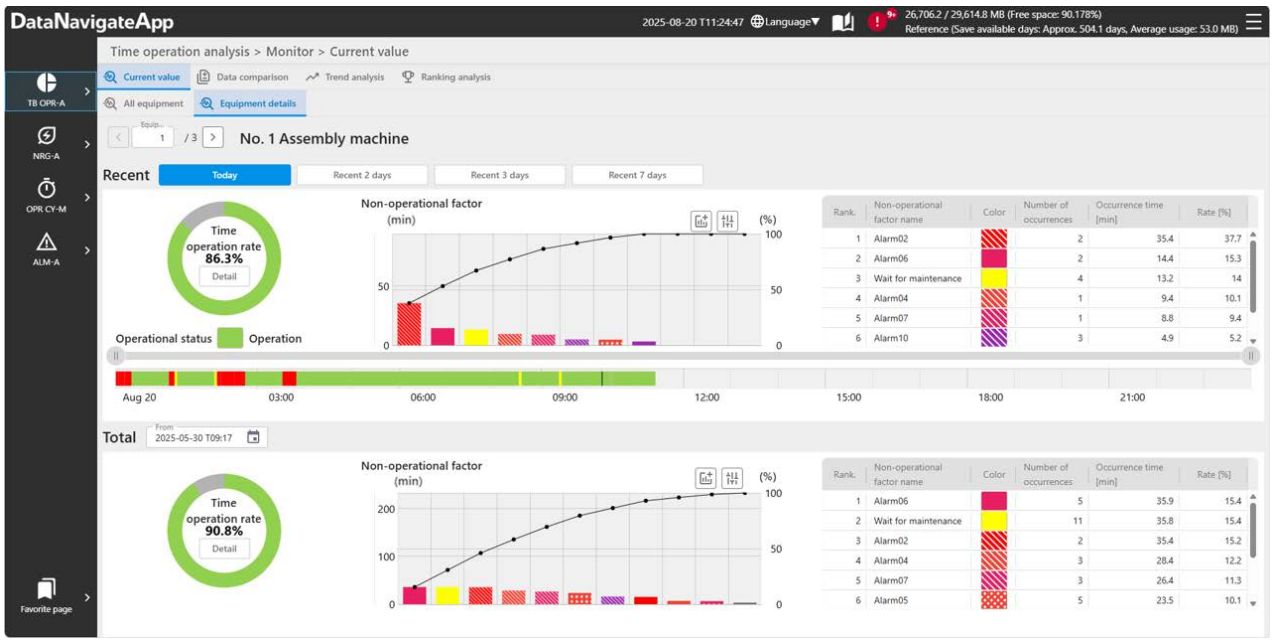
Time-Based Operation Analysis	Up to 16 pieces of equipment*2
Energy Analysis	Up to 16 pieces of equipment*2
Operation Cycle Monitoring	Up to 4 pieces of equipment*2
Alarm Analysis	Up to 16 pieces of equipment*2

*2: The operation has been checked with the combination of applications listed in the above table. As operation may differ depending on the setting value, use this information as a reference.

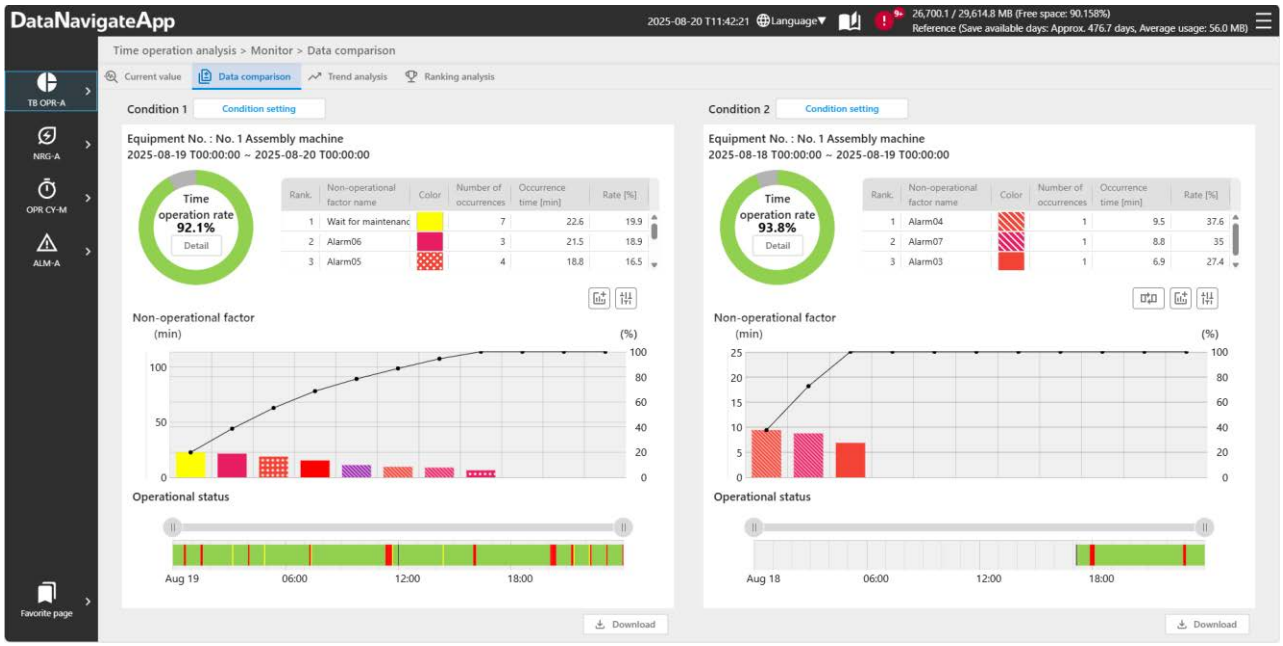
3.1. Time-Based Operation Analysis App

This application visualizes the operational status of equipment (such as operating, stopped, and in an error) and loss factors, which can be utilized for analyzing the factors contributing to reduced time operation rates.

1) Recent operational status can be checked.
In the "Current value" window, the recent (up to seven days) time operation rate, load time, and non-operating time of each equipment can be checked in real time. Total operation data for the specified period can be monitored at the same time, allowing you to determine whether any problems are occurring or signs of problems are appearing in the current equipment by comparing the rates of non-operational factors and the actual time operation rates.



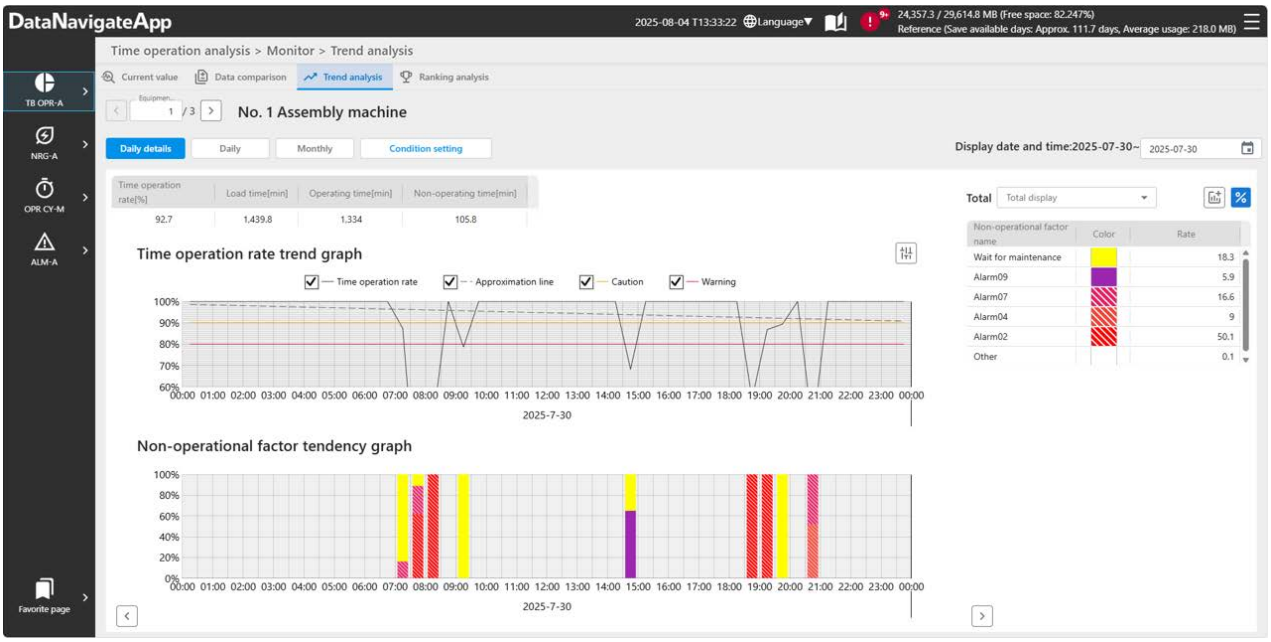
2) Issues causing a reduction in the operation rate can be analyzed.
In the "Data comparison" window, the data under different conditions (such as the equipment, period, and time frame) can be displayed for comparison. For example, waste can be analyzed and improvement effects can be checked by displaying the data from two different dates for the same equipment side by side or displaying the data from two different time frames within the same period for the same equipment for comparison.



The information displayed as the operational status indicates the equipment operational status being analyzed in "Time-Based Operation Analysis App". If "Time-Based Operation Analysis App" is not used, it will not be displayed.

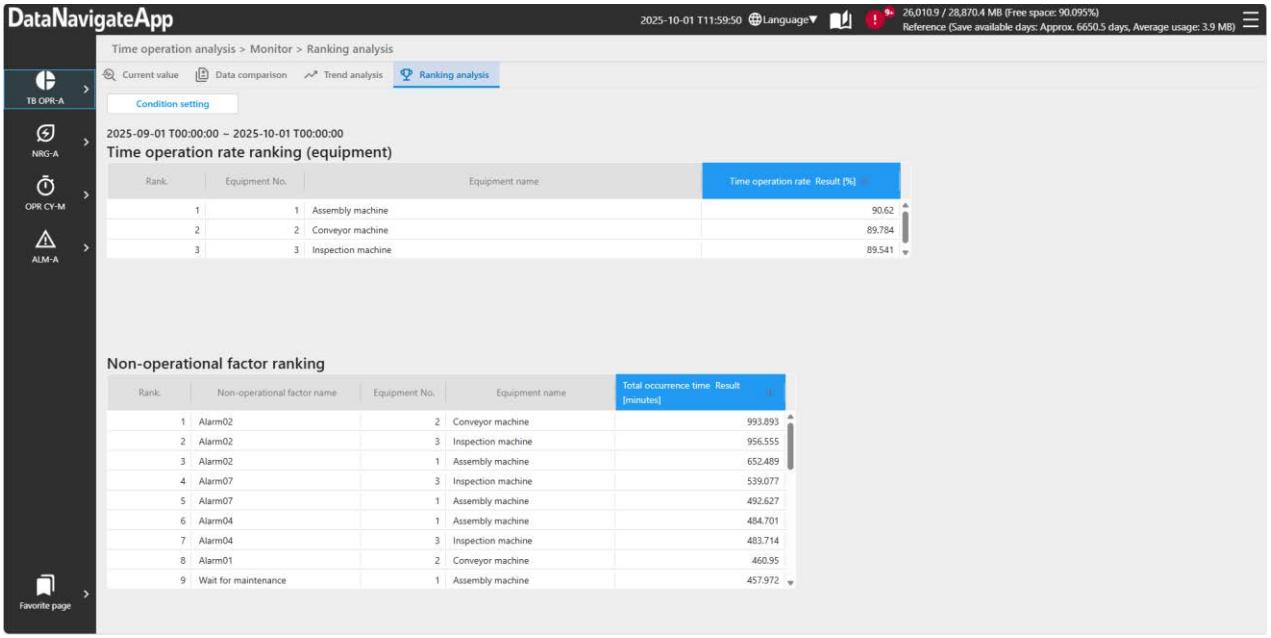
3) Trends in the time operation rate can be analyzed.

In the "Trend analysis" window, trends such as changes in the time operation rate and occurrence rates of non-operational factors can be checked. Trends based on results can be grasped intuitively, which can be utilized to determine whether future countermeasures are necessary. In addition, since the time operation rate for each time frame can be checked, trends such as reductions in the time operation rate in specific time frames, such as certain hours or days of the week, can be grasped.



4) Equipment and factors with high countermeasure effectiveness can be checked.

In the "Ranking analysis" window, pieces of equipment with low time operation rates and non-operational factors that have occurred for a long period of time can be checked in a ranking format, making it easy to identify issues with high countermeasure effectiveness.



■Application specifications

Item	Specifications				Remarks
Number of monitored equipment	Up to 16 pieces of equipment[*1]				-
Number of monitored operational/non-operational factors	Up to 33 for each equipment				An operation signal and up to 32 non-operational factor signals can be monitored.
Measurement signal/information	Signal name		Data type		-
	Operation signal		Bit[*2]		-
	Non-operational factor signal		Bit[*2] [*3]		-
	Equipment running signal		Bit[*2]		-
Display item[*4]	Item		Graph type		-
	Time operation rate		Donut chart, line graph		-
	Non-operational factor information		Pareto chart		It can be switched between occurrence time and rate.
	Operation result		Gantt chart, line graph		-
Display period	Type	From		To	-
Recent data	Today	Today's date switching time		Tomorrow's date switching time	Displays data for 24 hours.
	Recent 2 days	Date switching time of 1 day ago			Displays data for 48 hours.
	Recent 3 days	Date switching time of 2 days ago			Displays data for 72 hours.
	Recent 7 days	Date switching time of 6 days ago			Displays data for 168 hours.
Total data	-	Selected date and time		Current date and time	-
Data comparison	-	Date and time selected for From		Date and time selected for To	Up to 31 days can be selected.
Trend analysis	Daily details	Date switching time of the selected date		Date switching time of the day after the selected date	Displays data for 24 hours in 30-minute intervals.
	Daily	60 days before the selected date		Selected date	Displays data for 61 days in daily intervals.
	Monthly	24 months before the selected month		Selected month	Displays data for 24 months in monthly intervals.
Ranking analysis	-	Date and time selected for From		Date and time selected for To	Up to 31 days can be selected.
Downloading/ importing setting files	Supported (CSV file)				-
Alarm output	Supported (The device bit signal of the CPU is turned on.)				-

*1: The data storage period changes depending on the number of monitored equipment. For details, refer to "3 APPLICATION OUTLINE".

*2: For the selectable devices, refer to "3 APPLICATION OUTLINE".

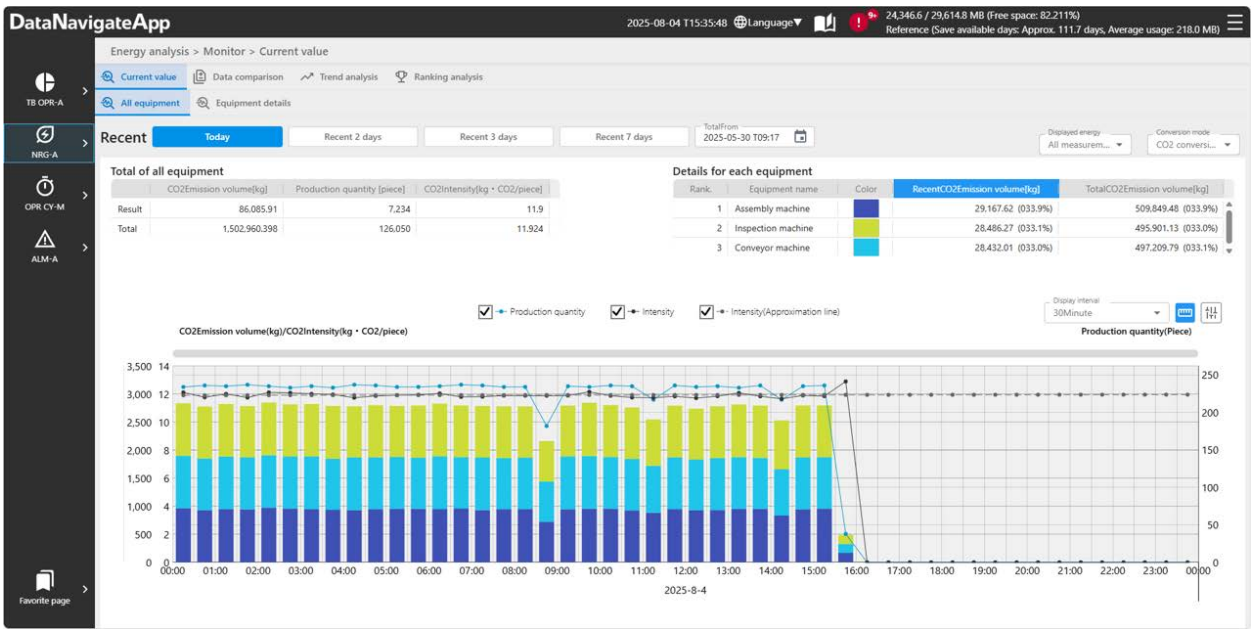
*3: For signals that alternate between ON and OFF, the status can be determined by setting the cycle (0.5 to 3.0 seconds).

*4: The information to be displayed differs depending on the window and display period.

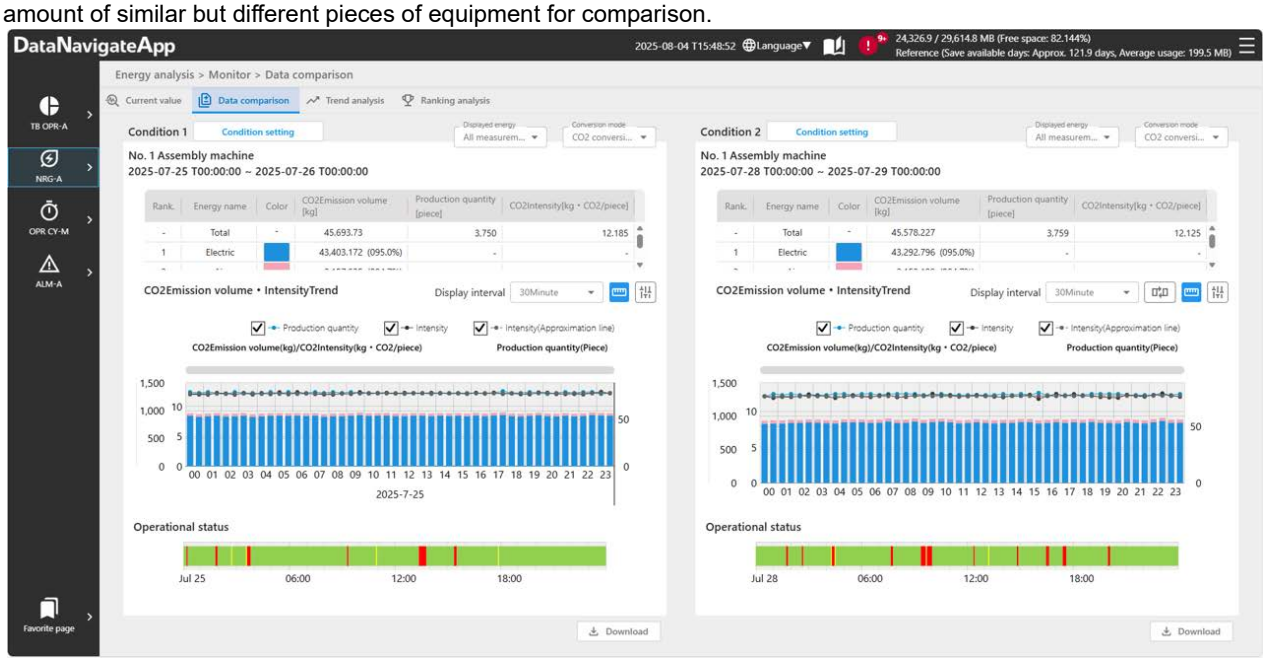
3.2. Energy Analysis App

This application visualizes the energy consumption of equipment such as power and flow of compressed air, which can be utilized for analyzing unnecessary power usage of the equipment.

1) Recent energy consumption and energy intensity of equipment can be checked.
In the "Current value" window, the recent (up to seven days) energy consumption and energy intensity of each equipment can be checked in real time. In addition to energy consumption, CO2 emissions and production costs can be checked by converting energy consumption into them.



