Flex Signal Instruction Manual

Ver. 5.1

Introduction

Thank you for purchasing Flex Signal. This document describes how to use Flex Signal.

Flex Signal is a package specially designed to wirelessly monitor the operating status of the PATLITE WD(*1) series (wireless communication model). Flex Signal allows you to monitor and manage the on or flash state of the signal lamp or the production volume in the web browser anytime, anywhere(*2).

(*1) For details on the WD series, contact PATLITE Corporation.

(*2) The signal lamps can be monitored and managed in any environment where you can communicate with the Flex Signal PC through a network.

Revision History

Ver.	Date	System version	Revision details
1.0	Feb. 24, 2014	1.0.0	First edition
1.1	Oct. 17, 2014	1.2.0	Improved the batch signal lamp setup function. Added the monitoring time display function. Added the function to share settings among multiple management groups.
1.2	Dec. 19, 2014	1.2.1	Improved the help function.
1.3	Jan. 22, 2015	1.2.1	Improved the help function.
2.0	Sep. 18, 2015	2.0.0	Added terms. Improved how the home page is accessed, menu, display mode, monitor, options, and other items. Added the operating state monitor, event notification settings, and license function.
2.1	Jul. 7, 2016	2.1.3	Added a description about downloaded CSV data.
3.0	Sep. 30, 2016	3.0.0	Improved the operation history, monthly report, operating state monitor, options, and other items. Added the general monitor, chart list, Gantt chart list, and batch download function. Abolished monitor size selection.
4.0	May 24, 2017	4.0.0	Added Chinese language support. Changed how to display the menu. Added the performance function. Added the signal lamp display settings on the monitor. Added the function to select "Display color" in "Component color." Added average time and percentage to signal lamp information. Added a description about the "All off" setting.
5.0	May 31, 2018	5.0.0	Added the group setup function. Added the shift function. Added the daily report automatic output function. Modified the single device screen. Modified basic event settings. Added the function to specify the number of defective products. Modified the calendar date selection.
5.1	Jun. 7, 2018	5.0.1	Changed the term "common group settings" to "signal lamp settings." Modified the menu, operation history monitor, monthly report monitor, operating state monitor, operation analysis monitor, batch signal lamp settings, individual signal lamp settings, and basic event settings.

Table of Contents

1. Screen Description

1-1. Terminology

This section introduces the terms related to this system. These terms are used for description purposes in this manual.

(1) Site IP address

IP address of the PC where Flex Signal is installed

(2) Start time (origin time)

Time at which a day starts. The initial setting is 00:00. How a day is managed depends on whether the specified time is before or after noon. If you specify 09:00, a day starts at 9:00 and ends at 8:59 on the following day. If you specify 21:00, a day starts at 21:00 on the previous day and ends at 20:59.

(3) Elapsed time

Time elapsed from the start time (origin time). Unless otherwise specified, this is the elapsed time on the current day.

(4) Identification ID

16 digits that indicate the MAC address of the signal lamp. (If the MAC address consists of less than 16 digits, preceding zeros are added.) The MAC address uniquely identifies the signal lamp.

(5) Off

Refers to the state where only the specified color of the signal lamp is off.

(6) Operation light

Component color pattern of the signal lamp that indicates operation

(7) Alarm light

Component pattern of the signal lamp that indicates an error (stop)

(8) Count function

Whether to use the signal lamp count function. If you use all the colors of the signal lamp for the on or flash state, this function cannot be used. You can specify whether to use this function for each signal lamp.

(9) Monitoring time

Time during which the signal lamp was monitored. Normally, this time is the same as the elapsed time. However, the monitoring time does not include the time during which there is a failure in the communication required for monitoring signal lamps. If a communication failure occurs, the following is possible. A signal lamp that is always on or flash can be used to determine the monitoring time.

[Communication failures of signal lamps]

- The signal lamp is off.

- The signal lamp cannot communicate with the receiver.

- The main PC cannot communicate with the receiver.

- The main PC is off.

(10) Operating time

Of the monitoring time, the total amount of time during which the operation lamp is on. This item is not displayed for signal lamps for which the operation lamp is not set.

(11) Operation rate

Proportion of the operating time to the monitoring time as a percentage. Unless otherwise specified, this is the operation rate on the current day. This item is not displayed for signal lamps for which the operation lamp is not set.

(12) Operation grading value

Three star grading with reference to the target operation rate

(13) Operation evaluation

Three star grading result of the operation rate. There are four grades (☆☆☆, ★☆☆, ★★☆, ★★★). They indicate the position of the operation rate in comparison with the criterion of each level. Unless otherwise specified, this is the operation evaluation on the current day. This item is not displayed for signal lamps for which the operation lamp is not set.

[Operation evaluation example]

When the following grades are used: ★☆☆: 60.0%, ★★☆: 70.0%, ★★★: 80.0%

When the operation rate is 50.0%, ☆☆☆ is displayed.

When the operation rate is 75.2%, ★★☆ is displayed.

When the operation rate is 83.0%, ★★★ is displayed.

(14) Number of Production

Number counted for the signal lamp. Unless otherwise specified, this is the production volume on the current day. This item is not displayed for signal lamps for which the count function is not used.

(15) Production grading value

Three star grading with reference to the target production volume

(16) Production target

Target production volume per day. Unless otherwise specified, this is the target production volume on the current day.

(17) Production rate

Proportion of the production volume to the target production volume per day as a percentage. This is the index of the production achievement level per day. Unless otherwise specified, this is the production achievement rate on the current day. This item is not displayed for signal lamps for which the count function is not used.

(18) Production tact time

Average operating time to produce one product (calculated by dividing the operating time by the production volume). This is the index of the production efficiency. This item is not displayed for signal lamps for which the count function is not used.

(19) Production evaluation

Three star grading result of the production achievement rate. There are four grades (☆☆☆, ★☆☆, ★★☆, ★★★). They indicate the position of the production achievement rate in comparison with the criterion of each level. Unless otherwise specified, this is the production evaluation on the current day. This item is not displayed for signal lamps for which the count function is not used.

[Production evaluation example]

When the following grades are used: ★☆☆: 50.0%, ★★☆: 65.0%, ★★★: 80.0%

When the production achievement rate is 45.0%, ☆☆☆ is displayed.

When the production achievement rate is 50.0%, ★☆☆ is displayed.

When the production achievement rate is 83.0%, ★★★ is displayed.

(20) Alarm time

Of the monitoring time, the total amount of time during which the error lamp (stop lamp) is on. This item is not displayed for signal lamps for which the error lamp (stop lamp) is not set.

(21) Alarm rate

Proportion of the abnormal time to the monitoring time as a percentage. Unless otherwise specified, this is the error rate on the current day. This item is not displayed for signal lamps for which the error lamp (stop lamp) is not set.

(22) Alarm count

Number of error occurrences. This indicates how many times the status indicated by the error lamp (stop lamp) occurs. Unless otherwise specified, this is the error count on the current day. This item is not displayed for signal lamps for which the error lamp (stop lamp) is not set.

(23) Defective products

Number of defective products in the production volume

(24) Good products

Number calculated by subtracting the number of defective products from the production volume. If the number of defective products is not specified, this number is the same as the production volume.

(25) Theoretical output

Scheduled production volume calculated from the monitoring time. This volume is calculated by using the reference cycle time for each piece of equipment (dividing the monitoring time (s) by the reference cycle time). This item is not displayed for signal lamps for which the reference cycle time is not set. This item is not displayed for signal lamps for which the count function is not used.

(26) Invalid characters

* ; & " ' $ # @ \ < >

These characters cannot be entered on the screen.

1-2. Accessing the home page

The address of the home page of Flex Signal is as shown below. Specify the following address in the web browser (such as Internet Explorer) to access the dashboard. When you successfully access the page, the screen described in "1-5(1). General monitor" appears.

http://[Site IP address]/FS

* If the home page does not appear like it should, check that the network settings for the main PC are correct.
* Flex Signal cannot be used with PATLITE WDS-AUTO2. Exit WDS-AUTO2 before using Flex Signal.

1-3. Menu

The menu available on every screen is displayed at the top of the screen. You can go to each screen from this menu.