2) Issues causing unnecessary energy consumption can be analyzed.
In the "Data comparison" window, the data under different conditions (such as the equipment, period, and time frame) can be displayed for comparison. For example, waste can be analyzed and improvement effects can be checked by converting the amount of energy consumed while the equipment was not operating into costs or displaying the energy amount of similar but different pieces of equipment for comparison.

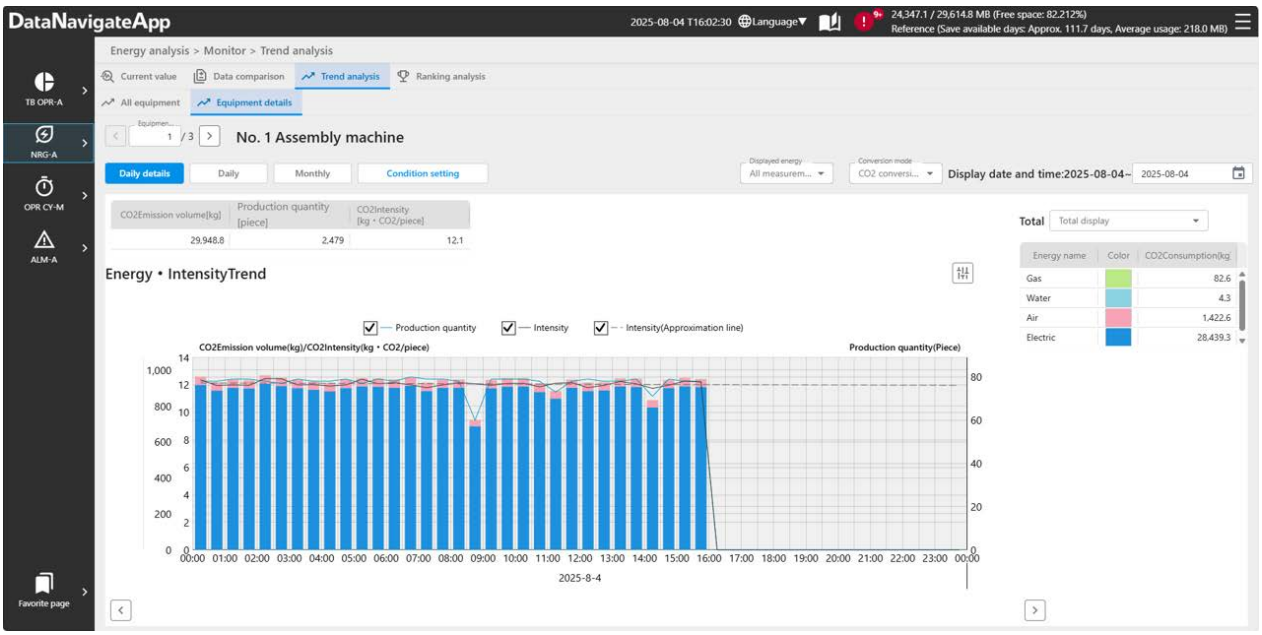


⚠CAUTION

The information displayed as the operational status indicates the equipment operational status being analyzed in "Time-Based Operation Analysis App". If "Time-Based Operation Analysis App" is not used, the operational status will not be displayed.

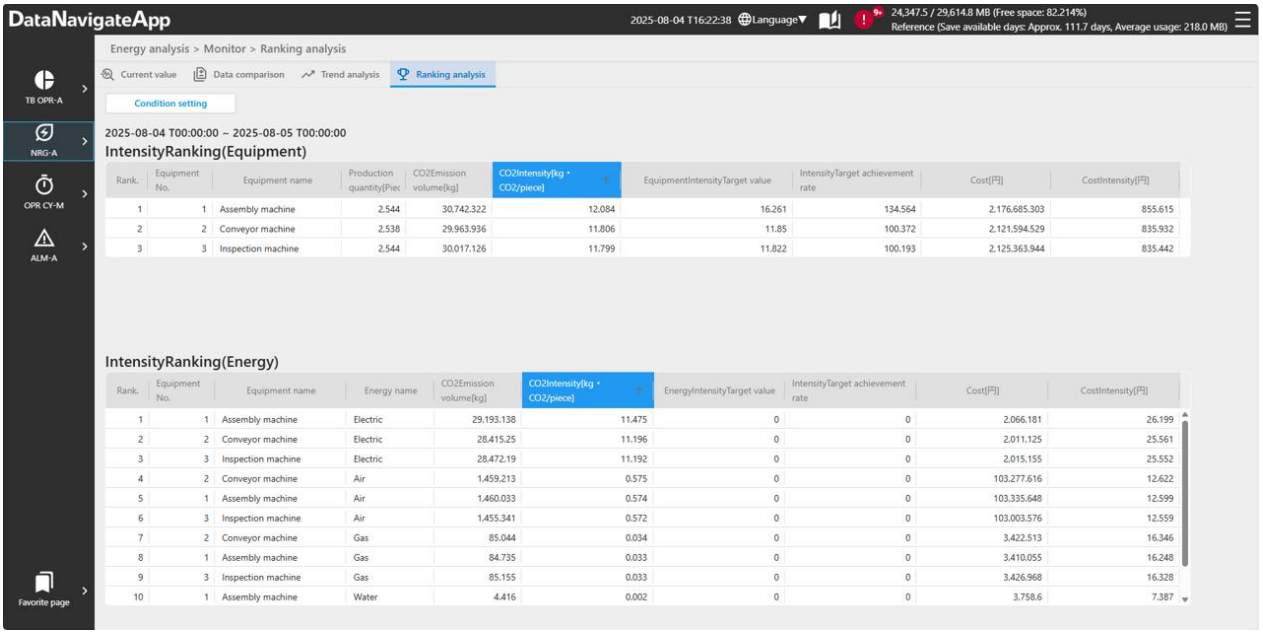
3) Trends in CO2 intensity can be analyzed.

In the "Trend analysis" window, trends in CO2 intensity and production volume can be checked. Trends based on results can be grasped intuitively, which can be utilized to determine whether future countermeasures are necessary. In addition, factors contributing to increased CO2 intensity and trends of increases and decreases within a specified period can be grasped because the energy consumption relative to production quantity can be checked.



4) Equipment and factors with high countermeasure effectiveness can be checked.

In the "Ranking analysis" window, pieces of equipment with high CO2 intensity can be checked in a ranking format. By displaying such data in a ranking format, it becomes easier to identify issues with high countermeasure effectiveness.



■Application specifications

<table>
<tr><th colspan="2">Item</th><th colspan="4">Specifications</th><th>Remarks</th></tr>
<tr><td colspan="2">Number of monitored equipment</td><td colspan="4">Up to 16 pieces of equipment[*1]</td><td>-</td></tr>
<tr><td colspan="2">Number of monitored energies</td><td colspan="4">Up to 10 for each equipment</td><td>Consumption of various types of energy, such as power and compressed air, can be monitored.</td></tr>
<tr><td colspan="2" rowspan="3">Measurement signal/information</td><td>Signal name</td><td colspan="3">Data type</td><td>-</td></tr>
<tr><td>Energy usage</td><td colspan="3">Word, double word, single precision real number[*2]</td><td>A cumulated value of energy usage. The energy consumption is calculated based on the difference in energy usage within the application.</td></tr>
<tr><td>Production quantity</td><td colspan="3">Word, double word[*2]</td><td>It can be selected from two patterns: measurement of "Production quantity" or "Number of non-defective products + Number of defective products".</td></tr>
<tr><td colspan="2" rowspan="5">Display item[*3]</td><td>Item</td><td colspan="3">Graph type</td><td>-</td></tr>
<tr><td>Energy consumption intensity</td><td colspan="3">Line graph</td><td rowspan="2">• At CO2 conversion
The CO2 intensity and CO2 emission volume are displayed in graphs.
• At cost conversion
The cost intensity and cost are displayed in graphs.</td></tr>
<tr><td>Energy consumption</td><td colspan="3">Bar graph</td></tr>
<tr><td>Production quantity</td><td colspan="3">Line graph</td><td>-</td></tr>
<tr><td>Operational status</td><td colspan="3">Gantt chart</td><td>If "Time-Based Operation Analysis App" is not used, it will not be displayed.</td></tr>
<tr><td colspan="2">Display period</td><td>Type</td><td>From</td><td>To</td><td>-</td></tr>
<tr><td rowspan="4"></td><td rowspan="4">Recent data[*4]</td><td>Today</td><td>Today's date switching time</td><td rowspan="4">Tomorrow's date switching time</td><td>Displays data for 24 hours.</td></tr>
<tr><td>Recent 2 days</td><td>Date switching time of 1 day ago</td><td>Displays data for 48 hours.</td></tr>
<tr><td>Recent 3 days</td><td>Date switching time of 2 days ago</td><td>Displays data for 72 hours.</td></tr>
<tr><td>Recent 7 days</td><td>Date switching time of 6 days ago</td><td>Displays data for 168 hours.</td></tr>
<tr><td></td><td>Total data</td><td>-</td><td>Selected date and time</td><td>Current date and time</td><td>-</td></tr>
<tr><td></td><td>Data comparison[*4]</td><td>-</td><td>Date and time selected for From</td><td>Date and time selected for To</td><td>Up to 31 days can be selected.</td></tr>
</table>

Item		Specifications			Remarks
	Trend analysis	Daily details	Date switching time of the selected date	Date switching time of the day after the selected date	Displays data for 24 hours in 30-minute intervals.
		Daily	60 days before the selected date	Selected date	Displays data for 61 days in daily intervals.
		Monthly	24 months before the selected month	Selected month	Displays data for 24 months in monthly intervals.
	Ranking analysis	-	Date and time selected for From	Date and time selected for To	Up to 31 days can be selected.
Downloading/ importing setting files		Supported (CSV file)			-

*1: The data storage period changes depending on the number of monitored equipment. For details, refer to "3 APPLICATION OUTLINE".

*2: For the selectable devices, refer to "3 APPLICATION OUTLINE".

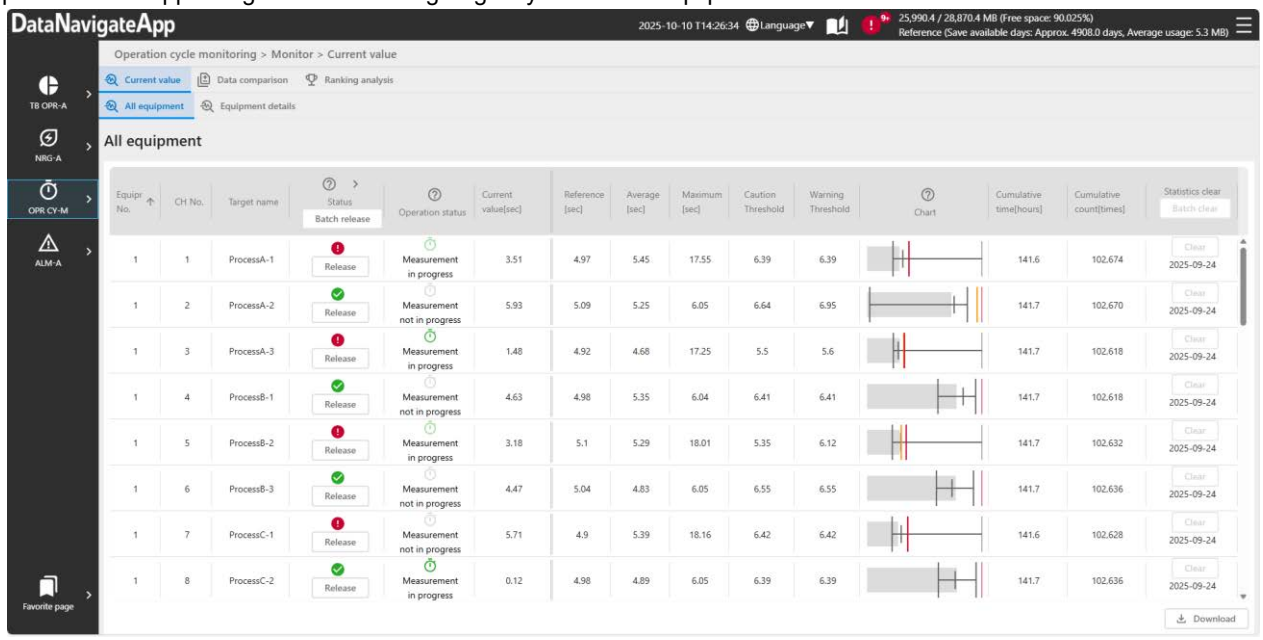
*3: The information to be displayed differs depending on the window and display period.

*4: The display interval can be selected from 5 minutes, 30 minutes, 1 hour, and 3 hours.

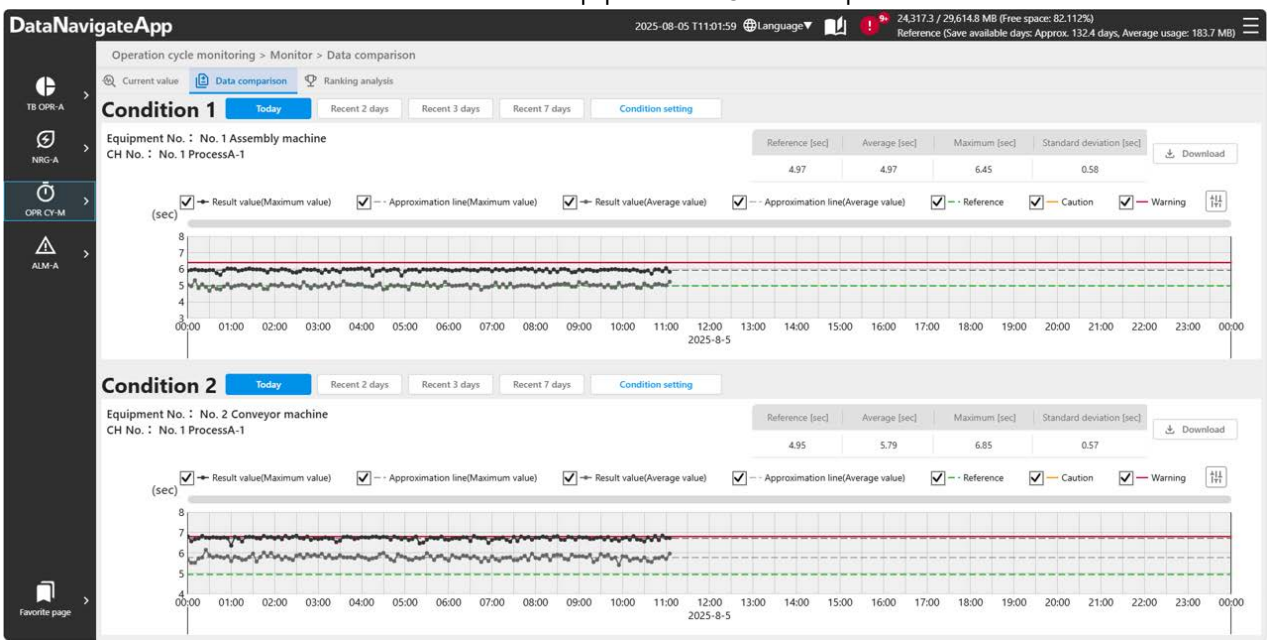
3.3. Operation Cycle Monitoring App

This application monitors operation time of cylinders and equipment against thresholds, which can be utilized for predictive maintenance by detecting error signs and performance degradation.

1) Recent operational status can be checked.
In the "Current value" window, the current alarm occurrence status, operation time, and statistics information of each CH can be checked in real time. Statistical values (the minimum value, average value, and maximum value), references, and thresholds for caution and warning can be grasped intuitively from charts, allowing you to determine whether signs of problems are appearing in the monitoring target cylinders and equipment.

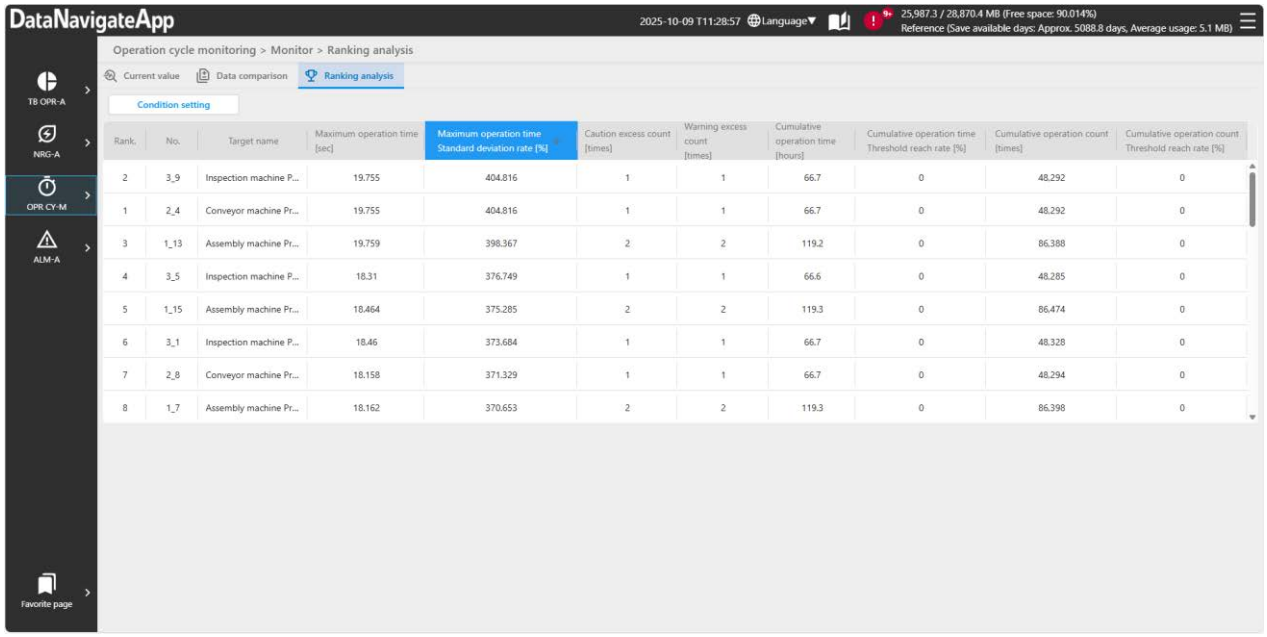


2) Trends in operation time of cylinders and equipment can be analyzed.
In the "Data comparison" window, changes in data such as operation time of cylinders and equipment can be displayed for comparison. Trends based on results can be grasped intuitively, which can be utilized to determine whether future countermeasures are necessary. In addition, data under different conditions (the equipment, CH, time frame, and product type) can be displayed for comparison. The cause of reduced operation time can be analyzed and improvement effects can be checked by displaying the data from two different dates for the same equipment and CH side by side or displaying the data from two different time frames for the same equipment and CH for comparison.



3) Equipment and factors that should be prioritized for countermeasures can be checked.

In the "Ranking analysis" window, the standard deviation rate of operation time, threshold excess count, and threshold reach rate of total operation count can be checked in a ranking format. By displaying such data in a ranking format, it becomes easier to identify equipment and issues that should be prioritized for countermeasures.



4) Monitoring functions can be added with optional settings.

Monitoring functions can be optionally added from the "Optional setting" window. The following describes the main additional functions.

• Delay timer setting…When the set time elapses after the condition of the set device is met, threshold monitoring is enabled.

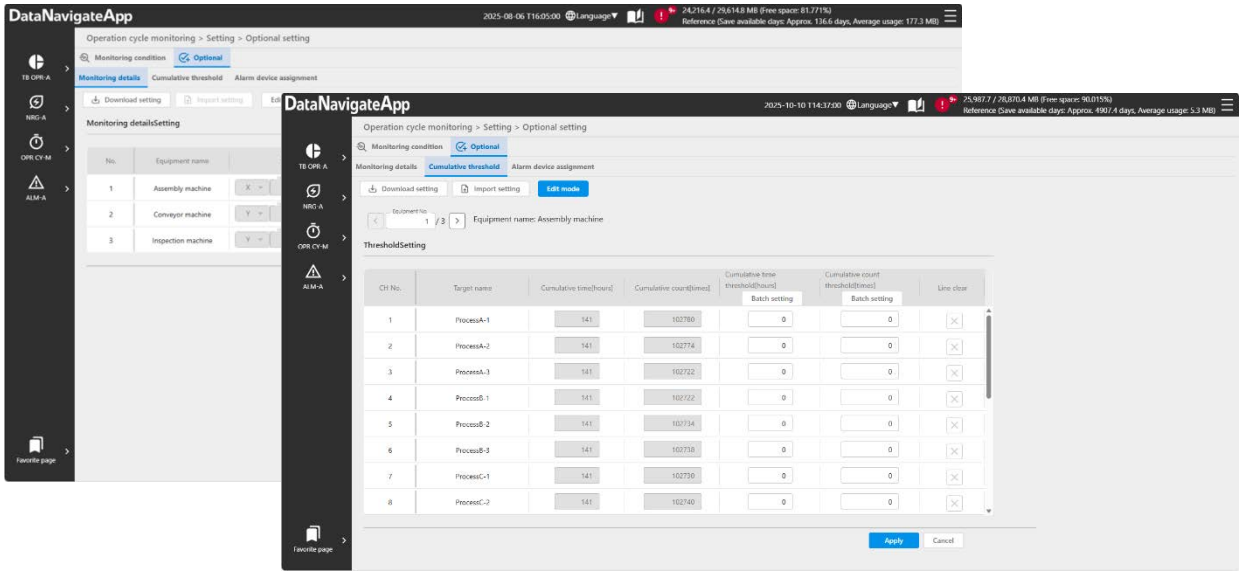
• Consecutive threshold excess count setting…An alarm is issued when the caution threshold or warning threshold is consecutively excessed for the set number of times.

• Sensor error…An alarm is issued when the detection timing of the operation start signal and operation completion signal is abnormal.

• Variation monitoring…An alarm is issued when the recent standard deviation is excessively larger than that of the reference data.

[Standard deviation of reference data × 1.36] < [Standard deviation for each 30 times of operation]

• Cumulative threshold setting…The preset values and thresholds for the cumulative time and cumulative count can be set. An alarm is issued when any of the thresholds is excessed.



■Application specifications

<table>
<tr><th colspan="2">Item</th><th colspan="4">Specifications</th><th>Remarks</th></tr>
<tr><td colspan="2">Number of monitored equipment</td><td colspan="4">Up to 4 pieces of equipment*1</td><td>-</td></tr>
<tr><td colspan="2">Number of monitoring target</td><td colspan="4">Each equipment: Up to 200
All equipment: Up to 400</td><td>-</td></tr>
<tr><td colspan="2" rowspan="3">Measurement signal/information</td><td colspan="2">Signal name</td><td colspan="2">Data type</td><td rowspan="3">-</td></tr>
<tr><td colspan="2">Measurement start signal</td><td colspan="2">Bit*2</td></tr>
<tr><td colspan="2">Measurement end signal</td><td colspan="2">Bit*2</td></tr>
<tr><td colspan="2">Display period</td><td>Type</td><td>From</td><td colspan="2">To</td><td>-</td></tr>
<tr><td></td><td>Current value</td><td>-</td><td>Clear date</td><td colspan="2">Current date and time</td><td>-</td></tr>
<tr><td></td><td rowspan="4">Data comparison *3</td><td>Today</td><td>Today's date switching time</td><td colspan="2" rowspan="4">Tomorrow's date switching time</td><td>Displays data for 24 hours.</td></tr>
<tr><td>Recent 2 days</td><td>Date switching time of 1 day ago</td><td>Displays data for 48 hours.</td></tr>
<tr><td>Recent 3 days</td><td>Date switching time of 2 days ago</td><td>Displays data for 72 hours.</td></tr>
<tr><td>Recent 7 days</td><td>Date switching time of 6 days ago</td><td>Displays data for 168 hours.</td></tr>
<tr><td></td><td>Ranking analysis</td><td>-</td><td>Clear date</td><td colspan="2">Current date and time</td><td>Displays data for 168 hours.</td></tr>
<tr><td colspan="2" rowspan="5">Monitoring item</td><td colspan="4">Operation time error</td><td>-</td></tr>
<tr><td colspan="4">Total operation time error</td><td>Enabled in the optional setting.</td></tr>
<tr><td colspan="4">Cumulative operation count</td><td>Enabled in the optional setting.</td></tr>
<tr><td colspan="4">Variation error</td><td>Enabled in the optional setting.</td></tr>
<tr><td colspan="4">Sensor error</td><td>Enabled in the optional setting.</td></tr>
<tr><td colspan="2">Downloading/ importing setting files</td><td colspan="4">Supported (CSV file)</td><td>-</td></tr>
<tr><td colspan="2">Alarm output</td><td colspan="4">Supported (The device bit signal of the CPU is turned on.)</td><td>-</td></tr>
</table>

*1: The data storage period changes depending on the number of monitored equipment. For details, refer to "3 APPLICATION OUTLINE".

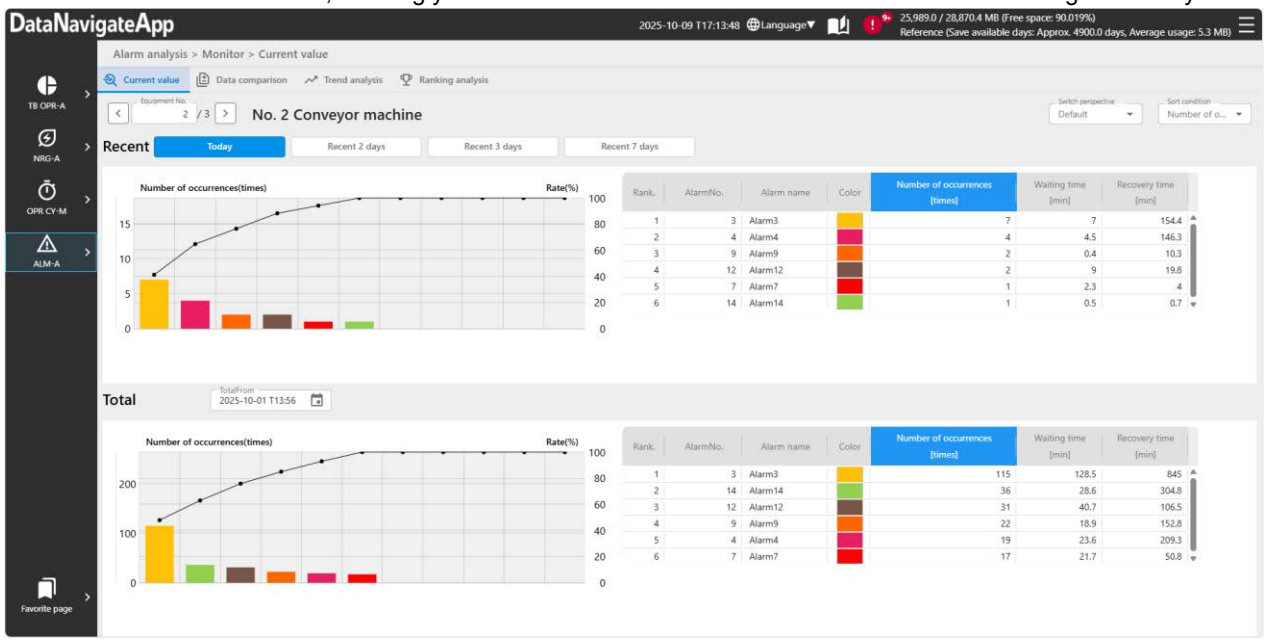
*2: For the selectable devices, refer to "3 APPLICATION OUTLINE".

*3: The average value and maximum value per 5 minutes are displayed.

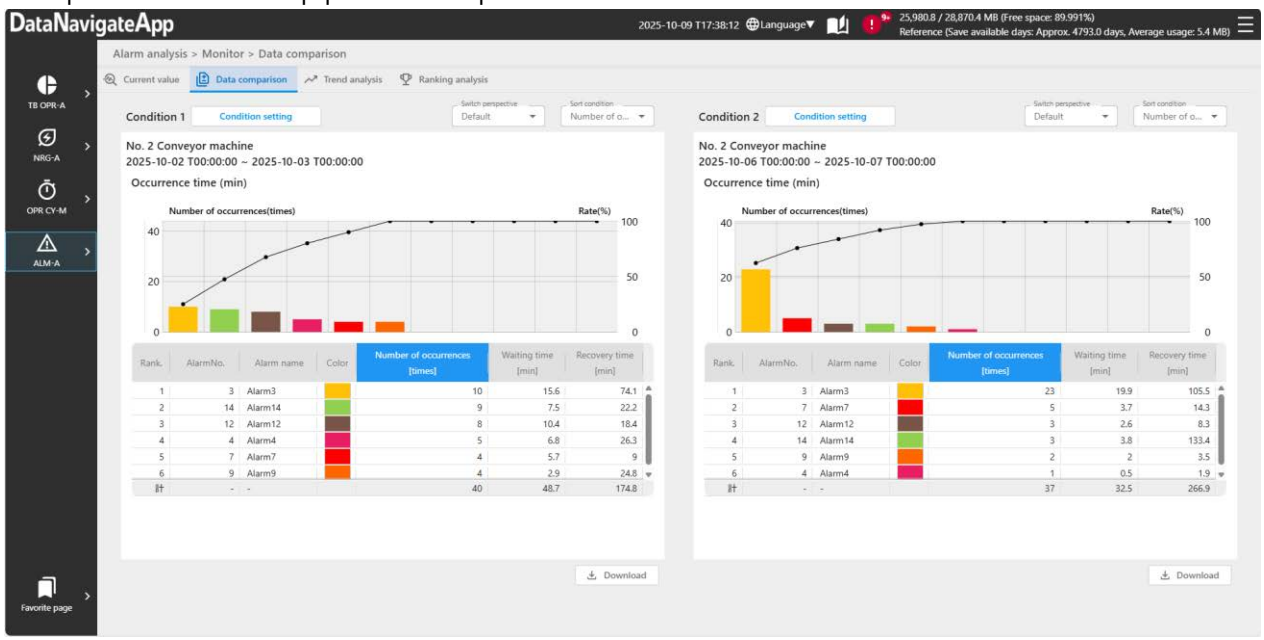
3.4. Alarm Analysis App

This application visualizes the alarm occurrence status of equipment (the number of occurrences and time) and allows you to tag alarms with information from desired perspectives such as processes and causes. This can help you grasp errors with high occurrence frequency or significant impact from each perspective.

1) Recent alarm information of equipment can be checked.
In the "Current value" window, the recent (up to seven days) alarm occurrence status (such as the number of occurrences and recovery time) for each equipment can be displayed. The total alarm occurrence status from the specified date can be monitored at the same time, allowing you to check whether the alarm occurrence status has changed recently.

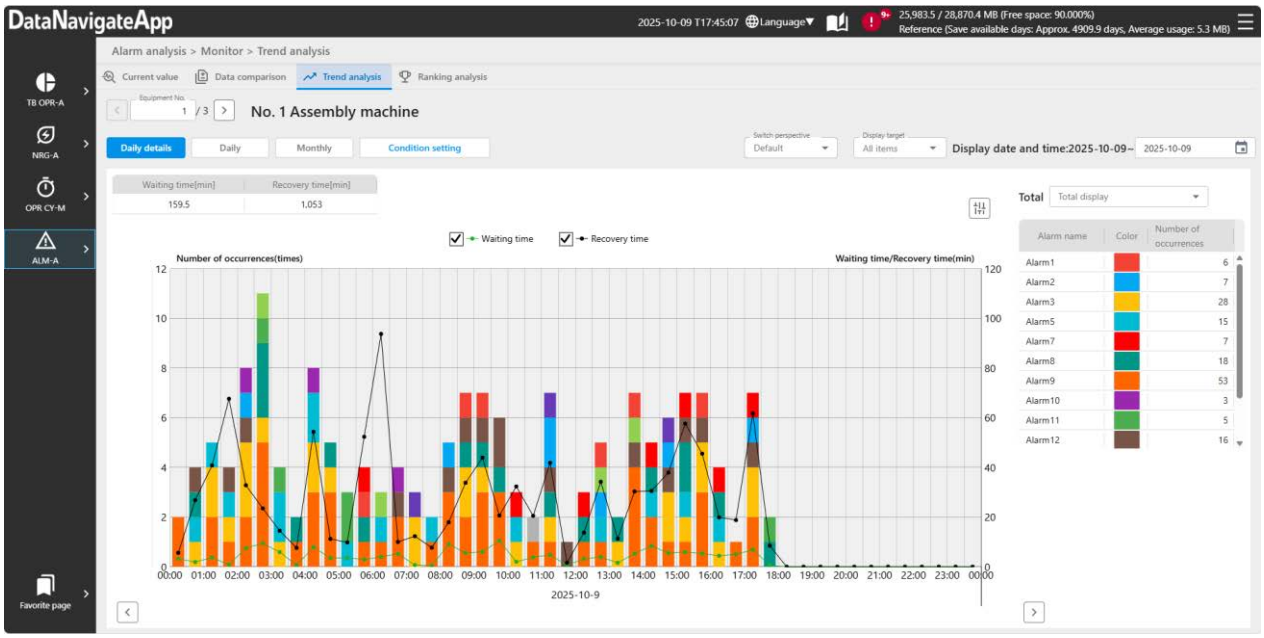


2) Alarms with high countermeasure effectiveness can be analyzed.
In the "Data comparison" window, the alarm information (the number of alarm occurrences, waiting time, recovery time, and rate) under different conditions (such as the equipment, time frame, and product type) can be displayed for comparison. For example, alarms with high improvement effects can be analyzed by displaying the data from two different dates for the same equipment side by side or displaying the data from two different time frames within the same period for the same equipment for comparison.



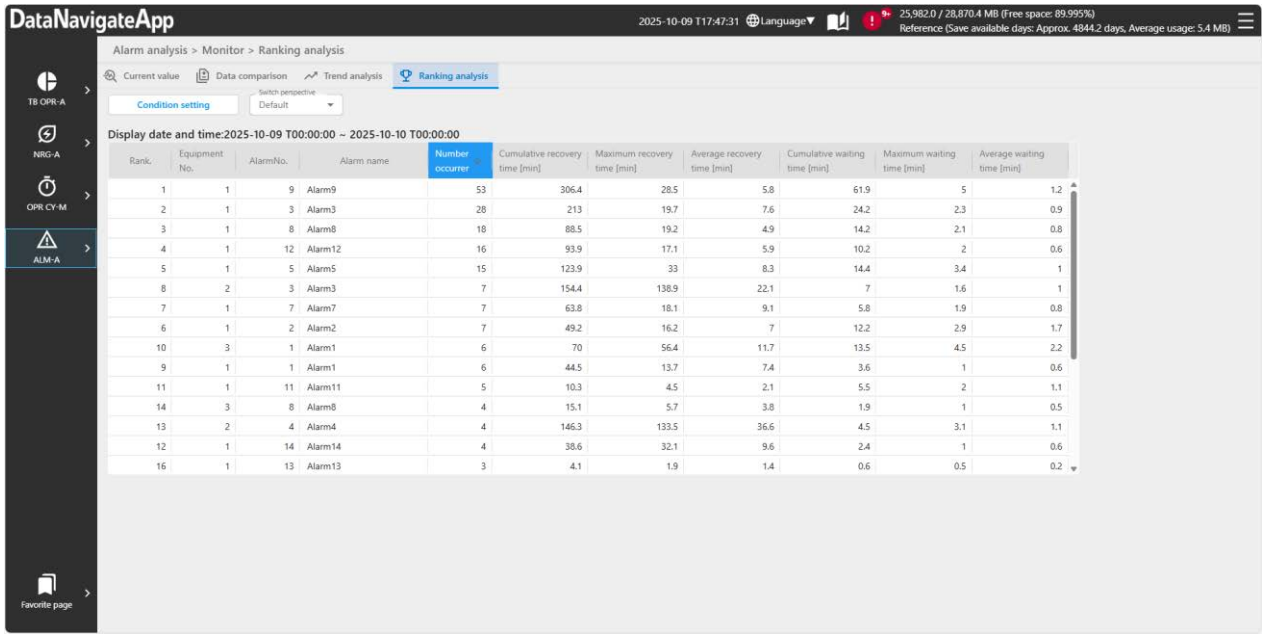
3) Trends in the alarm occurrence information can be analyzed.

In the "Trend analysis" window, trends such as changes in the number of alarm occurrences and occurrence time can be checked. Trends based on results can be grasped intuitively, which can be utilized to determine whether future countermeasures are necessary. In addition, since the breakdown of alarm information can be checked, trends such as frequent occurrences during specific time frames, such as certain hours or days of the week, can also be grasped.



4) Equipment and factors with high countermeasure effectiveness can be checked.

In the "Ranking analysis" window, equipment with a high number of alarm occurrences and alarms that have been occurring for a long period of time can be checked in a ranking format. By displaying such data in a ranking format, it becomes easier to identify issues with high countermeasure effectiveness.



■Application specifications

Item	Specifications				Remarks
Number of monitored equipment	Up to 16 pieces of equipment[*1]				-
Number of monitored alarms	Each equipment: Up to 500 All equipment: Up to 1000				-
Measurement signal/information[*2]	Signal name		Data type		-
	Alarm code		Word unsigned[*3]		Set a value to determine that an alarm has occurred. Use it only when alarm codes are used for alarm detection.
	Alarm signal		Bit[*3]		Use it only when alarm signals are used for alarm detection.
	Action start signal		Bit[*3]		Use it only when measuring the waiting time.
	Recovery completion signal		Bit[*3]		-
Display item[*4]	Item		Graph type		
	Alarm information		Pareto chart		It can be switched between the number of occurrences, waiting time, and recovery time.
Display period	Type		From	To	-
Recent data	Today		Today's date switching time	Tomorrow's date switching time	Displays data for 24 hours.
	Recent 2 days		Date switching time of 1 day ago		Displays data for 48 hours.
	Recent 3 days		Date switching time of 2 days ago		Displays data for 72 hours.
	Recent 7 days		Date switching time of 6 days ago		Displays data for 168 hours.
Total data	-		Selected date and time	Current date and time	
Data comparison	-		Date and time selected for From	Date and time selected for To	Up to 31 days can be selected.
Trend analysis	Daily details		Date switching time of the selected date	Date switching time of the day after the selected date	Displays data for 24 hours in 30-minute intervals.
	Daily		60 days before the selected date	Selected date	Displays data for 61 days in daily intervals.
	Monthly		24 months before the selected month	Selected month	Displays data for 24 months in monthly intervals.
Ranking analysis	-		Date and time selected for From	Date and time selected for To	Up to 31 days can be selected.
User perspective	Up to 4				Any perspectives can be set for analyzing alarms.

Tagging	50 for each user perspective	Any tags can be set for analyzing alarms.
Downloading/ importing setting files	Supported (CSV file)	-

*1: The data storage period changes depending on the number of monitored equipment. For details, refer to "3 APPLICATION OUTLINE".

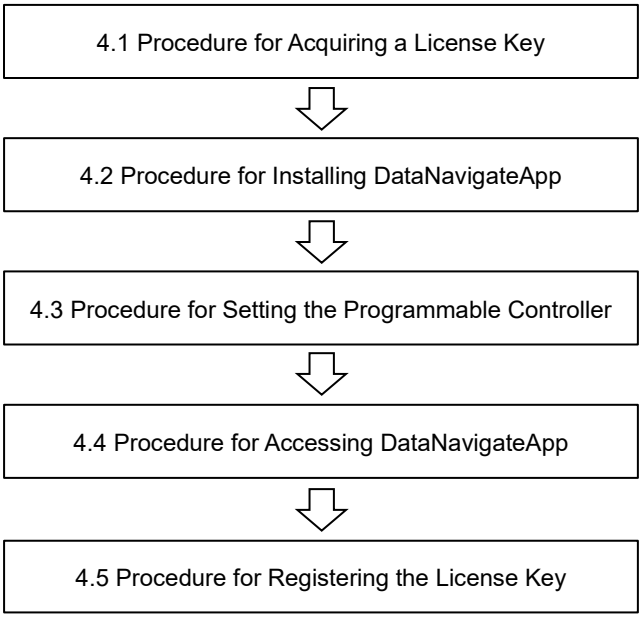
*2: Whether to use either or both of the alarm code and alarm signal can be selected.

*3: For the selectable devices, refer to "3 APPLICATION OUTLINE".

*4: The information to be displayed differs depending on the window, display period, and selected conversion mode.