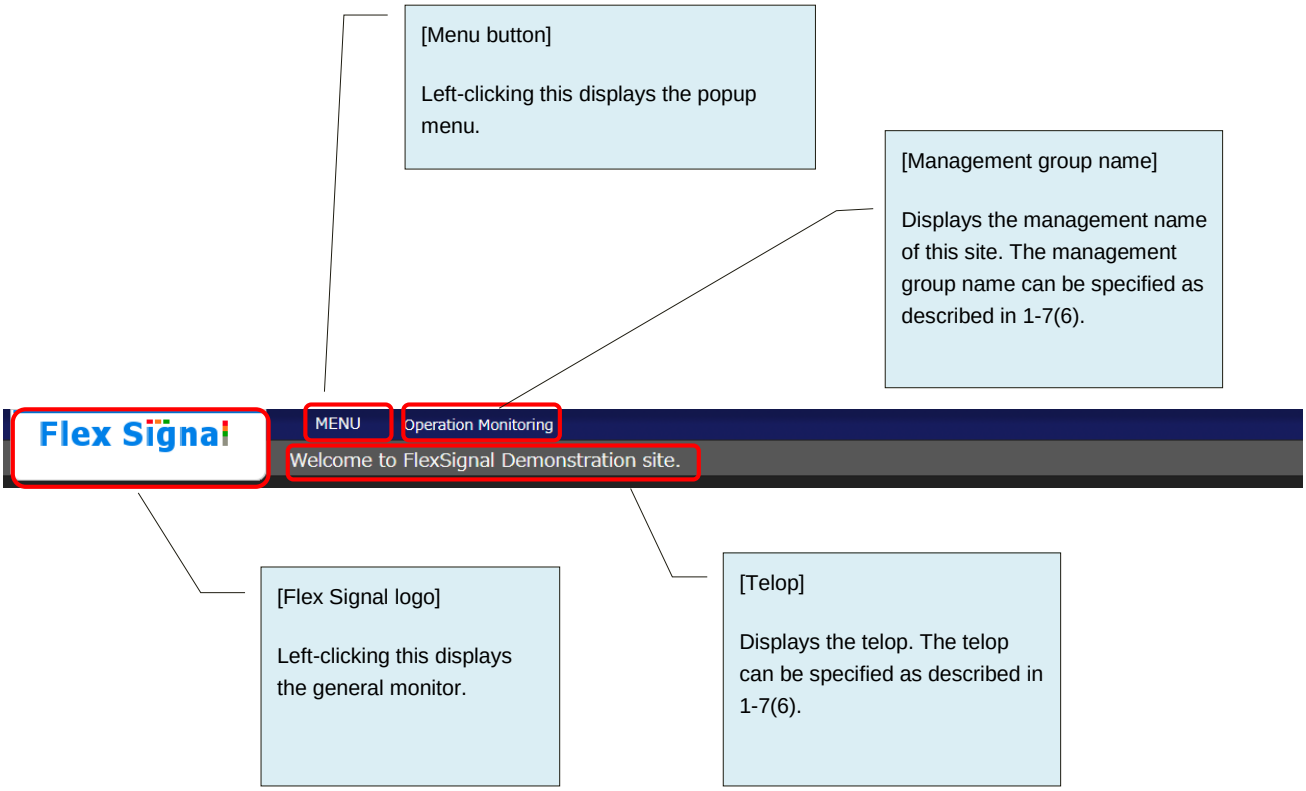


Figure 1: Top of the screen

Click each icon to go to the predetermined page.

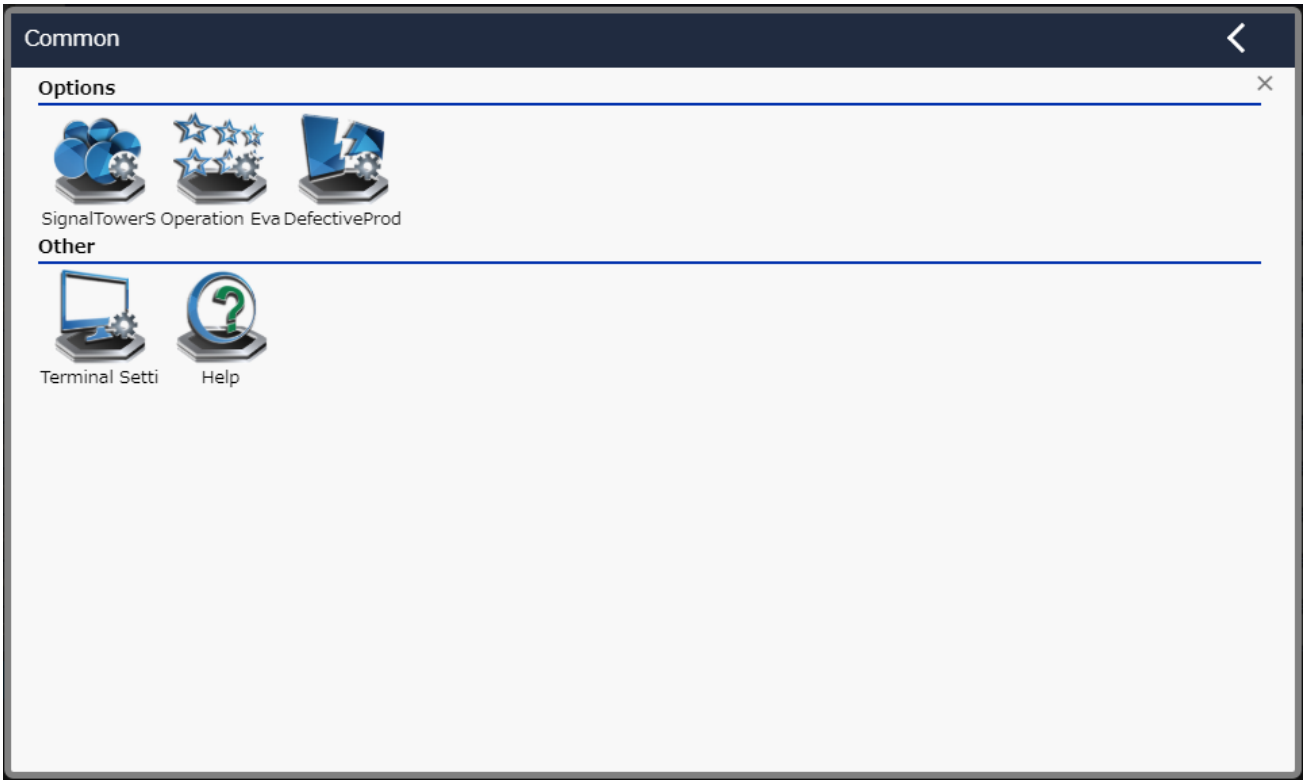


Figure 2: Common menu screen

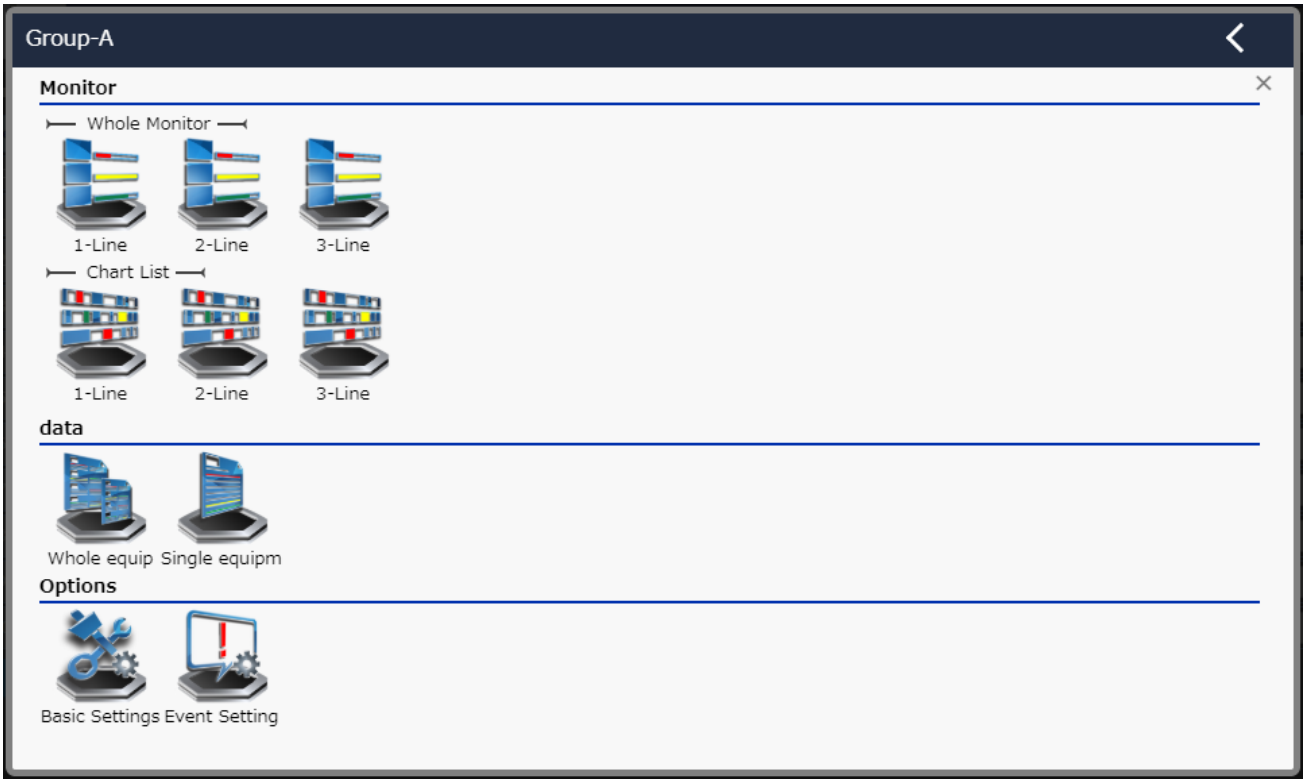


Figure 3: Menu screen for each group

Table 1: Description of the menu

No.	Item		Description
1	Group name	-	You can select the group to be displayed. Clicking a group name displays the group list as shown below. 
2	Monitor	Whole monitor submenu	You can go to the predetermined general monitor from each submenu.
3	Monitor	Chart list submenu	You can go to the predetermined chart list from each submenu.
4	Data	Whole equipment	You can go to the Gantt chart list monitor.
5	Data	Single equipment	You can go to the single device - operation history monitor.
6	Options	Signal tower settings	You can go to the signal lamp settings screen.
7	Options	Basic settings	You can go to the basic settings screen.
8	Options	Operation evaluation settings	You can go to the operation evaluation settings screen.
9	Options	Event settings	You can go to the event settings screen.
10	Options	Defective product settings	You can go to the defective product settings screen.
11	Other	Terminal settings	You can go to the terminal settings screen.
12	Other	Help	You can go to the help screen.

1-4. Display mode

You can select the screen theme to adjust the screen appearance.

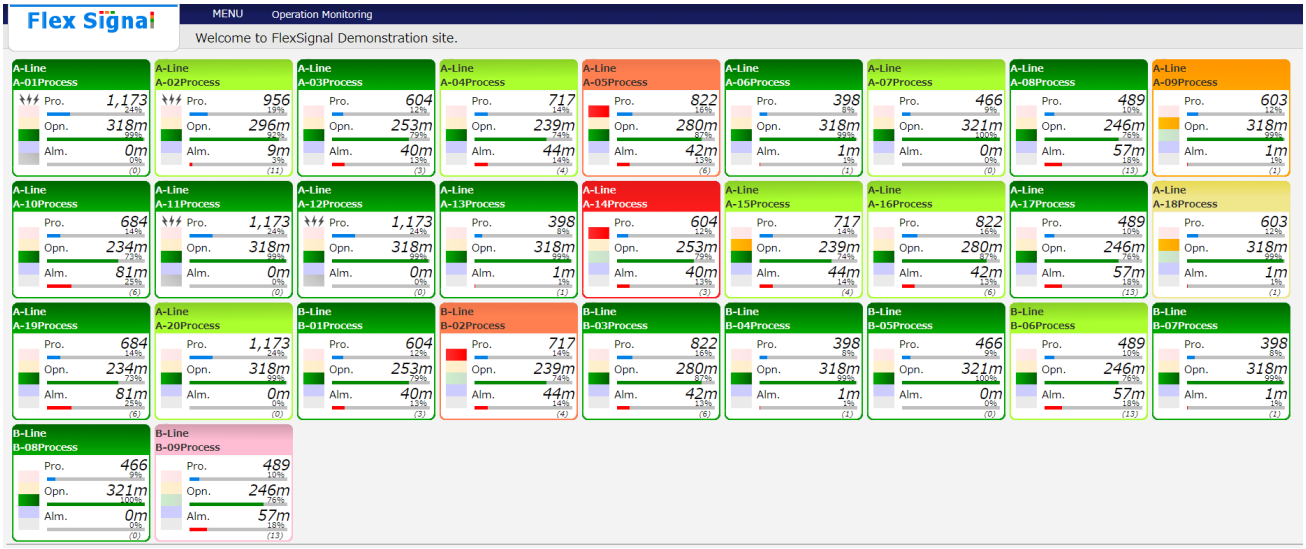
[Theme]

You can select from the following options to switch the base color:

- White: White-based theme
- Black (default): Black-based theme

* The signal lamp statuses are automatically placed according to the monitor size.

[Example 1] Theme: White, Monitor size: 1920 (W) x 1080 (H)



[Example 2] Theme: Black, Monitor size: 1280 (W) x 1024 (H)

1-5. Monitor

(1) Whole monitor

You can check the current operating states of the signal lamps in real time.

Figure 1: Whole monitor

Table 1: Description of the Whole monitor

No.	Item		Description
1	Signal light status	-	Displays the current status of the signal lamp in real time. (The actual on or flash state of the signal lamp may be displayed with a delay (after several seconds to one minute) depending on the communication environment.) The border line color is the display color selected for each component color. Click the signal lamp status to display the operation history monitor of each signal lamp.
2	Signal light status	Signal tower name	Displays the signal lamp name. The signal lamp name can be specified as described in "1−7 (4) Group settings - Individual signal light settings."
3	Signal light status	Current statuses of the buzzer and the red, yellow, green, blue and white lights	Displays the status of the buzzer and the on, flash or off status of the red, yellow, green, blue and white lamps in real time. Whether or not to display the buzzer, the number of displayed tiers and the color of each displayed tier can be specified as described in "1−7 (4) Group settings - Individual signal light settings." * Not displayed when the zoom display is set.
4	Signal light status	Monitor items	* Not displayed when the zoom display is set. - Display for one day Displays the display items in real time. The display items can be specified as described in "1−7 (4) Group settings - Individual signal light settings." - Display per shift Displays the numerical value for the shift that includes the current time. If the current time is not included in any shift time, the items are not displayed. The display items can be specified as described in "1−7 (4) Group settings - Individual signal light settings."
5	Signal light status When the zoom display is set	-	The display color for each component color is displayed across the area enclosed by the border line. The component color name is displayed at the center. The component color name and the zoom setting can be specified as described in "1−7 (4) Group settings - Individual signal light settings."
6	Signal light status When the elapsed time is set	-	The time elapsed after the current status occurred is displayed under the component color name. The elapsed time setting can be specified as described in "1−7 (4) Group settings - Individual signal light settings." * Displayed only when the zoom display is set.

(2) Chart list

You can check the current and past operating states of the signal lamps.