4. STARTUP PROCEDURE

Install DataNavigateApp to an SD memory card, and insert it into the C intelligent function module.
This chapter shows the procedure from starting up this application to accessing it with a browser.



4.1. Procedure for Acquiring a License Key

To use this application, apply for and acquire a license key.
Acquire a license key from "DataNavigateApp License Key Request form" in the MITSUBISHI ELECTRIC Factory Automation website. After the application, the license key file (datanavi_license[16-character manufacturing information].lic) will be sent as an e-mail attachment.
The information required for the application is as follows.

Information	Item	Remarks
Application information	Product name	Refer to the license agreement.
	Product model	
	Product ID	
Hardware information	Module name	Refer to "Checking Production Information and Firmware Version" in "MELSEC iQ-R Module Configuration Manual".
	Manufacturing information (Serial No.)	

⚠CAUTION

Do not change the file name of the obtained license key file.
Doing so disables authentication.

4.2. Procedure for Installing DataNavigateApp

Write the image file for installing DataNavigateApp, which is required to use this application, to the SD memory card. The following shows the procedure.

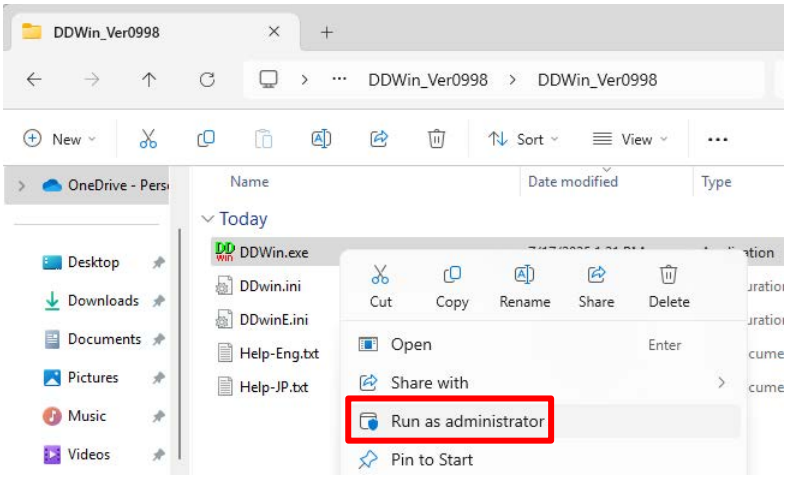
1. Access the following URL and download the free software "DD for Windows" to the personal computer, and unzip the file.
   https://www.si-linux.co.jp/techinfo/index.php?DD%20for%20Windows#s74c46f6
   Download "Ver.0.9.9.8".

⚠CAUTION

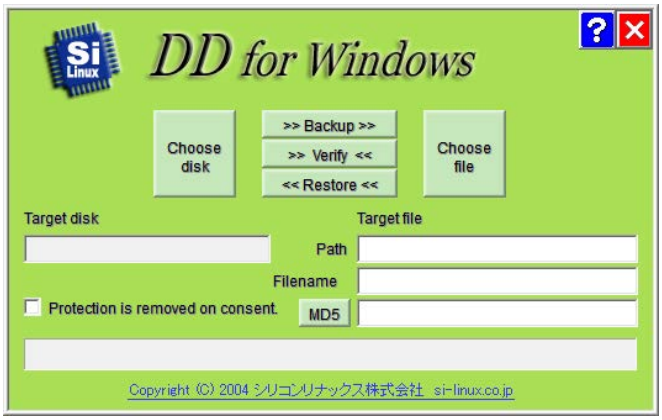
When writing the image file for installing DataNavigateApp to the SD memory card, use "DD for Windows" instead of using Explorer.
The installation cannot be properly performed without using "DD for Windows".

2. Insert the SD memory card into the personal computer, and if necessary data is stored on it, back it up to another location (such as the hard disk of the personal computer or an external drive) in advance.

3. Right-click the exe file "DDWin" in the folder unzipped in step 1, and select "Run as administrator".



4. When "DD for Windows" is displayed on the screen, select the following items.
   - Click "Choose file" and select the image file for installing DataNavigateApp.
   - Click "Choose disk" and select the drive where the SD memory card is inserted.



5. With the "<<Restore<<" button, write the image file for installing DataNavigateApp to the SD memory card.

⚠CAUTION

Do not perform the following operations while data is being written. The SD memory card may be damaged and become unusable.

• Removing the SD memory card

• Making the personal computer sleep

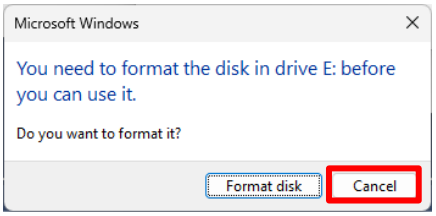
Writing data to the SD memory card takes approximately 1 to 15 minutes. Check the sleep setting of the personal computer or take sufficient precautions to prevent it from going to sleep.

6. After writing is completed, remove the SD memory card from the personal computer.

⚠CAUTION

A dialog prompting you to format the disk appears. **Select "Cancel"**.

If "Format disk" is selected, the written image file for installing DataNavigateApp will be deleted.



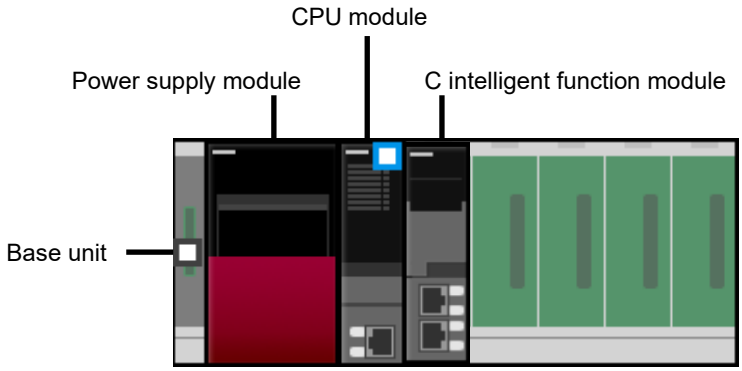
4.3. Procedure for Setting the Programmable Controller

Write project data of GX Works3, which is required to use this application, to the programmable controller.
This section provides procedures for the following two cases.
(1) When adding a new programmable controller
(2) When adding a C intelligent function module to an existing device configuration

(1) When adding a new programmable controller

(a) Mounting modules

1. Mount the CPU module, power supply module, and C intelligent function module on the base unit as follows.
   (Mount the C intelligent function module on a desired slot No.)



2. Insert the SD memory card in which DataNavigateApp is installed according to the procedure described in "4.2 Procedure for Installing DataNavigateApp" into the C intelligent function module.

TIPS

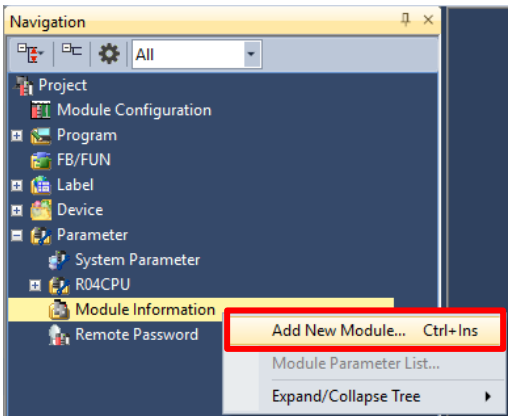
Enabling the writing lock of the SD memory card after installing DataNavigateApp to it will not affect the operation of DataNavigateApp.

3. Power off and on the programmable controller. Wait until the "RUN" and "CARD RDY" LEDs of the C intelligent function module turn on in green.

4. Power off and on the programmable controller again. Wait until the "USER" LED of the C intelligent function module turns on in green.

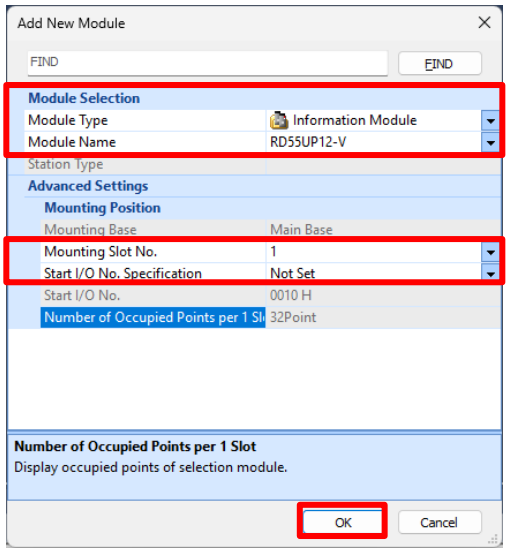
(b) Preparing project data of GX Works3

1. Prepare the project data of GX Works3 to be used in conjunction with DataNavigateApp.
2. In the Navigation window of GX Works3, double-click [Parameter], right-click [Module Information] , and select "Add New Module".

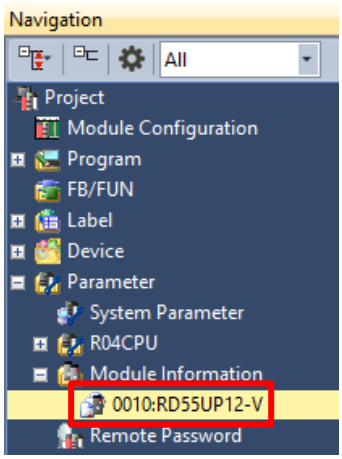


3. To add a C intelligent function module (RD55UP12-V), select the following items and click [OK].

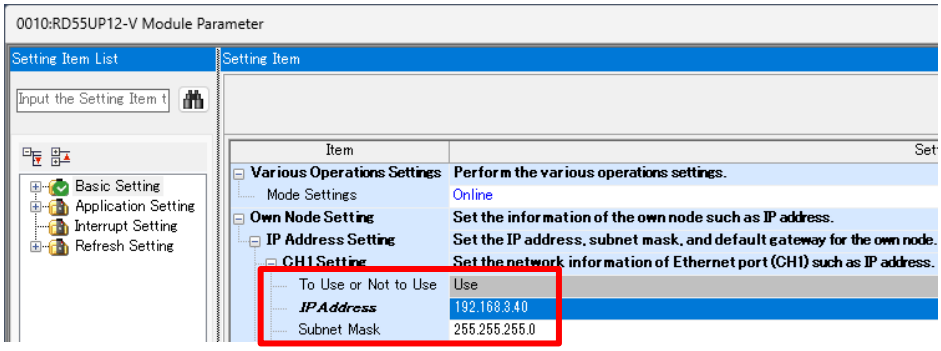
Item	Description
Module Type	Information Module
Module Name	RD55UP12-V
Mounting Slot No.	Slot No. of the actual base unit on which "RD55UP12-V" is mounted
Start I/O No. Specification	Not Set



4. Double-click the C intelligent function module (RD55UP12-V) added to the Navigation window to open the module parameter window.

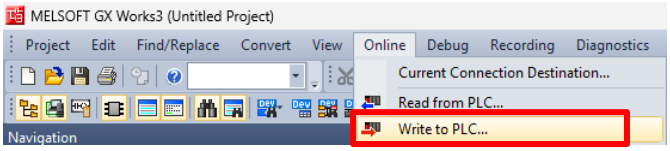


5. Set the IP address of "RD55UP12-V" in the basic setting.
   Use CH1 for the port CH. Set a unique value that does not conflict with any other IP addresses.

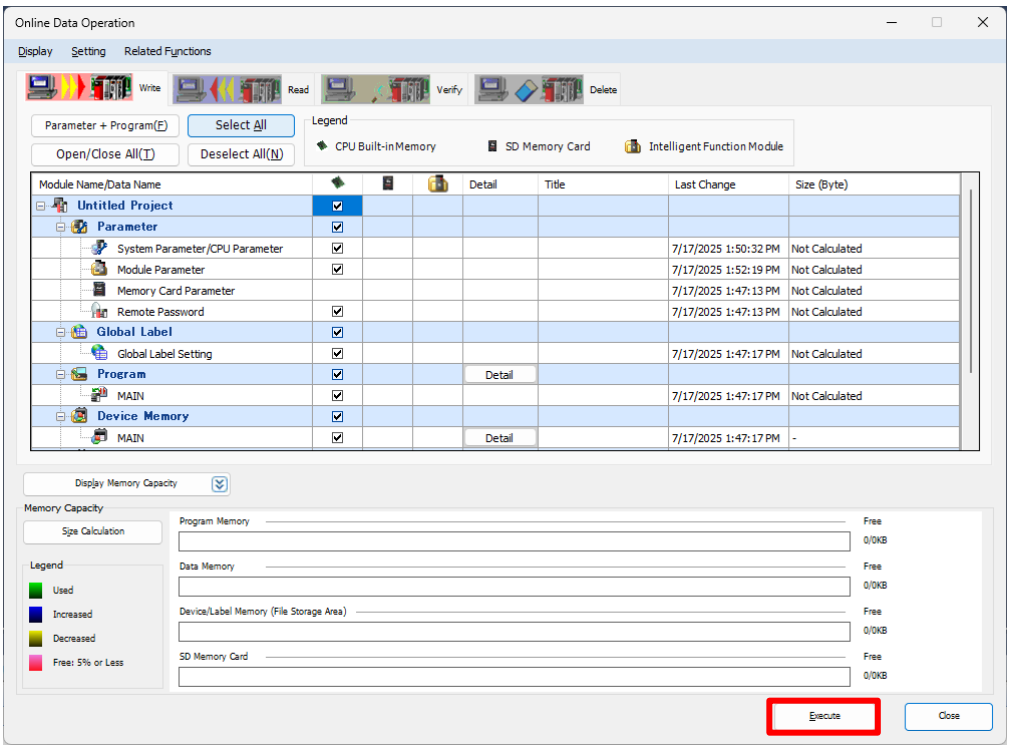


(c) Writing the project data of GX Works3

1. Select [Online] - [Write to PLC] from the menu of GX Works3.



2. The "Online Data Operation" window is displayed. Select the items to be written, and click [Execute] to write the project data to the programmable controller.
(With sufficient memory capacity, it is acceptable to select all items as the items to be written.)



3. Power off and on the programmable controller.

(2) When adding a C intelligent function module to an existing device configuration

(a) Mounting the module

1. Mount the C intelligent function module on the base unit.
2. Insert the SD memory card in which DataNavigateApp is installed according to the procedure described in "4.2 Procedure for Installing DataNavigateApp" into the mounted C intelligent function module.
3. The subsequent steps are the same as step 3 and onward in "4.3(1)(a) Mounting modules". Refer to step 3 and onward in "4.3(1)(a) Mounting modules".

(b) Preparing project data of GX Works3

1. Prepare the project data of GX Works3 in use.
2. The subsequent steps are the same as step 2 and onward in "4.3(1)(b) Preparing project data of GX Works3". Refer to step 2 and onward in "4.3(1)(b) Preparing project data of GX Works3".

(c) Writing the project data of GX Works3

The steps are the same as those in "4.3(1)(c) Writing the project data of GX Works3". Refer to "4.3(1)(c) Writing the project data of GX Works3".

4.4. Procedure for Accessing DataNavigateApp

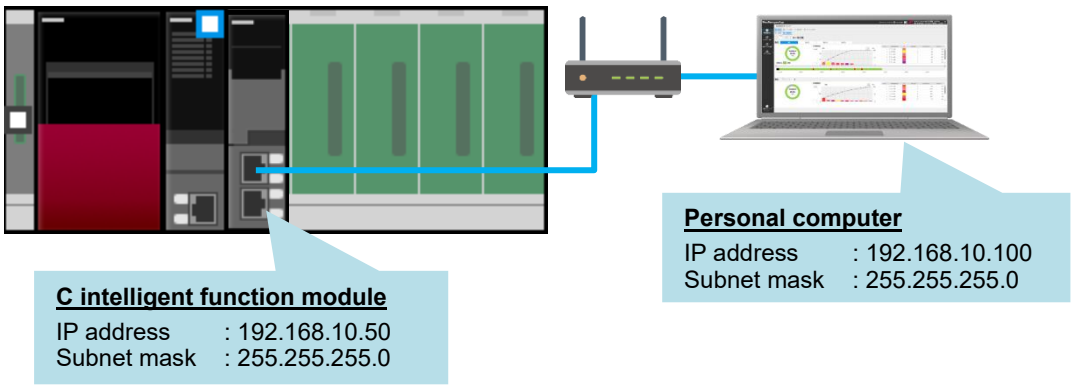
Configure the communication setting to access DataNavigateApp from a browser, which is required to use this application.
This section provides procedures for the following three patterns of configurations for connecting the C intelligent function module to the personal computer.

(1) When connecting directly (or via an access point)
(2) When connecting using the rooting function of the router
(3) When connecting using the NAT/NAPT function of the router

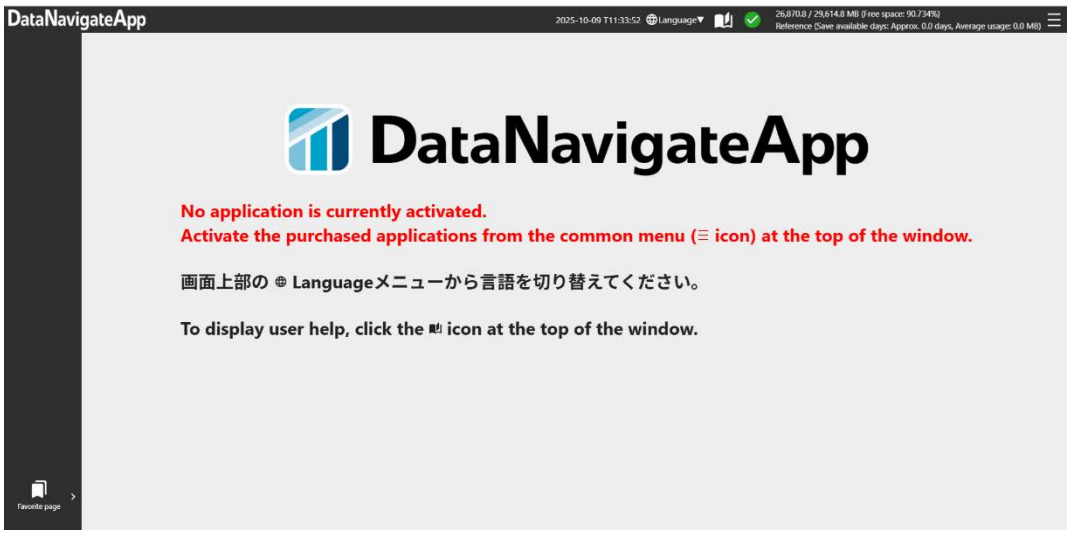
In this chapter, only the settings specific to DataNavigateApp are explained. For details and methods of the router setting, check the instruction manual of your router.

(1) When connecting directly (or via an access point)
The following configuration is used as an example.

[Connection configuration example]



1. Connect the LAN port of CH1 on the C intelligent function module and the personal computer.
2. Open a web browser and enter "http://IP address of the C intelligent function module:3000" (example: http://192.168.10.50:3000) to access DataNavigateApp.
When accessed successfully, the following window is displayed.