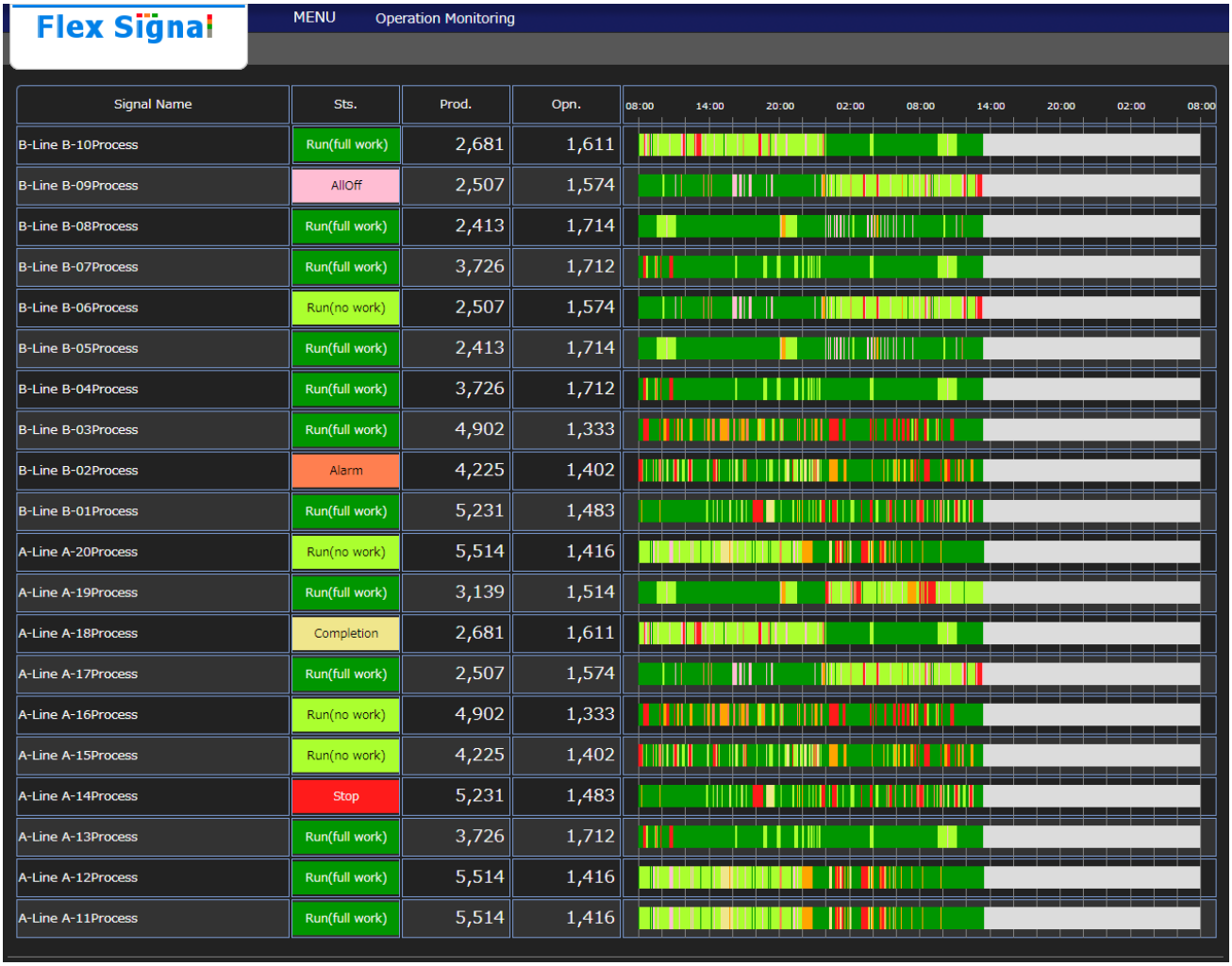


Figure 2: Chart list - Gantt chart for one day

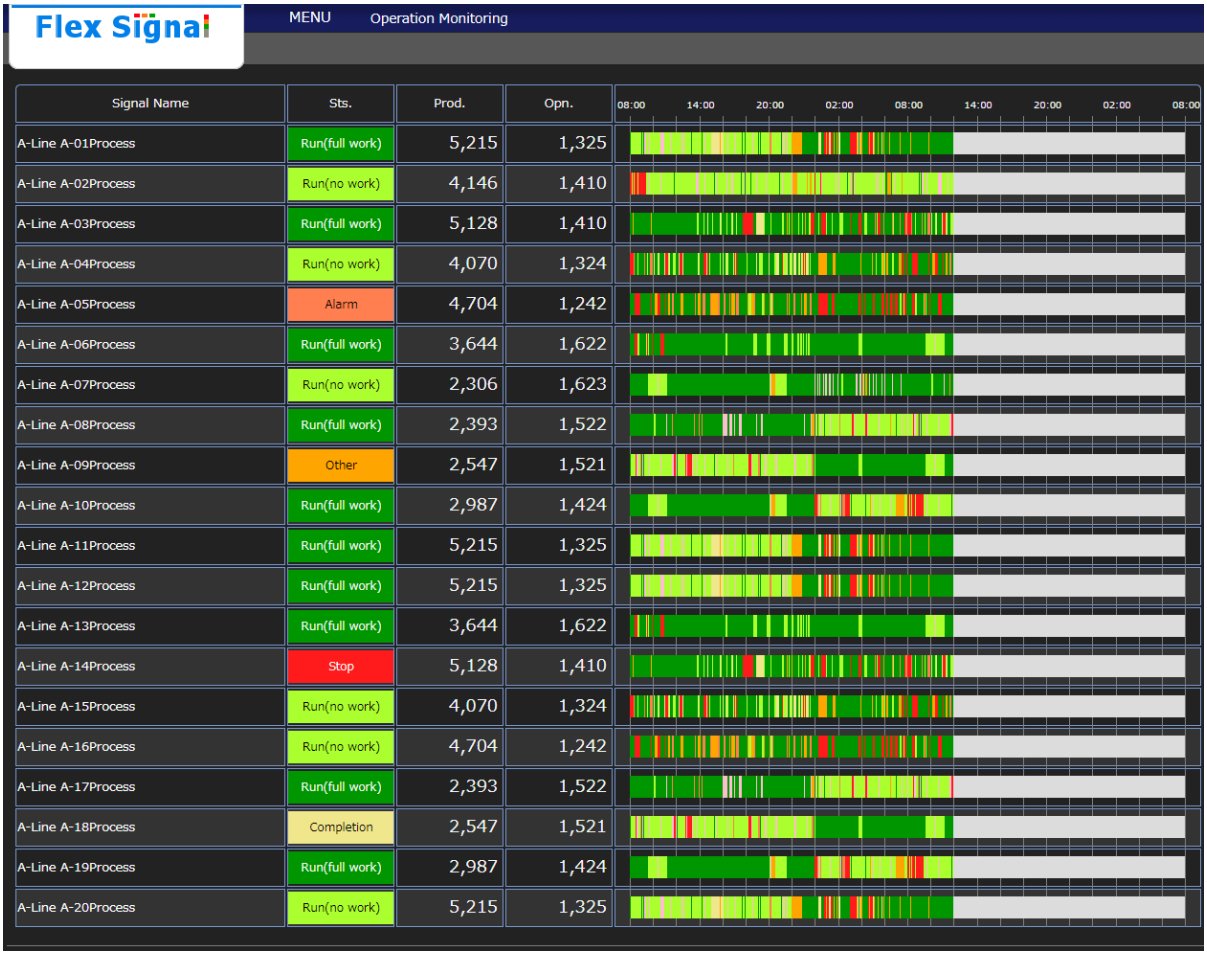


Figure 3: Chart list - Gantt chart for two days

Table 2: Description of the chart list

No.	Item	Description
1	Page Names	Displays the line name and signal lamp name of the target signal lamp. If the line name is not specified, only the signal lamp name is displayed. The line name and signal lamp name can be specified as described in "1-7 (4) Group settings - Individual signal light settings."
2	Display Settings	Displays the display items in real time. The display items can be specified as described in "1-7(8) Basic settings - Gantt chart settings."
3	Gantt Chart Range	Displays the operation chart in the Gantt chart format. The operation chart is displayed using the colors selected in "Display color" under "Component color." Display for one or two days can be specified as described in "1-7(8) Basic settings - Gantt chart settings."

1-6. Data

(1) Whole equipment - All of Gantt Chart monitor

You can view the signal lamp operation chart in list form.

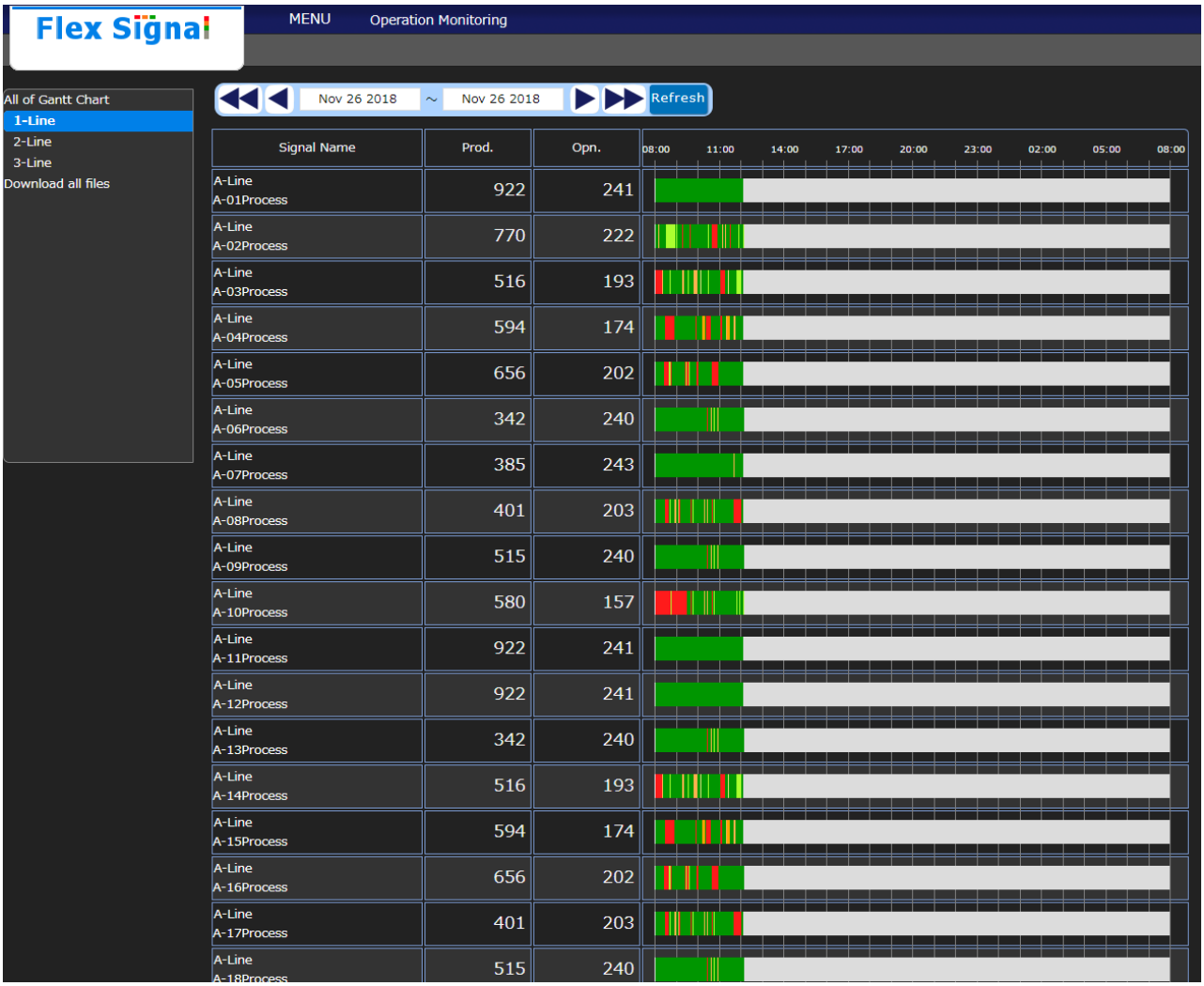
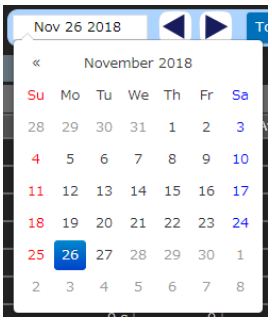


Figure 1: All of Gantt Chart monitor

Table 1: Description of the All of Gantt Chart monitor

No.	Item		Description
1	Menu	Gantt chart list	Displays the Gantt chart list monitors.
2	Menu	Download all files	Displays the batch download monitor.
3	Target day	-	Select the target year, month and day on the calendar. When you click a date, the calendar appears.  You can select up to seven days as the target period from the start day to the end day. * The next day or later cannot be selected.
4	Refresh	-	Refreshes the Gantt chart list monitor for the target days.
5	Date selection	-	Move the target year, month and day. When the start day is the same as the end day, clicking ◀◀ selects the previous day. When the start day is different from the end day, the past period that has the same number of days as the period from the start day to the end day is selected. Example: When the period is Jun. 29, 2017 to Jun. 29, 2017, clicking ◀◀ selects the period from Jun. 28, 2017 to Jun. 28, 2017. When the period is Jun. 25, 2017 to Jun. 29, 2017, clicking ◀◀ selects the period from Jun. 21, 2017 to Jun. 25, 2017. Click ◀ to select one day before the start and end days. Click ▶ to select one day after the start and end days. When the start day is the same as the end day, clicking ▶▶ selects the following day. When the start day is different from the end day, the future period that has the same number of days as the period from the start day to the end day is selected. Example: When the period is Jun. 29, 2017 to Jun. 29, 2017, clicking ▶▶ selects the

			period from Jun. 30, 2017 to Jun. 30, 2017. When the period is Jun. 21, 2017 to Jun. 25, 2017, clicking  selects the period from Jun. 25, 2017 to Jun. 29, 2017.
6	Signal name	-	Displays the line name and signal lamp name of the target signal lamp. If the line name is not specified, only the signal lamp name is displayed. The line name and signal lamp name can be specified as described in "1-7 (4) Group settings - Individual signal light settings."
7	Display items	-	Displays the display items in real time. The display items can be specified as described in "1-7(8) Basic settings - Gantt chart settings."
8	Operation chart	-	Displays the operation chart for selected dates in the Gantt chart format. The operation chart is displayed using the colors selected in "Display color" under "Component color."

(2) Whole equipment – download all files monitor

You can download signal lamp data all at once.

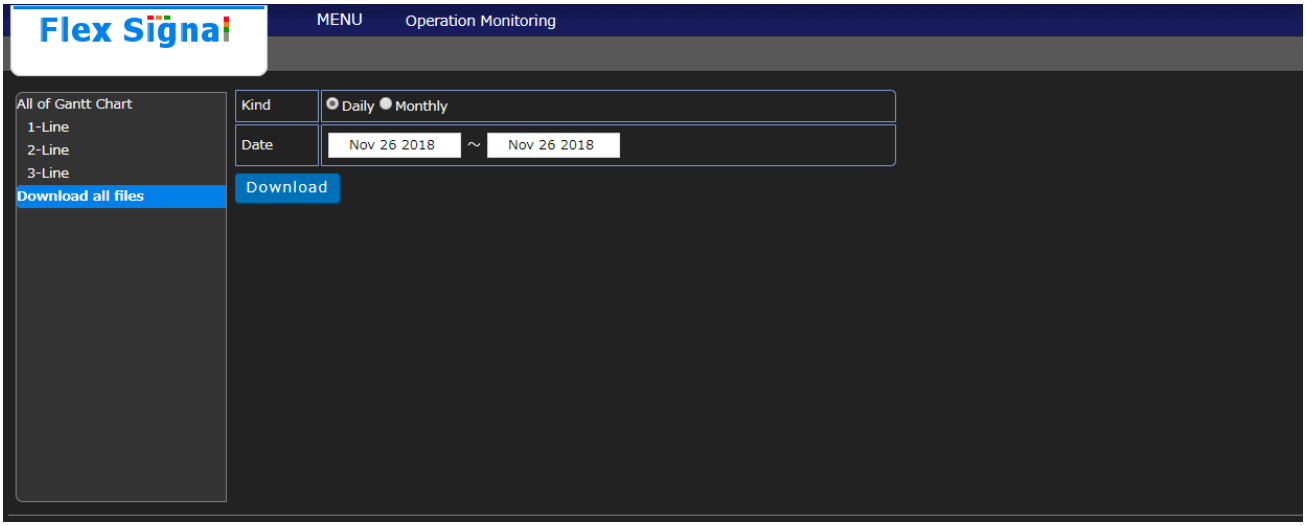
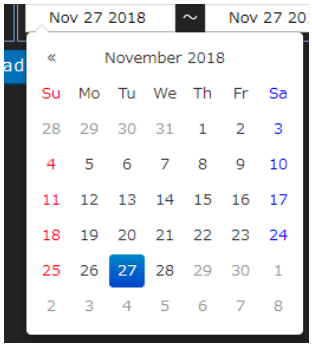


Figure 2: download all files monitor

Table 2: Description of the download all files monitor

No.	Item	Description
1	Kind selection	Select the category of data to be downloaded all at once.
2	Date selection	Select the target year, month and day on the calendar. When you click a date, the calendar appears.  When you select "Daily report" for "Category selection," you can select up to seven days as the target period from the start day to the end day.
3	Download	Starts downloading data. Data in the target category for the target period is output in the CSV format for the number of signal lamps, which is then zipped and downloaded.

(3) Single equipment - operation history monitor

You can check the operating state of a signal lamp for the whole day and per shift (statistical information, signal information and operation chart).

* If the shift time is not specified, data is not displayed per shift.

Data for the shift category in the basic settings is displayed.