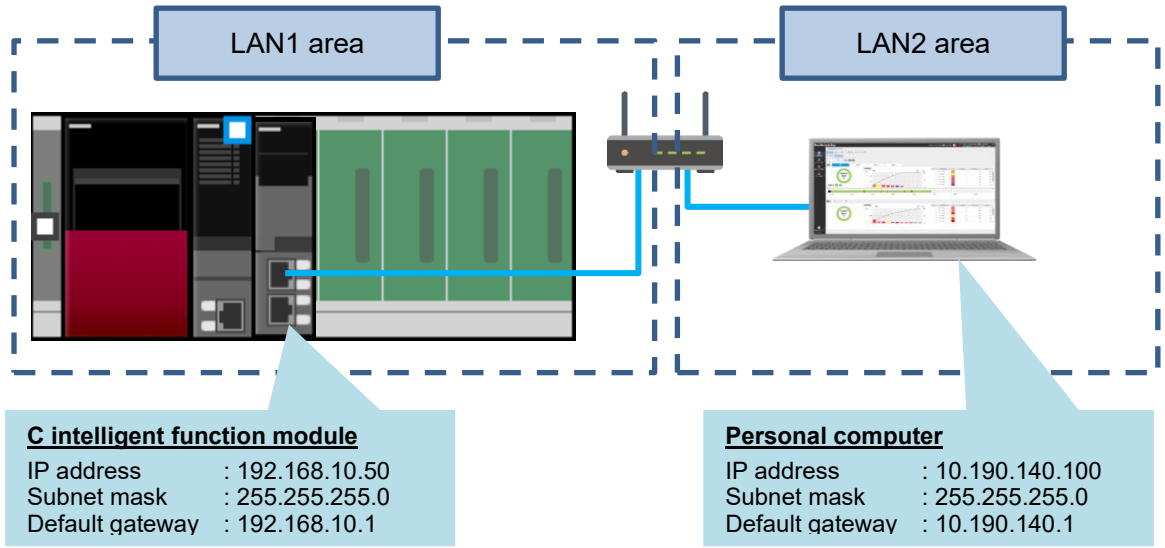


POINT

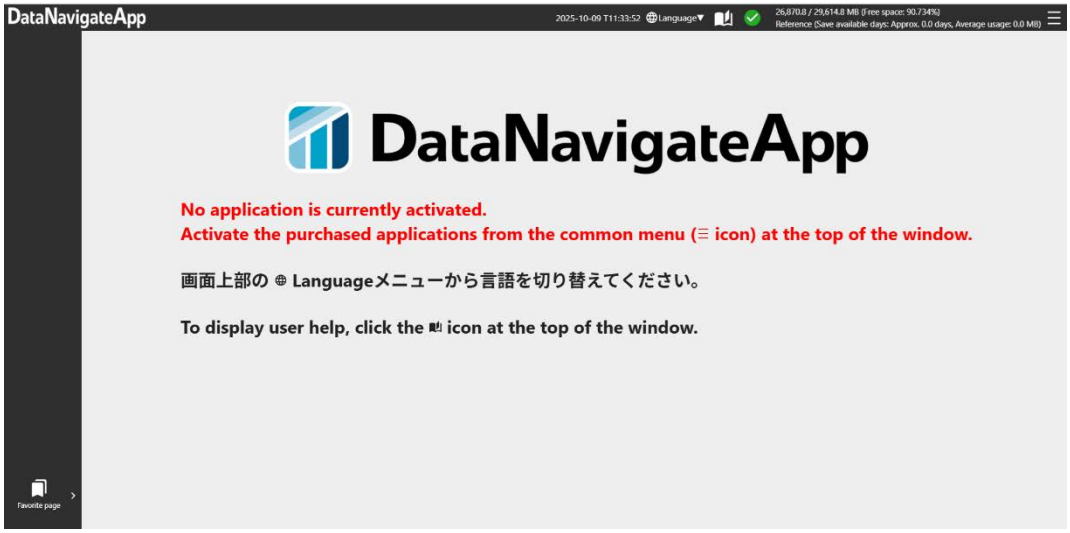
Immediately after the programmable controller is powered on, DataNavigateApp may not be accessed because the web server is not started yet. **If DataNavigateApp cannot be accessed, access it again after 2 to 3 minutes.**

(2) When connecting using the rooting function of the router
The following configuration is used as an example.

[Connection configuration example]



1. Connect the LAN port of CH1 on the C intelligent function module and the router.
2. Connect the personal computer and the router.
3. Open a web browser and enter "http://IP address of the C intelligent function module:3000" (example: http://192.168.10.50:3000) to access DataNavigateApp.
When accessed successfully, the following window is displayed.



POINT

Immediately after the programmable controller is powered on, DataNavigateApp may not be accessed because the web server is not started yet. **If DataNavigateApp cannot be accessed, access it again after 2 to 3 minutes.**

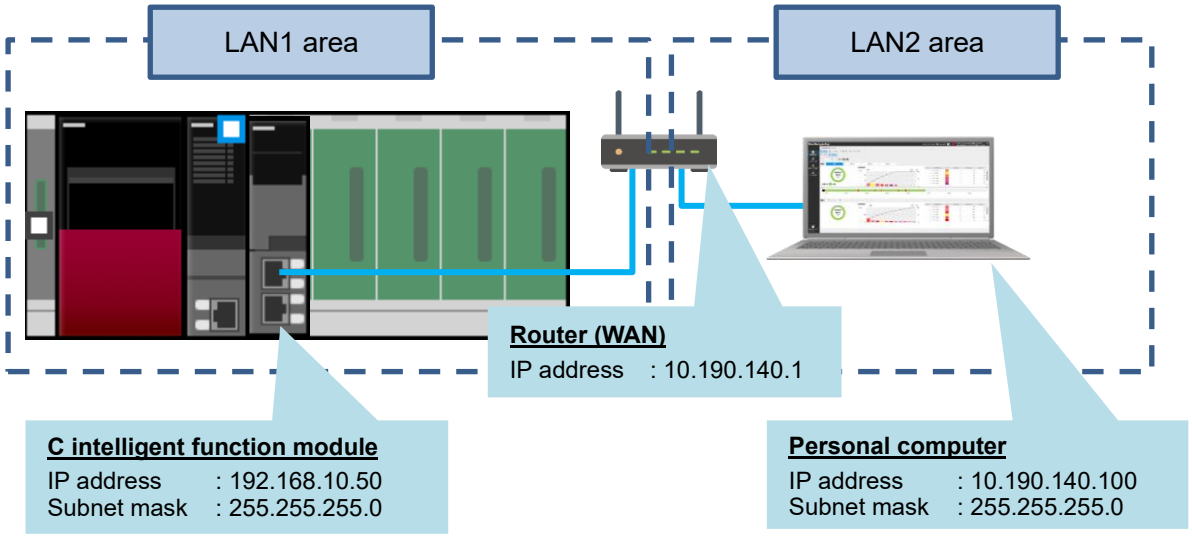
(3) When connecting using the NAT/NAPT function of the router

When using the NAT/NAPT function for connection, register IP addresses to be allowed to connect to DataNavigateApp in advance.

For the registration method, refer to "6.1 Initial Setting".

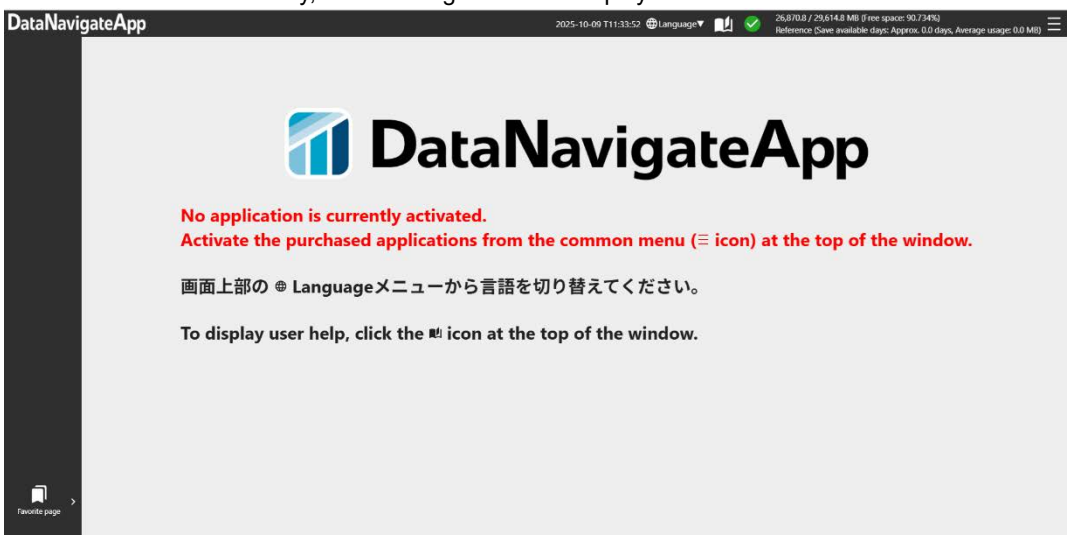
The following configuration is used as an example.

[Connection configuration example]



1. Connect the LAN port of CH1 on the C intelligent function module and the router.
2. Connect the personal computer and the router.
3. Open a web browser and enter "http://IP address of the router in the LAN area on the personal computer side:3000" (example: http://10.190.140.1:3000) to access DataNavigateApp.

   When accessed successfully, the following window is displayed.



POINT

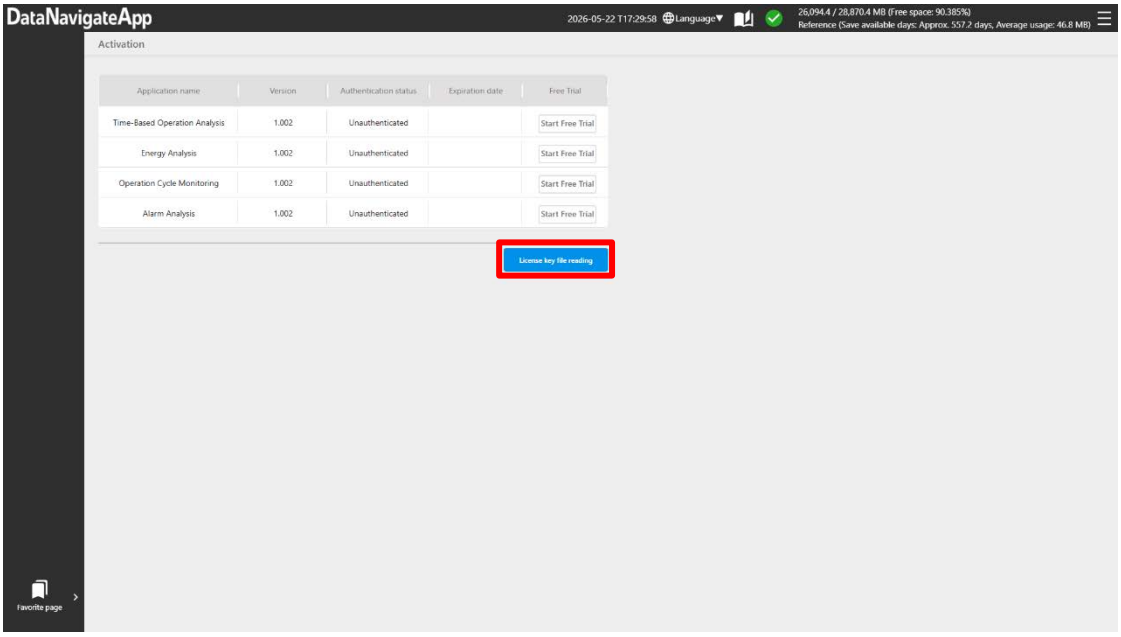
Immediately after the programmable controller is powered on, DataNavigateApp may not be accessed because the web server is not started yet. **If DataNavigateApp cannot be accessed, access it again after 2 to 3 minutes.**

4.5. Procedure for Registering the License Key

Register the license key, which is required to use this application.

■Registration method on the application

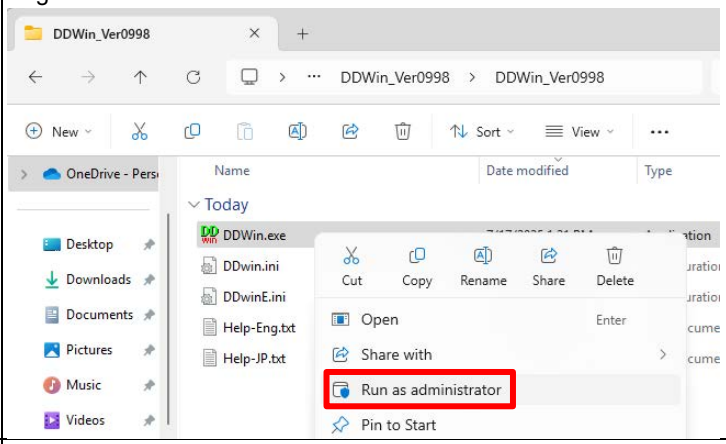
1. Click the ☰ button on the top right of the application and select [Activation] to display the activation window.
2. Click License key file/nreading to read the license key file acquired in "4.1 Procedure for Acquiring a License Key".



4.6. Troubleshooting at Startup

If DataNavigateApp does not start up correctly, check the relevant case in this section and perform troubleshooting.

■When the image file for installing DataNavigateApp cannot be written properly to the SD memory card

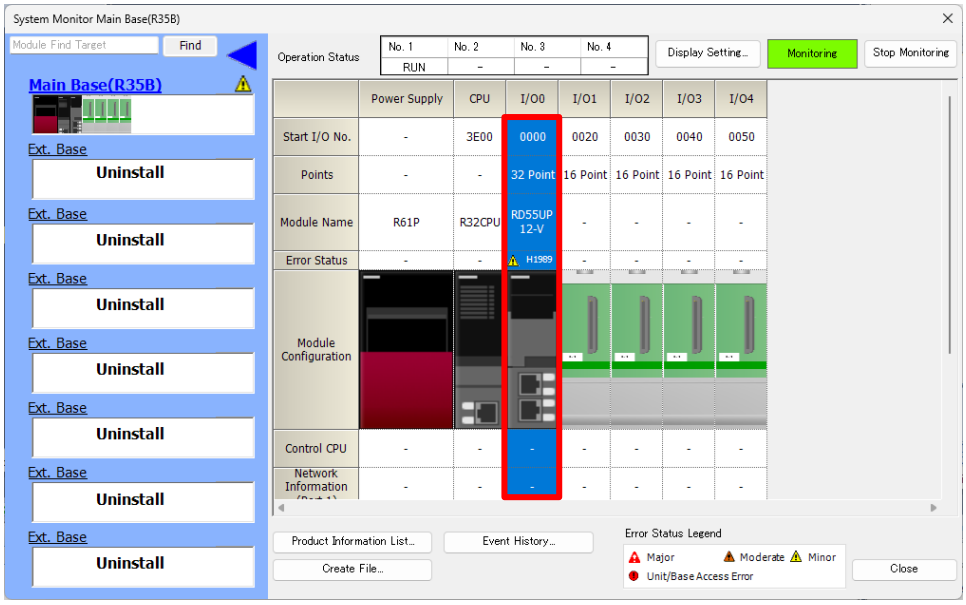
Case	Action
The writing destination drive cannot be selected.	Right-click "DD for Windows" and select "Run as administrator" to start it. 
An error stating that the memory is corrupted occurs while the file is being written.	**The personal computer may have gone to sleep while the file was being written to the SD memory card.** Check the sleep setting of the personal computer, and take sufficient precautions to prevent it from going to sleep. Writing data to the SD memory card takes approximately 1 to15 minutes.

■When the ERR LED of the C intelligent function module turns on

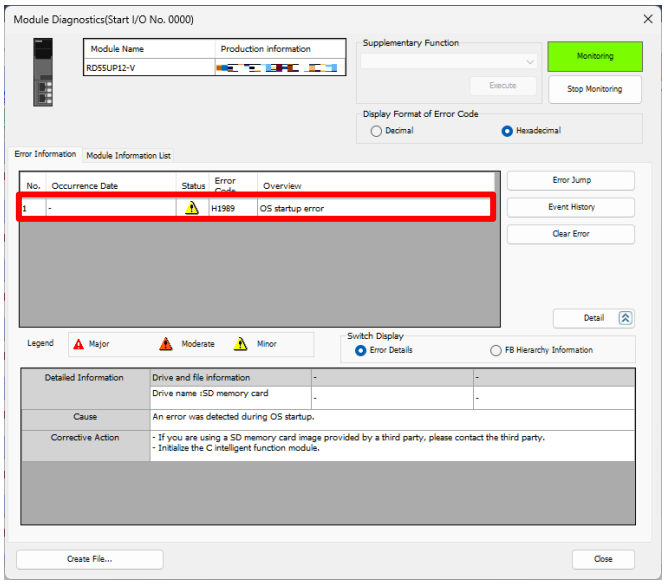
Check the error code using the following steps, and perform the action according to the situation.

1. Select [Diagnostics] - [System Monitor] from the menu of GX Works3.

2. Double-click the module model name [RD55UP12-V] on the displayed "System Monitor" window.



3. Check the error code on the displayed "Module Diagnostics" window.

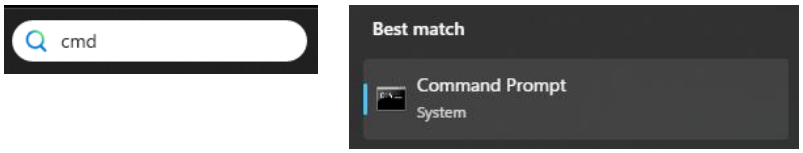


Case	Action
"H1989" is displayed as the error code.	Delete the partition of the SD memory card according to "7 PROCEDURE FOR UNINSTALLING DataNavigateApp", and format it again. Then, follow "4.2 Procedure for Installing DataNavigateApp" to write the image file for installing DataNavigateApp to the SD memory card again.
Any error code other than the above is displayed.	Refer to "MELSEC iQ-R C Intelligent Function Module User's Manual (Application)".

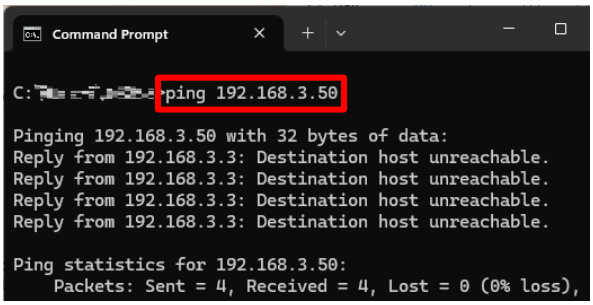
■When DataNavigateApp cannot be accessed from a web browser

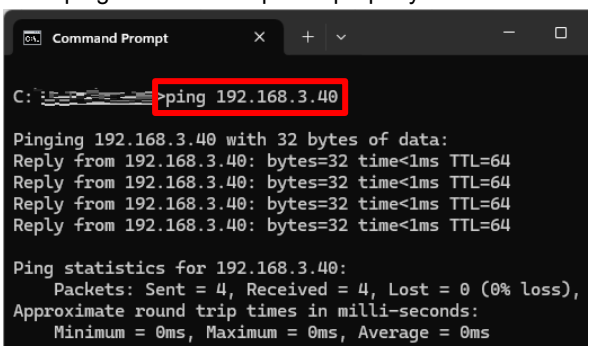
Follow the steps below to check if the personal computer and the C intelligent function module are correctly connected to the network.

1. Enter "cmd" in the search bar next to the start menu of the personal computer to open "Command Prompt".



2. Enter "ping [IP address of the C intelligent function module]" in the command prompt.
3. Press the Enter key to check if the ping command properly responds, and then check the action listed below.

Case	Action
If the ping command does not respond 	The Ethernet cable may not be correctly connected. Check if the Ethernet cable is correctly connected.
	The IP address of the C intelligent function module may not be correctly set. Refer to "4.3 Procedure for Setting the Programmable Controller" to check if the IP address setting of the C intelligent function module is correct.
	Access from a specific IP address is blocked by an IP filter function such as a firewall. Disable the IP filter function or access from a different IP address.
	The personal computer and the C intelligent function module may not be connected to the same network. Refer to "4.3 Procedure for Setting the Programmable Controller" and "4.4 Procedure for Accessing DataNavigateApp" to set the IP addresses of the personal computer and C intelligent function module.
	If the NAT/NAPT function of the router is used, the NAT/NAPT function may not be set correctly. Refer to "4.4 Procedure for Accessing DataNavigateApp" to check if the NAT/NAPT function is set correctly with the support tool.

If the ping command responds properly  	The SD memory card may not be correctly inserted into the C intelligent function module. Check if the SD memory card is correctly inserted.
	DataNavigateApp may be disabled. Power off and on the programmable controller, and check that the "USER" LED of the C intelligent function module turns on in green. If the "USER" LED does not turn on in green, DataNavigateApp may not be correctly written to the SD memory card. Refer to "4.2 Procedure for Installing DataNavigateApp" to rewrite DataNavigateApp to the SD memory card.
	Port No. may not be specified in the web address entered in the web browser. Refer to "4.4 Procedure for Accessing DataNavigateApp" to check if the entered web address is correct.
	There may be a device with the same IP address as the personal computer or the C intelligent function module on the LAN to which they are connected. If there is, change the IP address to a unique one.

■When DataNavigateApp is not displayed properly in the web browser

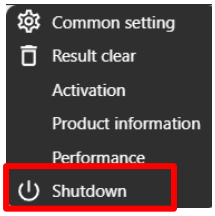
If the UI or monitor values of DataNavigateApp displayed in your web browser are not displayed properly, old information may be displayed due to the cache of your web browser. Clear the cache of your web browser and access DataNavigateApp again.

5. TERMINATION PROCEDURE

To terminate this application, follow either of the procedures below.

(1) When manually shutting down DataNavigateApp

1. Click the ☰ button on the top right of the application.
2. Select "Shutdown" to terminate DataNavigateApp.



3. Check that the "USER" LED of the C language intelligent function module is OFF.
4. Power off the programmable controller.

(2) When shutting down DataNavigateApp using a shutdown trigger

* When shutting down using a shutdown trigger, configure the setting from "Common setting" > [Optional] > [Shutdown trigger] in DataNavigateApp in advance.

The shutdown trigger cannot be used for 3 minutes after DataNavigateApp is started.

1. Turn on the assigned device for the shutdown trigger to terminate DataNavigateApp.
2. Check that the device that notifies the DataNavigateApp startup status is OFF.
3. Check that the "USER" LED of the C language intelligent function module is OFF.
4. Power off the programmable controller.

⚠CAUTION

Shut down the application before turning off the power.
If the C intelligent function module is powered off without shutting down DataNavigateApp, a file system error or similar issues may occur. Always shut down DataNavigateApp before powering off the C intelligent function module.

⚠CAUTION

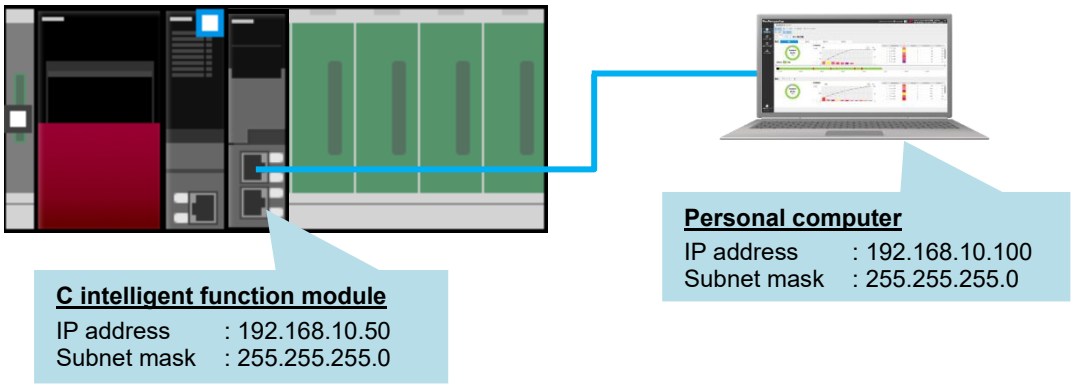
Do not set the assigned device of the shutdown trigger and the report device of each application to the same device.
If the assigned device of the shutdown trigger and the report device of each application are set to the same device, DataNavigateApp will be shut down when the report device of each application is turned on.

6. SETTINGS USING THE SUPPORT TOOL

DataNavigateApp can execute the following functions using the support tool in the exe format.

Function	Function overview
Initial setting	Set information on the C intelligent function module being used. The name, IP address, and connection destination of each C intelligent function module can be changed.
Security	Certificates and private keys required for each encrypted communication can be registered to ensure secure communication with e-mail and web browsers.
Maintenance	Update DataNavigateApp and back up and restore the database (DB).

The following shows a system configuration example for connecting the personal computer that uses the support tool to DataNavigateApp.



* To construct a system configuration using the NAT/NAPT function of the router, it is necessary to set the static IP masquerade and register the external IP address using the support tool. For details, refer to "4.4(3) When connecting using the NAT/NAPT function of the router".

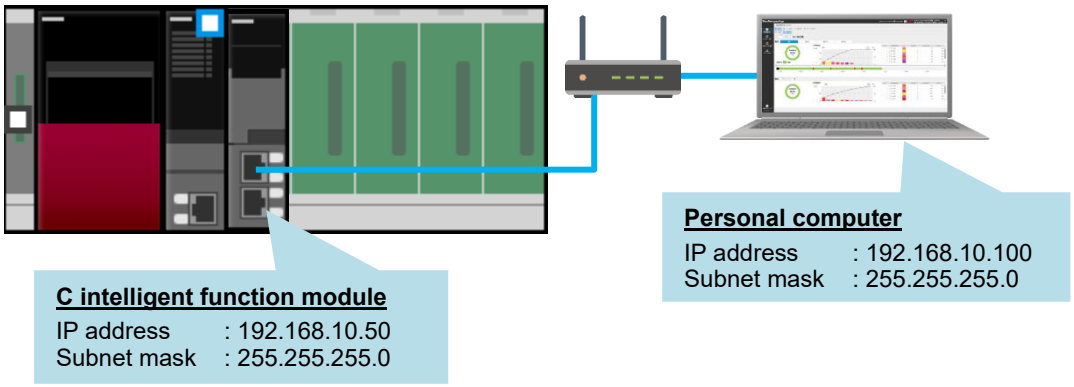
6.1. Initial Setting

6.1.1. Module setting

Register the C intelligent function module that will communicate with the support tool. Following either of the procedures below, set the connection destination according to the configuration for accessing DataNavigateApp via the personal computer.

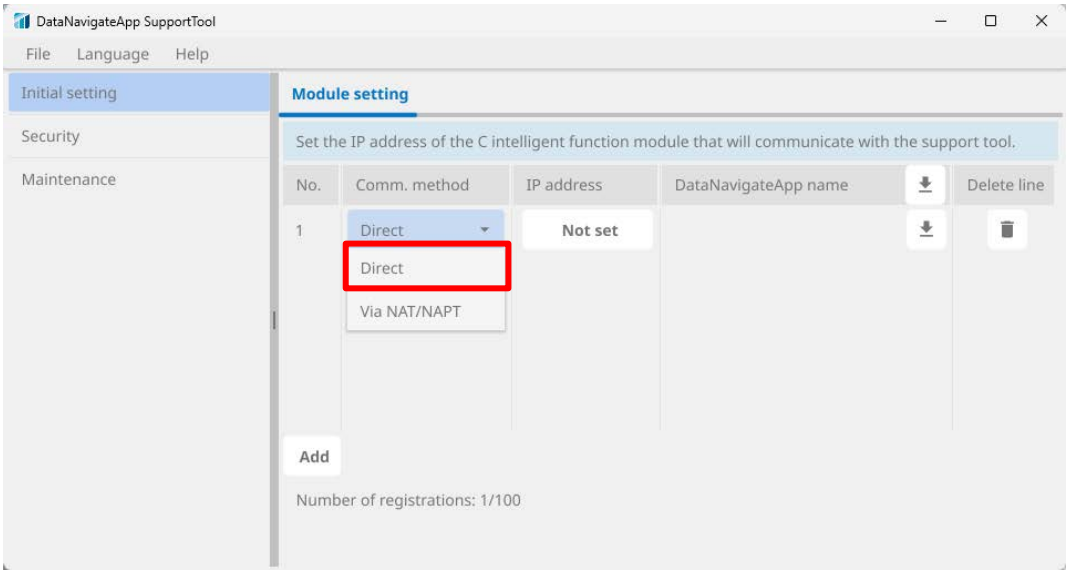
(1) When directly connecting the personal computer to the C intelligent function module to access DataNavigateApp

[Connection configuration example]

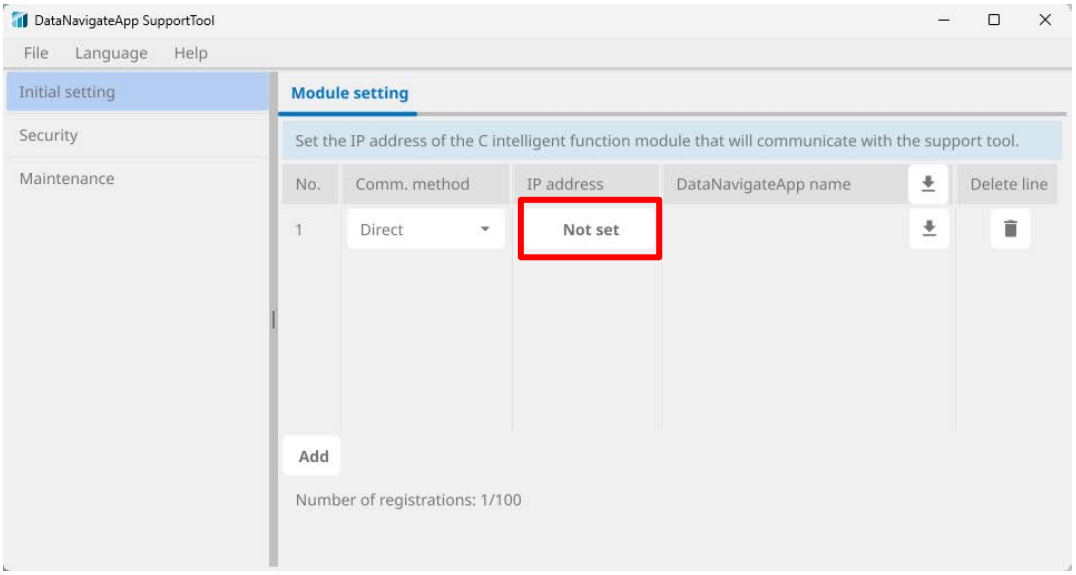


1. Open the [Module setting] tab in the [Initial setting] window, and click the [Add] button.

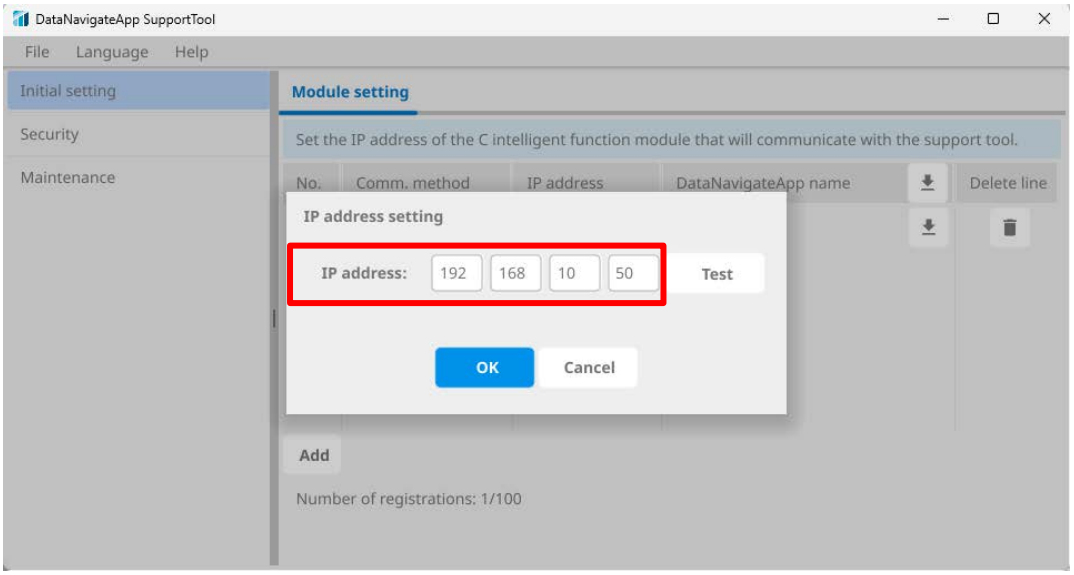
2. Select [Direct] from [Communication method].



3. Click the [Not set] button in the [IP address] column.



4. Set the IP address of the C intelligent function module that the support tool will access.
   Clicking the [Test] button executes the communication test between "Support tool" and "C intelligent function module".



5. Click the [OK] button. Up to 100 modules can be registered.

(2) When accessing DataNavigateApp using the NAT/NAPT function of the router

When accessing DataNavigateApp using the NAT/NAPT function of the router, only communication from the external IP addresses registered using the support tool in advance is allowed in DataNavigateApp.

When using the NAT/NAP function of the router, static masquerade must be set in advance.

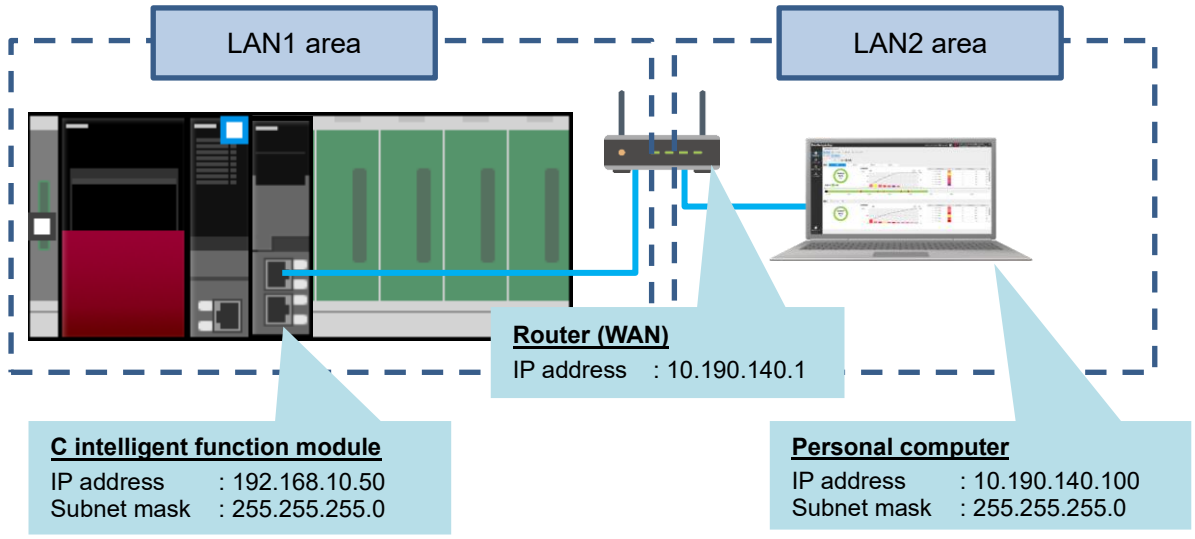
Open the router settings and set static IP masquerade for the following ports.

Identification No.	Internal address	Port No.
1	IP address of the C intelligent function module (Example: 192.168.10.50)	3000
2	IP address of the C intelligent function module (Example: 192.168.10.50)	54380
3	IP address of the C intelligent function module (Example: 192.168.10.50)	52122

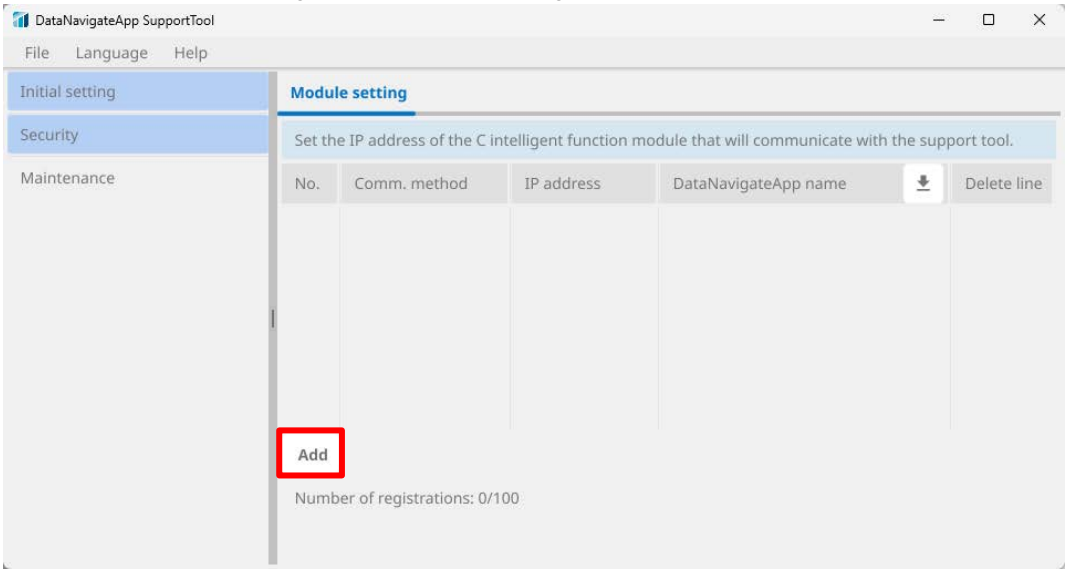
TIPS

Port No. 52122 will not be used after the registration to the C intelligent function module with the support tool. **Delete the setting** as needed.

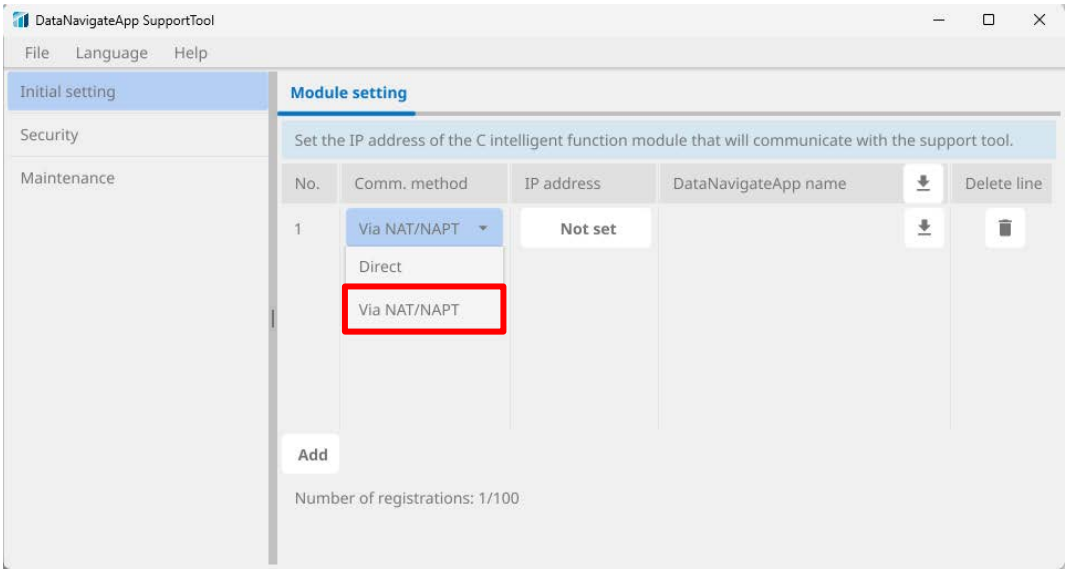
[Connection configuration example]



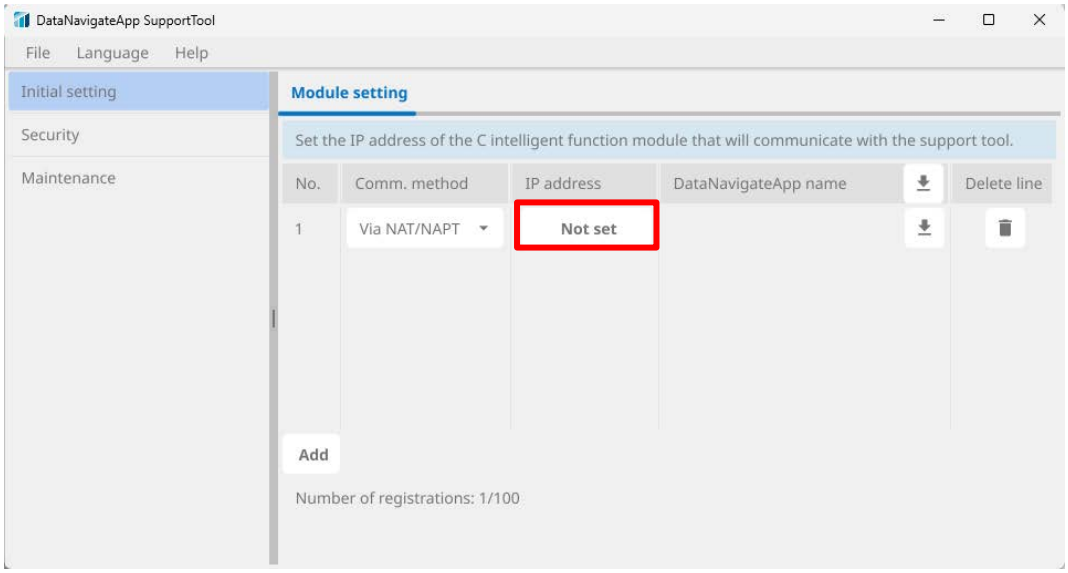
1. Open the [Module setting] tab in the [Initial setting] window, and click the [Add] button.