Figure 4: Total - operation history monitor

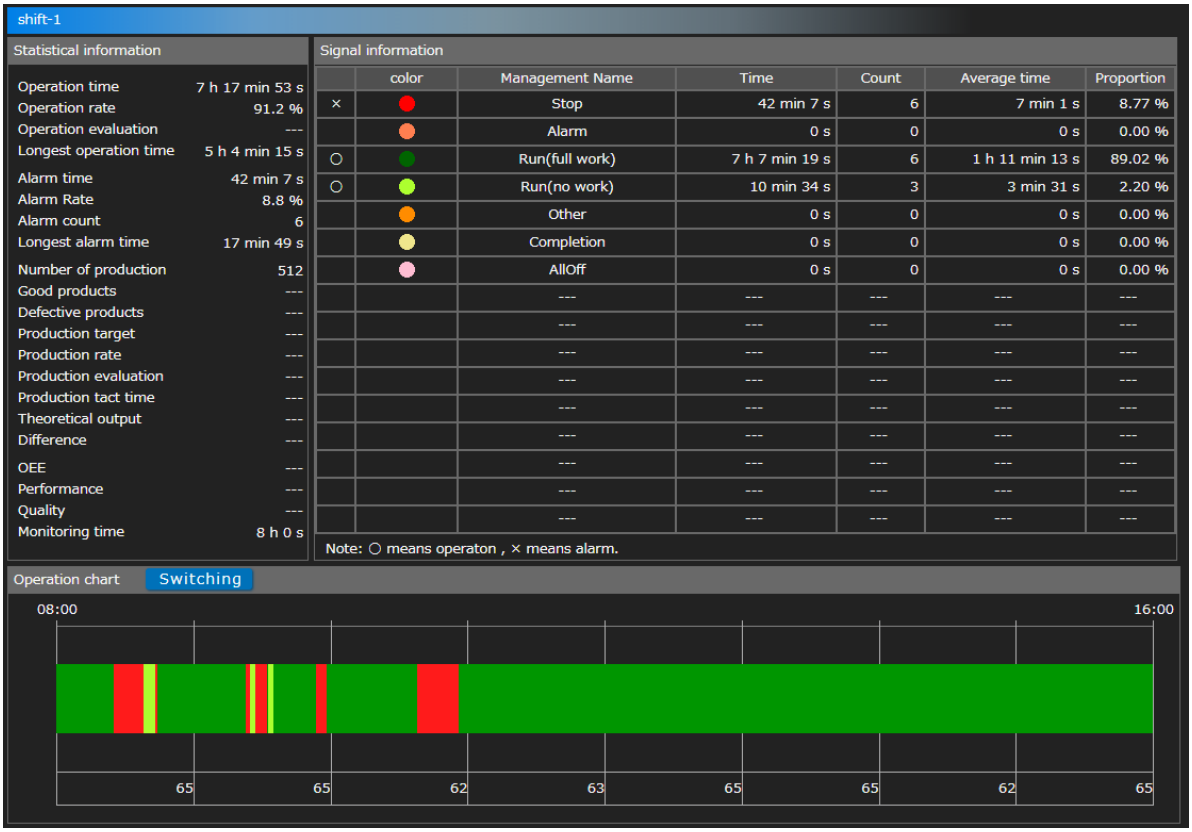


Figure 5: Shift 1 - operation history monitor

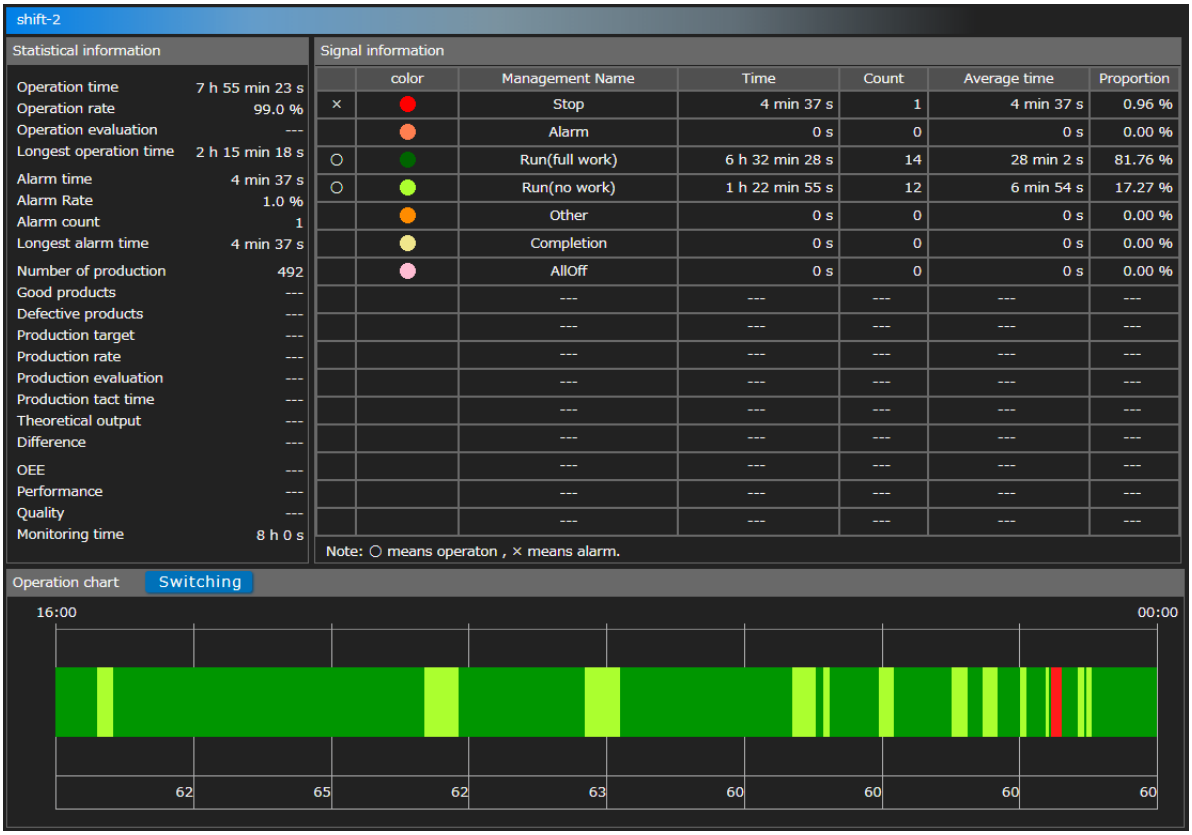


Figure 6: Shift 2 - operation history monitor

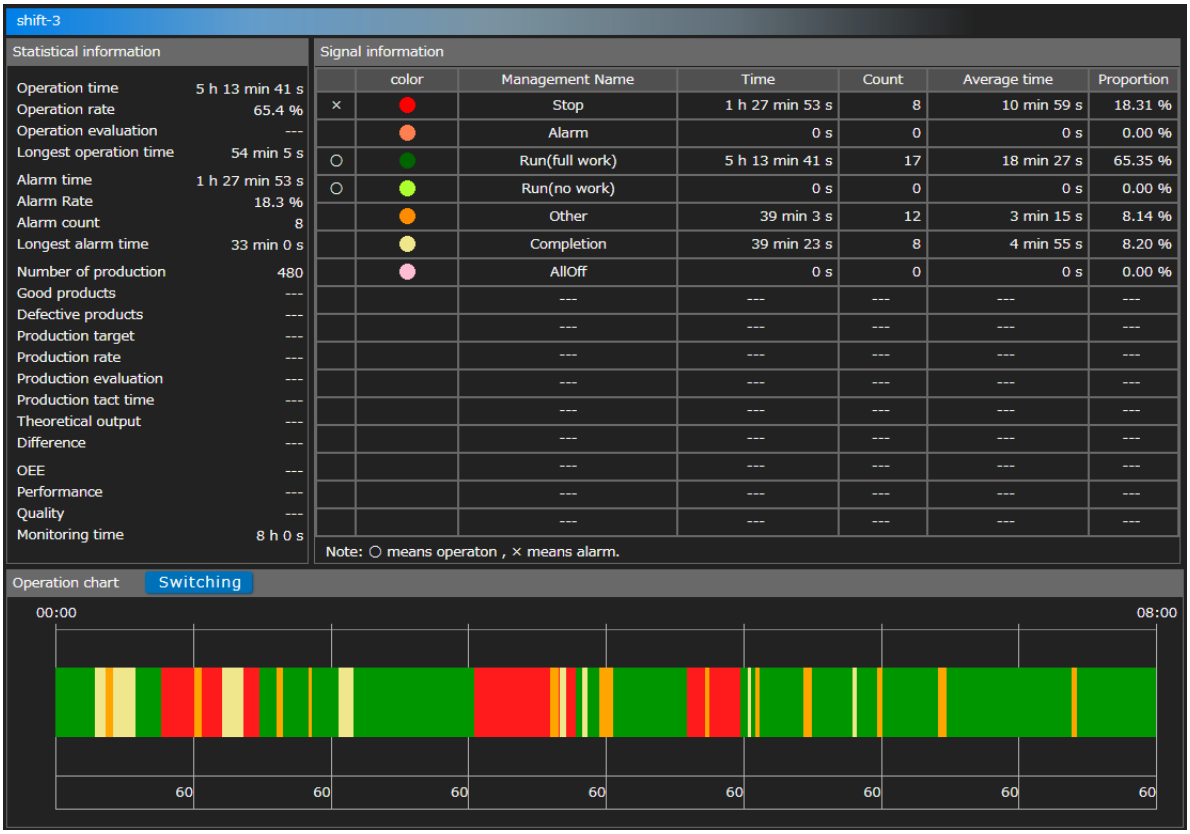
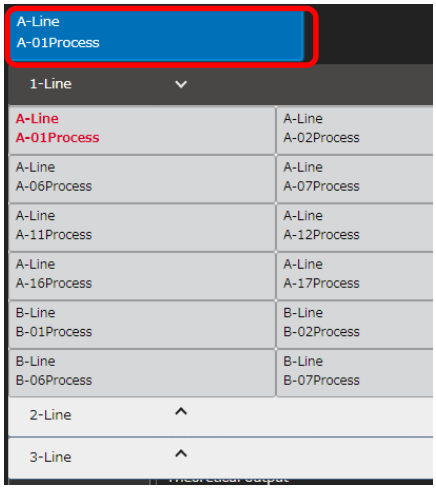
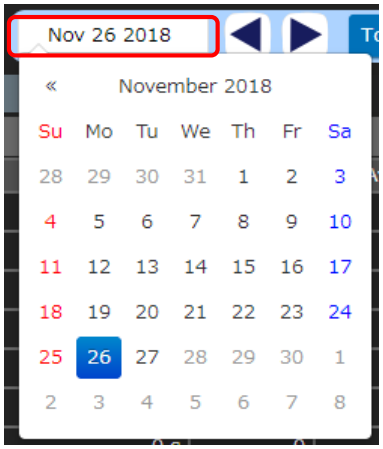
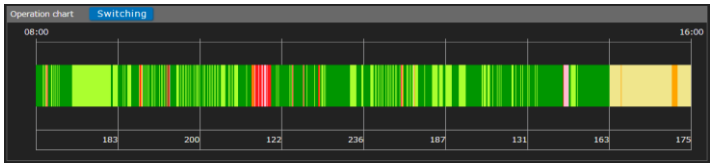
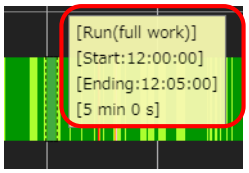
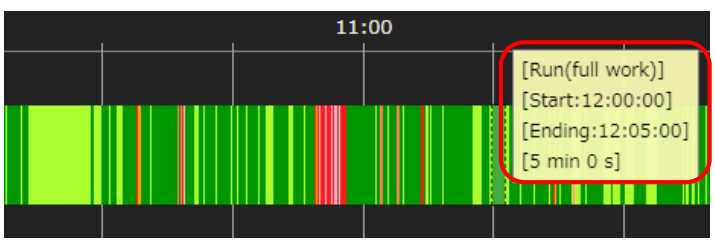