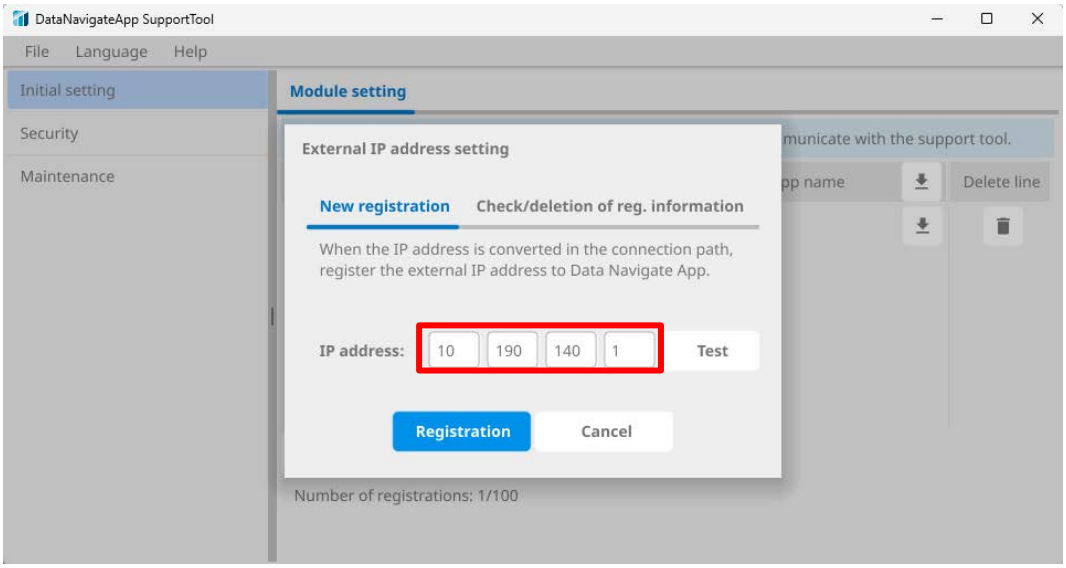
2. Select [Via NAT/NAPT] from [Communication method].



3. Click the [Not set] button in the [IP address] column.



4. Enter the IP address (external IP address) of the router to be used in the [New registration] tab. Clicking the [Test] button executes the communication test between "Support tool" and "C intelligent function module".



5. Click the [Registration] button. Up to 100 modules can be registered.

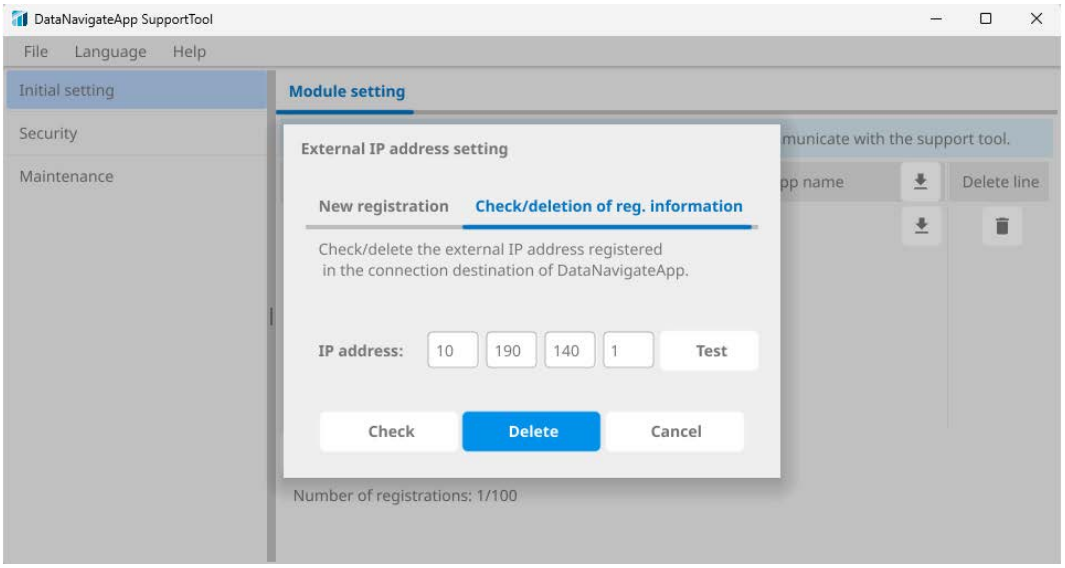
6. Restart the programmable controller to apply the registration of the support tool.

TIPS

The operations that can be performed in the [Check/deletion of reg. information] tab of the [External registration] window are as follows:

• [Check] button: The external IP address that is currently registered to DataNavigateApp can be checked.

• [Delete] button: The external IP address that is currently registered to DataNavigateApp can be deleted.



6.2. Security

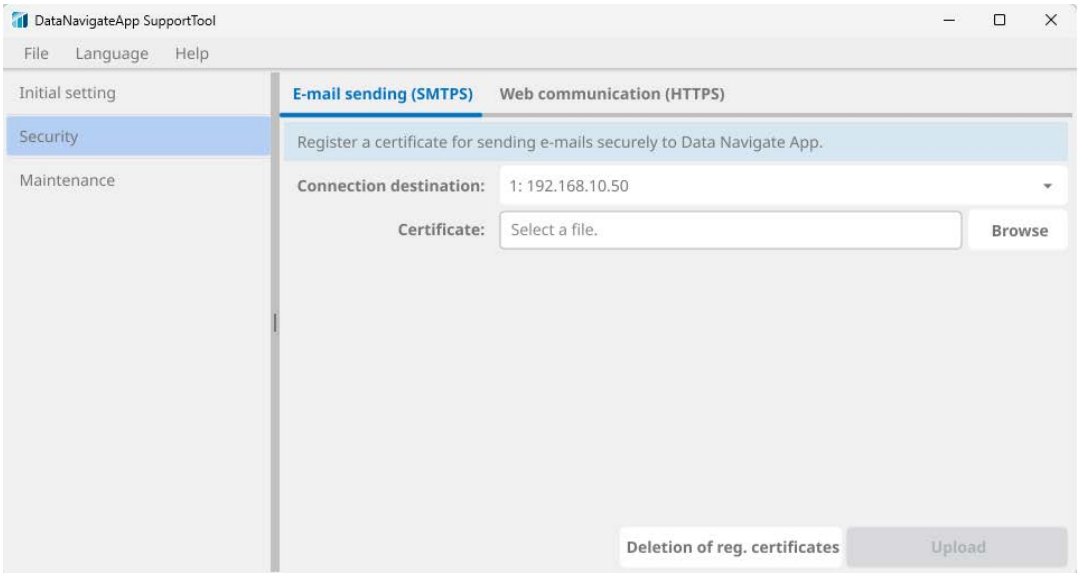
To use various encrypted communications, the required certificates must be written to the C intelligent function module.

6.2.1. E-mail sending (SMTP)

The following shows the steps for writing the certificate required for encrypted communication of e-mail sending.

1. Open the [E-mail sending (SMTPS)] tab in the [Security] window.
2. For [Connection destination], select the IP address of the C intelligent function module that will use encrypted communication.

   * When accessing DataNavigateApp using the NAT/NAPT function of the router, select the IP address (external IP address) of the router to be used.
3. Select the storage destination of the required certificate for [Certificate].
4. Click the [Upload] button.



⚠CAUTION

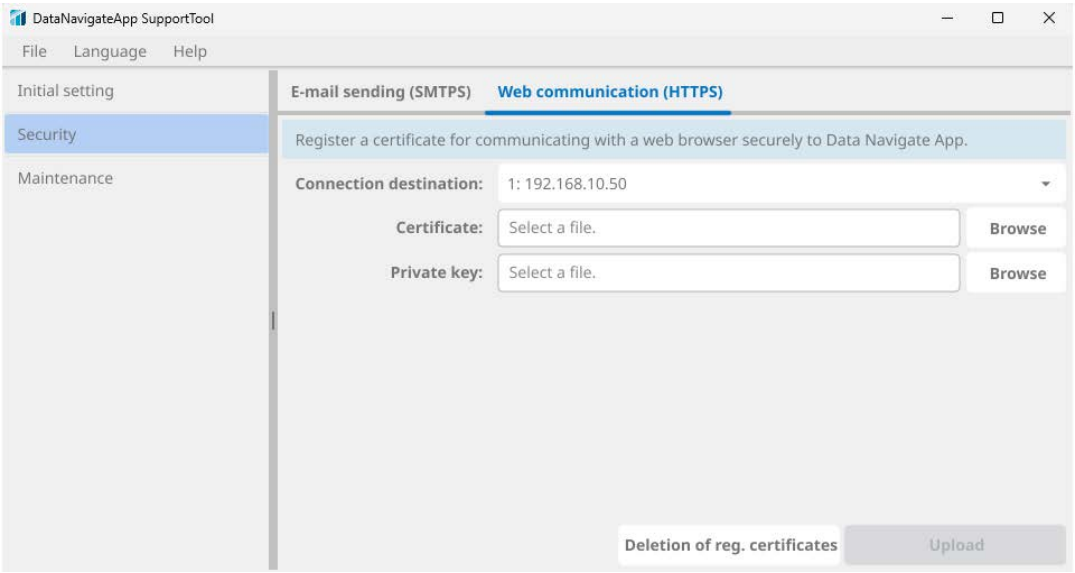
With the "Deletion of registered certificates" button, the registered certificates can be deleted.
Even after the certificates are deleted, encrypted communication may still be available depending on the specifications and settings of the mail server.

6.2.2. Web communication (HTTPS)

The following shows the steps for writing the certificate required for encrypted web communication.

1. Open the [Web communication (HTTPS)] tab in the [Security] window.
2. For [Connection destination], select the IP address of the C intelligent function module that will use encrypted communication.

   * When accessing DataNavigateApp using the NAT/NAPT function of the router, select the IP address (external IP address) of the router to be used.
3. Select the storage destination of the required certificate for [Certificate].
4. Select the storage destination of the required private key for [Private key].
5. Click the [Upload] button.



⚠CAUTION

The method for accessing Data Navigation App differs during HTTPS communication. During HTTPS communication, entering the port No. is not required.
For HTTP communication: "http://(IP address of the C intelligent function module):3000"
For HTTPS communication: "https://(IP address of the C intelligent function module)"

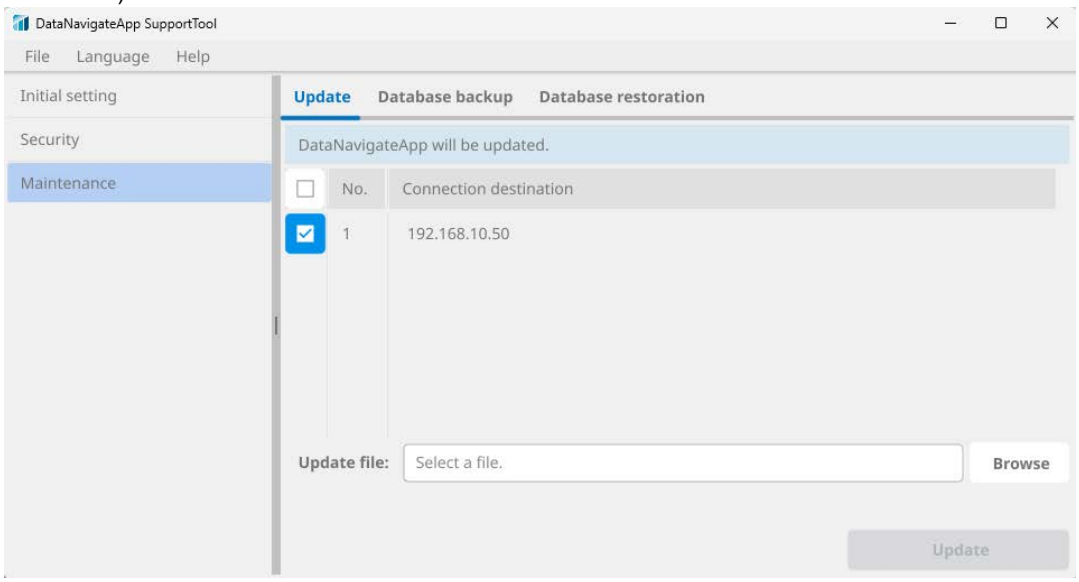
6.3. Maintenance

6.3.1. Update

The following shows the steps for updating DataNavigateApp.

1. Open the [Maintenance] window.
2. Select the target C intelligent function modules for update.

   * When accessing DataNavigateApp using the NAT/NAPT function of the router, select the IP address (external IP address) of the router to be used.



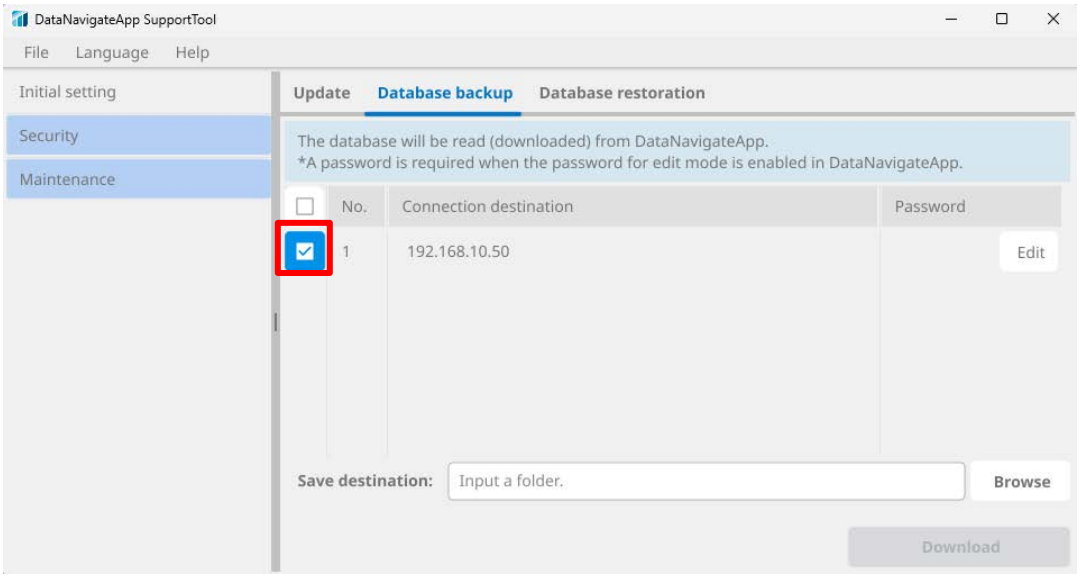
3. Select the storage destination of the update file for [Update file].
4. Click the [Update] button.

6.3.2. Database backup

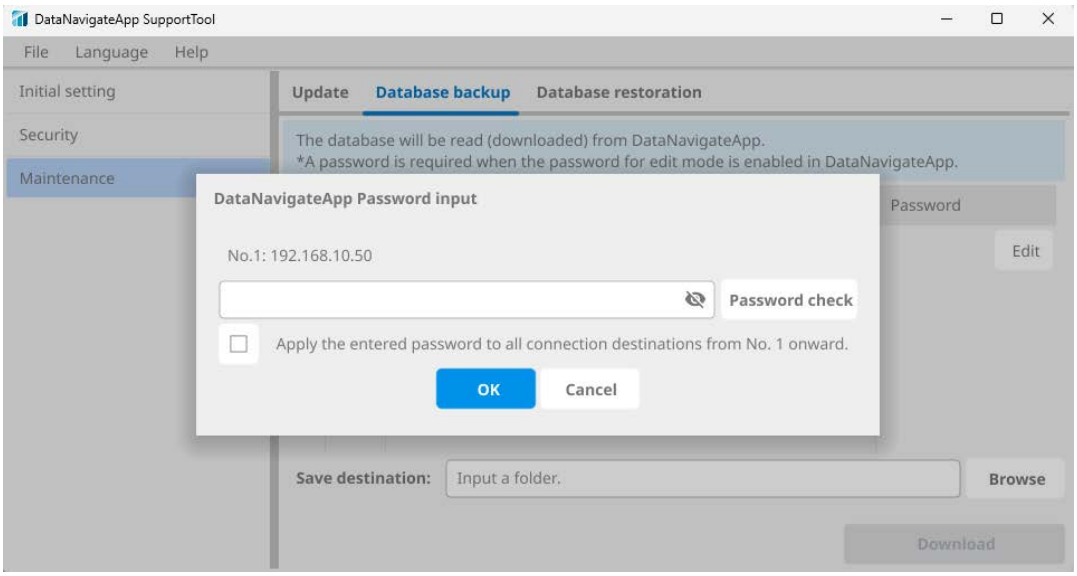
The following explains the procedure for backing up the database (DB) of DataNavigateApp to the personal computer.

1. Open the [Database backup] tab in the [Maintenance] window.
2. Select the communication destination from which the backup will be obtained.

   * When accessing DataNavigateApp using the NAT/NAPT function of the router, select the IP address (external IP address) of the router to be used.



3. When the password for edit mode is enabled, enter the password to each connection destination.



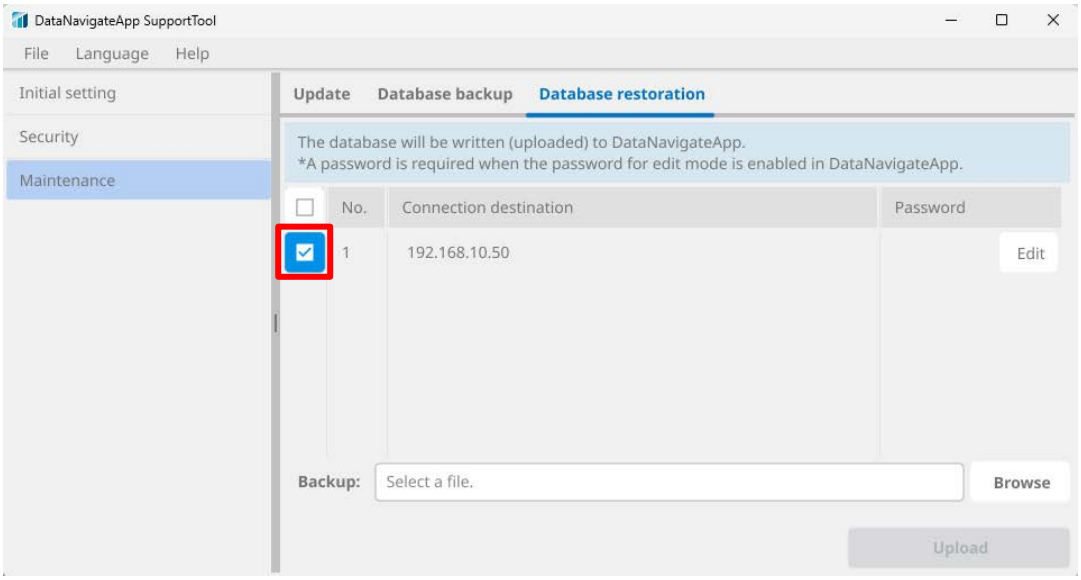
4. Set the save destination folder name for the backup data in [Save destination].
5. Click the [Download] button. The backup data is saved in pkg format.