Figure 7: Shift 3 - operation history monitor

Table 3: Description of the operation history monitor

No.	Item		Description
1	Signal light selection	-	Select the signal lamp to be displayed. Click the displayed signal lamp name to display the signal lamp list.  Click to select the signal lamp name. * The displayed signal lamp list is determined according to the general monitor settings.
2	Target day	-	Select the target year, month and day on the calendar. When you click a date, the calendar appears.  * The next day or later cannot be selected.
3	Today	-	Displays the operation history for the current day.
4	Download	-	Downloads the daily report data for the target day (statistical information, signal information and operation history) in the CSV format.
5	Menu	Operation history	Displays the operation history monitor for the target date.
6	Menu	Monthly	Displays the monthly report monitor.
7	Menu	Operation status	Displays the operating state monitor.
8	Menu	Operation analysis	Displays the operation analysis monitor.
9	Statistical information	Operation time	Displays the operating time on the target day.
10	Statistical	Operation rate	Displays the operation rate on the target day.

	information		
11	Statistical information	Operation evaluation	Displays the operation evaluation on the target day.
12	Statistical information	Longest operation time	Displays the maximum continuous operating time on the target day.
13	Statistical information	Alarm time	Displays the abnormal time on the target day.
14	Statistical information	Alarm rate	Displays the error rate on the target day.
15	Statistical information	Alarm count	Displays the error count on the target day.
16	Statistical information	Longest alarm time	Displays the maximum continuous abnormal time on the target day.
17	Statistical information	Number of production	Displays the production volume on the target day.
18	Statistical information	Good production	Displays the number of good products on the target day.
19	Statistical information	Defective products	Displays the number of defective products on the target day.
20	Statistical information	Production target	Displays the target production volume on the target day.
21	Statistical information	Production rate	Displays the production achievement rate on the target day.
22	Statistical information	Production evaluation	Displays the production evaluation of the production achievement rate.
23	Statistical information	Production tact time	Displays the production cycle time on the target day.
24	Statistical information	Theoretical output	Displays the number of producible products on the target day.
25	Statistical information	Difference	Displays differences on the target day.
26	Statistical information	OEE	Displays the total equipment efficiency on the target day.
27	Statistical information	Performance	Displays the performance on the target day.
28	Statistical information	Quality	Displays the quality on the target day.
29	Statistical information	Monitoring time	Displays the monitoring time on the target day.
30	Signal information	-	Displays the component color definition, time, the number of occurrences, average time and percentage of the signal lamp.
31	Operation chart	Switching	Select this button to switch the display method of the operation chart. You can display the on or flash state of each color signal lamp in the chart (figure below) or display the colors selected in "Display color" under "Component color" in the chart (Figure 3 in 1-6). * Unused signal lamps and buzzers are not displayed.

			
32	Operation chart	(shift display)	One chart displays data according to the shift time setting. 
33	Operation chart	Detailed information (each color signal light display)	Details of the signal lamp status at that time are displayed when you place the cursor on the chart.  1. Status of each color signal lamp (on, flash or off), 2. Start time, 3. End time, and 4. Total time are displayed as details. If the lamp is off, ■ is displayed.
34	Operation chart	Red (on or flash)	Displays the on state (■) or flash state (■) of the red lamp.
35	Operation chart	Yellow (on or flash)	Displays the on state (■) or flash state (■) of the yellow lamp.
36	Operation chart	Green (on or flash)	Displays the on state (■) or flash state (■) of the green lamp.
37	Operation chart	Blue (on or flash)	Displays the on state (■) or flash state (■) of the blue lamp.
38	Operation chart	White (on or flash)	Displays the on state (■) or flash state (■) of the white lamp.
39	Operation chart	Buzzer (off or on)	Displays the off state (■) or on state (■) of the buzzer.
40	Operation chart	Detailed information (display color display)	Details of the signal lamp status at that time are displayed when you place the cursor on the chart. 

			1. Signal status (component color), 2. Start time, 3. End time, and 4. Total time are displayed as details. Display color under each component color is displayed in the chart.
41	Operation chart	Production target	Displays the production volume for each hour.

[Daily report data to be downloaded]

The daily report CSV data consists of the following five items:

Table 4: Description of CSV items

Number of rows	Item name	Description
Row 1	Header section	The data date, line name and signal lamp name are output.
Rows 2 to 20	Statistical data item	The statistical data information list is output.
Rows 21 to 44	Production volume data item	Production volume information is output for each hour.
Rows 45 to 70	Signal data item for which component color is set	The total signal on state information is output using the colors selected in "Display color" under "Component color."
From Rows 71	Signal event data item for which a component color is set	Detailed on/off information is output using the colors selected in "Display color" under "Component color."

Details of each item are as shown below.

Table 5: Details of statistical data items

Column	Name	Description
1	Statistical data item name	The title of statistical data is output.
2	Statistical data	The calculated statistical data value is output.
3	Spare	
4	Spare	
5	Spare	
6	Spare	
7	Spare	
8	Spare	

Table 6: Details of production volume data items

Column	Name	Description
1	Time	The time is output.
2	Production target	The production volume is output for each hour.
3	Spare	
4	Spare	
5	Spare	
6	Spare	
7	Spare	
8	Spare	

Table 7: Details of signal data item for which component color is set

Column	Name	Description
1	Component color setting	The component color management name and color information are output.
2	Time	Total time of the status indicated by the relevant component color is output in HHMMSS format.
3	Count	How many times the relevant component color has changed from the recovered status to the generated status is output.
4	Average time	The average time per occurrence is output in HHMMSS format.
5	Proportion	The percentage relative to the monitoring time is output.
6	Spare	
7	Spare	
8	Spare	

Table 8: Details of signal event data item for which component color is set

Column	Name	Description
1	Start date/time	The time at which the status indicated by the component color occurred is output.
2	End date/time	The time at which the status indicated by the component color ended is output.
3	Duration	The duration of the status indicated by the component color is displayed in seconds.
4	Red signal light signal value No.	The signal value is output. (2: On, 4: Flash)
5	Yellow signal light signal value No.	The signal value is output. (2: On, 4: Flash)
6	Green signal light signal value No.	The signal value is output. (2: On, 4: Flash)
7	Blue signal light signal value No.	The signal value is output. (2: On, 4: Flash)
8	White signal light signal value No.	The signal value is output. (2: On, 4: Flash)
9	Buzzer value No.	The buzzer value is output. (1: On)
10	Component color setting	The component color management name and color information are output.

[Sample downloaded daily report data] (Format: CSV, Character encoding: UTF-8, Line feed code: CRLF)

Daily Report data,2018/11/25,A-Line A-01Process,,,,,,
Operation time,18:13:39,,,,,,,,
Operation rate,75.9,,,,,,,,
Operation evaluation,★☆☆,,,,,,,,

Longest operation time,01:24:52,,,,,,,,
Alarm time,01:47:04,,,,,,,,
Alarm rate,7.4,,,,,,,,
Alarm count,24,,,,,,,,
Longest alarm time,00:33:00,,,,,,,,
Number of production,4324,,,,,,,,
Production target,5000,,,,,,,,
Production rate,86.5,,,,,,,,
Production evaluation,★★☆,,,,,,,,