6.3.3. Database restoration

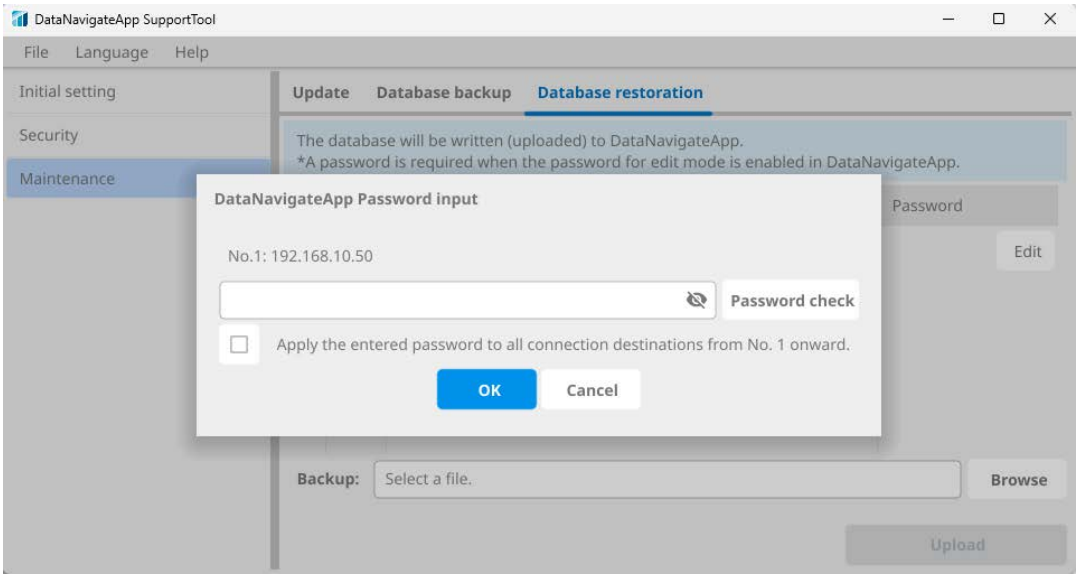
The following explains the procedure for restoring the database of DataNavigateApp to the SD card.

1. Open the [Database restoration] tab in the [Maintenance] window.
2. Select the connection destination to which the backup data will be written.

   * When accessing DataNavigateApp using the NAT/NAPT function of the router, select the IP address (external IP address) of the router to be used.



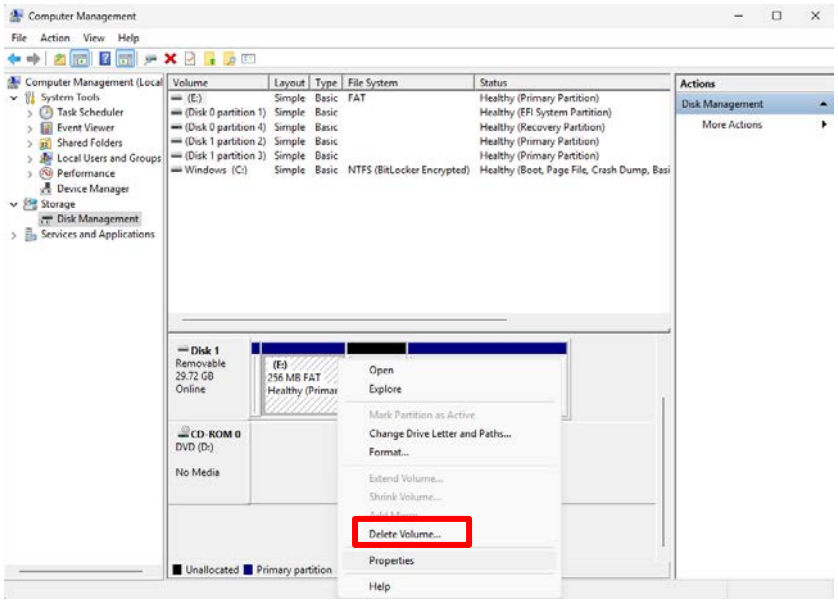
3. When the password for edit mode is enabled, enter the password to each connection destination.



4. Set the backup data to be written in [Backup].
5. Click the [Upload] button.

7. PROCEDURE FOR UNINSTALLING DataNavigateApp

1. Turn off the power and then remove the SD memory card from the C intelligent function module.
2. Insert the SD memory card into the personal computer and open Explorer.
3. Right-click [This PC] and select [Manage].
4. The [Computer Management] window will appear.
5. Select [Disk Management] under [Storage].
6. Select the partition in the SD memory card, right-click it, and execute [Delete Volume].



7. If there are multiple partitions, execute step 6 for all the partitions to set the volume of the SD memory card to the unassigned state.
8. By newly setting volume and formatting the SD memory card, data can be completely deleted.

Appendix 1 BUFFER MEMORY OUTPUT FUNCTION

Outputs a part of the information displayed on the screen of DataNavigateApp to the buffer memory in the C intelligent function module.

Appendix 1.1. Output Data List

The output targets and their usage areas are as follows:

Output target	Usage area
Common information	Un¥G17000 to Un¥G19999
Time-Based Operation Analysis	Un¥G20000 to Un¥G39999
Energy Analysis	Un¥G40000 to Un¥G79999
Alarm Analysis	Un¥G80000 to Un¥G99999

Some data types are indicated using abbreviations. The correspondences with the official names are as follows:

Abbreviation	Official name
Word	Word [unsigned]
D word	Double word [unsigned]
User	User specification

Appendix 1.1.1. Common information

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type	Remarks
17000	-	Data output time (Year)	Instantaneous value	1 minute	1	Word	Output example : 2026
17001	-	Data output time (Month)			1	Word	Output example: 2
17002	-	Data output time (Day)			1	Word	Output example: 20
17003	-	Data output time (Hour)			1	Word	Output example: 10
17004	-	Data output time (Minute)			1	Word	Output example: 5
17005	-	Data output time (Second)			1	D word	Output example: 0
17006	1	Product type currently being produced	Instantaneous value	1 minute	40	User	
17046	2	Product type currently being produced			40	User	
17086	3	Product type currently being produced			40	User	
17126	4	Product type currently being produced			40	User	
17166	5	Product type currently being produced			40	User	
17206	6	Product type currently being produced			40	User	
17246	7	Product type currently being produced			40	User	
17286	8	Product type currently being produced			40	User	
17326	9	Product type currently being produced			40	User	

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type	Remarks
17366	10	Product type currently being produced	Instantaneous value	1 minute	40	User	
17406	11	Product type currently being produced			40	User	
17446	12	Product type currently being produced			40	User	
17486	13	Product type currently being produced			40	User	
17526	14	Product type currently being produced			40	User	
17566	15	Product type currently being produced			40	User	
17606	16	Product type currently being produced			40	User	
17646	-	Spare area	-	-	2354	User	

Appendix 1.1.2. Time-based operation analysis

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type*1	Remarks
20000	1	Time-based operation rate	Total value	1 minute	2	Single precision real number	
20002	1	Load time			2	Single precision real number	
20004	1	Operating time			2	Single precision real number	
20006	1	Non-operating time			2	Single precision real number	
20008	1	Rank. 1 Non-operational factor No.			1	Word	
20009	1	Rank. 1 Number of occurrences			2	D word	
20011	1	Rank. 1 Occurrence time			2	Single precision real number	
20013	1	Rank. 1 Rate			2	Single precision real number	
20015	1	Rank. 2 Non-operational factor No.			1	Word	
20016	1	Rank. 2 Number of occurrences			2	D word	
20018	1	Rank. 2 Occurrence time			2	Single precision real number	
20020	1	Rank. 2 Rate			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
20022	1	Rank. 3 Non-operational factor No.	Total value	1 minute	1	Word	
20023	1	Rank. 3 Number of occurrences			2	D word	
20025	1	Rank. 3 Occurrence time			2	Single precision real number	
20027	1	Rank. 3 Rate			2	Single precision real number	
20029	1	Rank. 4 Non-operational factor No.			1	Word	
20030	1	Rank. 4 Number of occurrences			2	D word	
20032	1	Rank. 4 Occurrence time			2	Single precision real number	
20034	1	Rank. 4 Rate			2	Single precision real number	
20036	1	Rank. 5 Non-operational factor No.			1	Word	
20037	1	Rank. 5 Number of occurrences			2	D word	
20039	1	Rank. 5 Occurrence time			2	Single precision real number	
20041	1	Rank. 5 Rate			2	Single precision real number	
20043	1	Rank. 6 Non-operational factor No.			1	Word	
20044	1	Rank. 6 Number of occurrences			2	D word	

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
20046	1	Rank. 6 Occurrence time	Total value	1 minute	2	Single precision real number	
20048	1	Rank. 6 Rate			2	Single precision real number	
20050	1	Rank. 7 Non-operational factor No.			1	Word	
20051	1	Rank. 7 Number of occurrences			2	D word	
20053	1	Rank. 7 Occurrence time			2	Single precision real number	
20055	1	Rank. 7 Rate			2	Single precision real number	
20057	1	Rank. 8 Non-operational factor No.			1	Word	
20058	1	Rank. 8 Number of occurrences			2	D word	
20060	1	Rank. 8 Occurrence time			2	Single precision real number	
20062	1	Rank. 8 Rate			2	Single precision real number	
20064	1	Rank. 9 Non-operational factor No.			1	Word	
20065	1	Rank. 9 Number of occurrences			2	D word	
20067	1	Rank. 9 Occurrence time			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
20069	1	Rank. 9 Rate	Total value	1 minute	2	Single precision real number	
20071	1	Rank. 10 Non-operational factor No.			1	Word	
20072	1	Rank. 10 Number of occurrences			2	D word	
20074	1	Rank. 10 Occurrence time			2	Single precision real number	
20076	1	Rank. 10 Rate			2	Single precision real number	
20078	1	(Others) Number of occurrences			2	D word	
20080	1	(Others) Occurrence time			2	Single precision real number	
20082	1	(Others) Rate			2	Single precision real number	
20084	1	System reserved area	-	-	416	-	
20500	2	Equipment 2 information	-	-	500	-	The data structure is the same as equipment 1.
21000	3	Equipment 3 information			500		
21500	4	Equipment 4 information			500		
22000	5	Equipment 5 information			500		
22500	6	Equipment 6 information			500		
23000	7	Equipment 7 information			500		

Start address	Equipment No.	Storage data	Instantaneous value/ total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
23500	8	Equipment 8 information			500		
24000	9	Equipment 9 information			500		
24500	10	Equipment 10 information			500		
25000	11	Equipment 11 information			500		
25500	12	Equipment 12 information			500		
26000	13	Equipment 13 information			500		
26500	14	Equipment 14 information			500		
27000	15	Equipment 15 information			500		
27500	16	Equipment 16 information			500		
28000	-	Spare area	-	-	12000	-	

Appendix 1.1.3. Energy analysis

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
40000	1	Production quantity	Total value	5 minute	2	D word	
40002	1	CO2 emissions			2	Single precision real number	
40004	1	Cost			2	Single precision real number	
40006	1	CO2 intensity			2	Single precision real number	
40008	1	Cost intensity			2	Single precision real number	
40010	1	Energy 1 Consumption			2	Single precision real number	
40012	1	Energy 1 CO2 emissions			2	Single precision real number	
40014	1	Energy 1 Cost			2	Single precision real number	
40016	1	Energy 1 Energy intensity			2	Single precision real number	
40018	1	Energy 1 CO2 intensity			2	Single precision real number	
40020	1	Energy 1 Cost intensity			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
40022	1	Energy 2 Consumption	Total value	5 minute	2	Single precision real number	
40024	1	Energy 2 CO2 emissions			2	Single precision real number	
40026	1	Energy 2 Cost			2	Single precision real number	
40028	1	Energy 2 Energy intensity			2	Single precision real number	
40030	1	Energy 2 CO2 intensity			2	Single precision real number	
40032	1	Energy 2 Cost intensity			2	Single precision real number	
40034	1	Energy 3 Consumption			2	Single precision real number	
40036	1	Energy 3 CO2 emissions			2	Single precision real number	
40038	1	Energy 3 Cost			2	Single precision real number	
40040	1	Energy 3 Energy intensity			2	Single precision real number	
40042	1	Energy 3 CO2 intensity			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
40044	1	Energy 3 Cost intensity	Total value	5 minute	2	Single precision real number	
40046	1	Energy 4 Consumption			2	Single precision real number	
40048	1	Energy 4 CO2 emissions			2	Single precision real number	
40050	1	Energy 4 Cost			2	Single precision real number	
40052	1	Energy 4 Energy intensity			2	Single precision real number	
40054	1	Energy 4 CO2 intensity			2	Single precision real number	
40056	1	Energy 4 Cost intensity			2	Single precision real number	
40058	1	Energy 5 Consumption			2	Single precision real number	
40060	1	Energy 5 CO2 emissions			2	Single precision real number	
40062	1	Energy 5 Cost			2	Single precision real number	
40064	1	Energy 5 Energy intensity			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
40066	1	Energy 5 CO2 intensity	Total value	5 minute	2	Single precision real number	
40068	1	Energy 5 Cost intensity			2	Single precision real number	
40070	1	Energy 6 Consumption			2	Single precision real number	
40072	1	Energy 6 CO2 emissions			2	Single precision real number	
40074	1	Energy 6 Cost			2	Single precision real number	
40076	1	Energy 6 Energy intensity			2	Single precision real number	
40078	1	Energy 6 CO2 intensity			2	Single precision real number	
40080	1	Energy 6 Cost intensity			2	Single precision real number	
40082	1	Energy 7 Consumption			2	Single precision real number	
40084	1	Energy 7 CO2 emissions			2	Single precision real number	
40086	1	Energy 7 Cost			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
40088	1	Energy 7 Energy intensity	Total value	5 minute	2	Single precision real number	
40090	1	Energy 7 CO2 intensity			2	Single precision real number	
40092	1	Energy 7 Cost intensity			2	Single precision real number	
40094	1	Energy 8 Consumption			2	Single precision real number	
40096	1	Energy 8 CO2 emissions			2	Single precision real number	
40098	1	Energy 8 Cost			2	Single precision real number	
40100	1	Energy 8 Energy intensity			2	Single precision real number	
40102	1	Energy 8 CO2 intensity			2	Single precision real number	
40104	1	Energy 8 Cost intensity			2	Single precision real number	
40106	1	Energy 9 Consumption			2	Single precision real number	
40108	1	Energy 9 CO2 emissions			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
40110	1	Energy 9 Cost	Total value	5 minute	2	Single precision real number	
40112	1	Energy 9 Energy intensity			2	Single precision real number	
40114	1	Energy 9 CO2 intensity			2	Single precision real number	
40116	1	Energy 9 Cost intensity			2	Single precision real number	
40118	1	Energy 10 Consumption			2	Single precision real number	
40120	1	Energy 10 CO2 emissions			2	Single precision real number	
40122	1	Energy 10 Cost			2	Single precision real number	
40124	1	Energy 10 Energy intensity			2	Single precision real number	
40126	1	Energy 10 CO2 intensity			2	Single precision real number	
40128	1	Energy 10 Cost intensity			2	Single precision real number	
40130	1	System reserved area	-	-	870	-	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
41000	2	Equipment 2 information	-	-	1000	-	The data structure is the same as equipment 1.
42000	3	Equipment 3 information			1000		
43000	4	Equipment 4 information			1000		
44000	5	Equipment 5 information			1000		
45000	6	Equipment 6 information			1000		
46000	7	Equipment 7 information			1000		
47000	8	Equipment 8 information			1000		
48000	9	Equipment 9 information	-	-	1000	-	The data structure is the same as equipment 1.
49000	10	Equipment 10 information			1000		
50000	11	Equipment 11 information			1000		
51000	12	Equipment 12 information			1000		
52000	13	Equipment 13 information			1000		
53000	14	Equipment 14 information			1000		
54000	15	Equipment 15 information			1000		
55000	16	Equipment 16 information			1000		
56000	-	Spare area	-	-	24000	-	

Appendix 1.1.4. Alarm analysis

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
80000	1	Rank. 1 Alarm No.	Total value	1 minute	2	D word	
80002	1	Rank. 1 Number of occurrences			2	D word	
80004	1	Rank. 1 Waiting time			2	Single precision real number	
80006	1	Rank. 1 Recovery time			2	Single precision real number	
80008	1	Rank. 1 Rate			2	Single precision real number	
80010	1	Rank. 2 Alarm No.			2	D word	
80012	1	Rank. 2 Number of occurrences			2	D word	
80014	1	Rank. 2 Waiting time			2	Single precision real number	
80016	1	Rank. 2 Recovery time			2	Single precision real number	
80018	1	Rank. 2 Rate			2	Single precision real number	
80020	1	Rank. 3 Alarm No.			2	D word	
80022	1	Rank. 3 Number of occurrences			2	D word	
80024	1	Rank. 3 Waiting time			2	Single precision real number	
80026	1	Rank. 3 Recovery time			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
80028	1	Rank. 3 Rate	Total value	1 minute	2	Single precision real number	
80030	1	Rank. 4 Alarm No.			2	D word	
80032	1	Rank. 4 Number of occurrences			2	D word	
80034	1	Rank. 4 Waiting time			2	Single precision real number	
80036	1	Rank. 4 Recovery time			2	Single precision real number	
80038	1	Rank. 4 Rate			2	Single precision real number	
80040	1	Rank. 5 Alarm No.			2	D word	
80042	1	Rank. 5 Number of occurrences			2	D word	
80044	1	Rank. 5 Waiting time			2	Single precision real number	
80046	1	Rank. 5 Recovery time			2	Single precision real number	
80048	1	Rank. 5 Rate			2	Single precision real number	
80050	1	Rank. 6 Alarm No.			2	D word	
80052	1	Rank. 6 Number of occurrences			2	D word	
80054	1	Rank. 6 Waiting time			2	Single precision real number	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
80056	1	Rank. 6 Recovery time	Total value	1 minute	2	Single precision real number	
80058	1	Rank. 6 Rate			2	Single precision real number	
80060	1	Rank. 7 Alarm No.			2	D word	
80062	1	Rank. 7 Number of occurrences			2	D word	
80064	1	Rank. 7 Waiting time			2	Single precision real number	
80066	1	Rank. 7 Recovery time			2	Single precision real number	
80068	1	Rank. 7 Rate			2	Single precision real number	
80070	1	Rank. 8 Alarm No.			2	D word	
80072	1	Rank. 8 Number of occurrences			2	D word	
80074	1	Rank. 8 Waiting time			2	Single precision real number	
80076	1	Rank. 8 Recovery time			2	Single precision real number	
80078	1	Rank. 8 Rate			2	Single precision real number	
80080	1	Rank. 9 Alarm No.			2	D word	
80082	1	Rank. 9 Number of occurrences			2	D word	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type*1	Remarks
80084	1	Rank. 9 Waiting time	Total value	1 minute	2	Single precision real number	
80086	1	Rank. 9 Recovery time			2	Single precision real number	
80088	1	Rank. 9 Rate			2	Single precision real number	
80090	1	Rank. 10 Alarm No.			2	D word	
80092	1	Rank. 10 Number of occurrences			2	D word	
80094	1	Rank. 10 Waiting time			2	Single precision real number	
80096	1	Rank. 10 Recovery time			2	Single precision real number	
80098	1	Rank. 10 Rate			2	Single precision real number	
80100	1	Other Number of occurrences			2	D word	
80102	1	Other Waiting time			2	Single precision real number	
80104	1	Other Recovery time			2	Single precision real number	
80106	1	Other Rate			2	Single precision real number	
80108	1	System reserved area	-	-	392	-	

Start address	Equipment No.	Storage data	Instantaneous value/ Total value	Update cycle	Number of occupied words	Data type[*1]	Remarks
80500	2	Equipment 2 information	-	-	500	-	The data structure is the same as equipment 1.
81000	3	Equipment 3 information			500		
81500	4	Equipment 4 information			500		
82000	5	Equipment 5 information			500		
82500	6	Equipment 6 information			500		
83000	7	Equipment 7 information			500		
83500	8	Equipment 8 information			500		
84000	9	Equipment 9 information			500		
84500	10	Equipment 10 information			500		
85000	11	Equipment 11 information			500		
85500	12	Equipment 12 information			500		
86000	13	Equipment 13 information			500		
86500	14	Equipment 14 information			500		
87000	15	Equipment 15 information			500		
87500	16	Equipment 16 information			500		
88000	-	Spare area	-	-	12000	-	-

REVISIONS

Revision date	No.	Description
October 2025	BCN-89999-9913-A	First edition
December 2025	BCN-89999-9913-B	Corrected
May 2026	BCN-89999-9913-C	An item has been added to precautions (PRECAUTIONS FOR USING DataNavigateApp). A table for SD memory cards that have been verified to operate correctly has been added (Section 2.1). The maximum number of monitored equipment has been increased (Chapter 3). Types of collectable devices have been added (Chapter 3). The data output function has been added (Chapter 3, App. 1). The shutdown trigger assignment function have been added (Chapter 5). The database backup and database restoration functions have been added (Section 6.3.2, 6.3.3). Descriptions for connecting using the NAT/NAPT function of the router have been modified (Section 4.4). The procedure for configuring the communication setting of the support tool has been modified (Section 6.1.2). Corrected

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