Production tact time,15.2,,,,,,,,
Monitoring time,24:00:00,,,,,,,,
Performance,,,,,,,,,
OEE,,,,,,,,,
Quality,100.0,,,,,,,,
Theoretical output,,,,,,,,
Good products,4324,Defective products,0,,,,,
Number of production 08:00,183,,,,,,,,
Number of production 09:00,200,,,,,,,,
Number of production 10:00,122,,,,,,,,
Number of production 11:00,236,,,,,,,,
Number of production 12:00,187,,,,,,,,
Number of production 13:00,131,,,,,,,,
Number of production 14:00,163,,,,,,,,
Number of production 15:00,175,,,,,,,,
Number of production 16:00,150,,,,,,,,
Number of production 17:00,127,,,,,,,,
Number of production 18:00,149,,,,,,,,
Number of production 19:00,162,,,,,,,,
Number of production 20:00,181,,,,,,,,
Number of production 21:00,169,,,,,,,,
Number of production 22:00,178,,,,,,,,
Number of production 23:00,150,,,,,,,,
Number of production 00:00,167,,,,,,,,
Number of production 01:00,255,,,,,,,,
Number of production 02:00,147,,,,,,,,
Number of production 03:00,159,,,,,,,,
Number of production 04:00,191,,,,,,,,
Number of production 05:00,191,,,,,,,,
Number of production 06:00,222,,,,,,,,
Number of production 07:00,329,,,,,,,,
OnRed::::::Stop,01:47:04,24,00:04:27,7.44,,,,,
RedFlash::::::Alarm,00:28:08,12,00:02:20,1.95,,,,,
::OnGreen::::Run(full work),12:29:36,546,00:01:22,52.06,,,,,
::GreenFlash::::Run(no work),05:44:03,518,00:00:39,23.89,,,,,
:OnYellow:::::Other,01:40:22,24,00:04:10,6.97,,,,,
:YellowFlash:::::Completion,01:35:46,11,00:08:42,6.65,,,,,
OffRed:OffYellow:OffGreen:OffBlue:OffWhite::AllOff,00:15:01,23,00:00:39,1.04,,,,,
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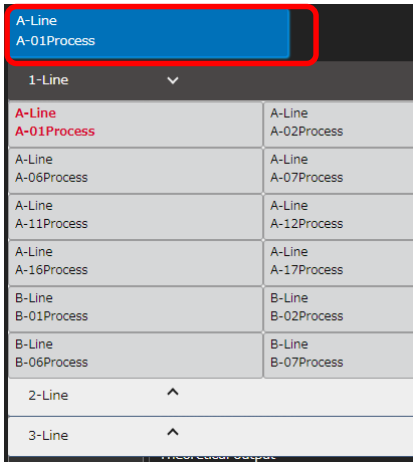
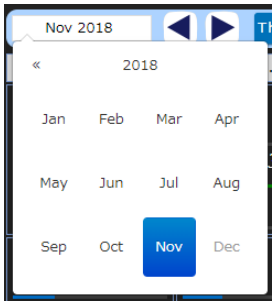
,,,,,,,,,
2018/11/25 08:00:00,2018/11/25 08:05:00,300,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:05:00,2018/11/25 08:05:45,45,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:05:45,2018/11/25 08:05:49,4,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:05:49,2018/11/25 08:06:28,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:06:28,2018/11/25 08:06:36,8,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:06:36,2018/11/25 08:07:15,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:07:15,2018/11/25 08:08:11,56,4,,,,,,RedFlash::::::Alarm
2018/11/25 08:08:11,2018/11/25 08:09:38,87,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:09:38,2018/11/25 08:09:45,7,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:09:45,2018/11/25 08:10:00,15,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:10:00,2018/11/25 08:10:25,25,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:10:25,2018/11/25 08:11:19,54,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:11:19,2018/11/25 08:11:58,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:11:58,2018/11/25 08:12:04,6,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:12:04,2018/11/25 08:12:43,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:12:43,2018/11/25 08:12:49,6,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:12:49,2018/11/25 08:13:28,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:13:28,2018/11/25 08:13:33,5,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:13:33,2018/11/25 08:14:17,44,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:14:17,2018/11/25 08:14:58,41,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:14:58,2018/11/25 08:15:00,2,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:15:00,2018/11/25 08:15:02,2,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:15:02,2018/11/25 08:15:41,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:15:41,2018/11/25 08:15:47,6,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:15:47,2018/11/25 08:16:26,39,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:16:26,2018/11/25 08:16:31,5,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:16:31,2018/11/25 08:17:16,45,,,4,,,,::GreenFlash::::Run(no work)
2018/11/25 08:17:16,2018/11/25 08:17:55,39,,,2,,,,::OnGreen::::Run(full work)
2018/11/25 08:17:55,2018/11/25 08:18:01,6,,,4,,,,::GreenFlash::::Run(no work)

(4) Single equipment - monthly monitor

You can check the monthly operating state (statistical information) of signal lamp with numerical values.

Figure 8: Monthly monitor

Table 9: Description of the monthly monitor

No.	Item		Description
1	Signal light selection	-	Select the signal lamp to be displayed. Click the displayed signal lamp name to display the signal lamp list.  Click to select the signal lamp name. * The displayed signal lamp list is determined according to the general monitor settings.
2	Target month	-	Select the target year and month on the calendar. When you click a date, the calendar appears.  * The next month or later cannot be selected.
3	This month	-	Displays the monthly report for this month.
4	Download	-	Downloads the monthly report data for the target month (daily statistical information for one month) in the CSV format.
5	Menu	Operation history	Displays the operation history monitor.
6	Menu	Monthly	Displays the monthly report monitor for the target date.
7	Menu	Operation state	Displays the operating state monitor.
8	Menu	Operation analysis	Displays the operation analysis monitor.
9	Daily breakdown	Display items	Displays the display items. The display items can be specified as described in "1-7 (4) Group settings - Individual signal light settings."

[Sample downloaded monthly report data] (Format: CSV, Character encoding: UTF-8, Line feed code: CRLF)

Monthly Report data,2018/11,A-Line A-01Process,,,,,,,,,,,,,,,,,,,,,,

Date,Operation time,Operation rate,Operation evaluation,Longest operation time,Alarm time,Alarm rate,Alarm count,Longest alarm time,Number of production,Production target,Production rate,Production evaluation,Production tact time,Monitoring time,Performance,OEE,Quality,Theoretical output,Good products,Defective products,,,,,

2018/11/01,22:06:34,92.1,★★★,03:39:00,00:44:45,3.1,8,00:16:03,2003,5000,40.1,☆☆☆,39.7,24:00:00,,,100.0,,2003,0,,,,,

2018/11/02,21:29:59,89.6,★★☆,04:00:21,01:28:57,6.2,22,00:24:06,2063,5000,41.3,☆☆☆,37.5,24:00:00,,,100.0,,2063,0,,,,,

2018/11/03,21:16:41,88.7,★★☆,08:55:36,01:05:29,4.5,13,00:34:08,2438,5000,48.8,☆☆☆,31.4,24:00:00,,,100.0,,2438,0,,,,,

2018/11/04,19:57:39,83.2,★★☆,00:20:43,02:06:35,8.8,34,00:41:19,3407,5000,68.1,☆☆☆,21.1,24:00:00,,,100.0,,3407,0,,,,,

2018/11/05,18:13:39,75.9,★☆☆,01:24:52,01:47:04,7.4,24,00:33:00,4324,5000,86.5,★★☆,15.2,24:00:00,,,100.0,,4324,0,,,,,

2018/11/06,20:26:14,85.2,★★☆,03:54:42,02:22:43,9.9,12,00:54:30,4623,5000,92.5,★★★,15.9,24:00:00,,,100.0,,4623,0,,,,,

2018/11/07,19:19:47,80.5,★☆☆,02:12:05,01:45:22,7.3,16,00:16:26,3487,5000,69.7,☆☆☆,20.0,24:00:00,,,100.0,,3487,0,,,,,

2018/11/08,17:29:03,72.9,★☆☆,02:06:25,02:59:02,12.4,18,00:46:24,4059,5000,81.2,★★☆,15.5,24:00:00,,,100.0,,4059,0,,,,,

2018/11/09,23:11:02,96.6,★★★,05:22:08,00:47:31,3.3,8,00:17:49,3313,5000,66.3,☆☆☆,25.2,24:00:00,,,100.0,,3313,0,,,,,

2018/11/10,23:09:38,96.5,★★★,08:55:36,00:02:08,0.1,2,00:01:34,1932,5000,38.6,☆☆☆,43.2,24:00:00,,,100.0,,1932,0,,,,,

2018/11/11,22:06:34,92.1,★★★,03:39:00,00:44:45,3.1,8,00:16:03,2003,5000,40.1,☆☆☆,39.7,24:00:00,,,100.0,,2003,0,,,,,

2018/11/12,21:29:59,89.6,★★☆,04:00:21,01:28:57,6.2,22,00:24:06,2063,5000,41.3,☆☆☆,37.5,24:00:00,,,100.0,,2063,0,,,,,

2018/11/13,21:16:41,88.7,★★☆,08:55:36,01:05:29,4.5,13,00:34:08,2438,5000,48.8,☆☆☆,31.4,24:00:00,,,100.0,,2438,0,,,,,

2018/11/14,19:57:39,83.2,★★☆,00:20:43,02:06:35,8.8,34,00:41:19,3407,5000,68.1,☆☆☆,21.1,24:00:00,,,100.0,,3407,0,,,,,

2018/11/15,18:13:39,75.9,★☆☆,01:24:52,01:47:04,7.4,24,00:33:00,4324,5000,86.5,★★☆,15.2,24:00:00,,,100.0,,4324,0,,,,,

2018/11/16,20:26:14,85.2,★★☆,03:54:42,02:22:43,9.9,12,00:54:30,4623,5000,92.5,★★★,15.9,24:00:00,,,100.0,,4623,0,,,,,

2018/11/17,19:19:47,80.5,★☆☆,02:12:05,01:45:22,7.3,16,00:16:26,3487,5000,69.7,☆☆☆,20.0,24:00:00,,,100.0,,3487,0,,,,,

2018/11/18,17:29:03,72.9,★☆☆,02:06:25,02:59:02,12.4,18,00:46:24,4059,5000,81.2,★★☆,15.5,24:00:00,,,100.0,,4059,0,,,,,

2018/11/19,23:11:02,96.6,★★★,05:22:08,00:47:31,3.3,8,00:17:49,3313,5000,66.3,☆☆☆,25.2,24:00:00,,,100.0,,3313,0,,,,,

2018/11/20,23:09:38,96.5,★★★,08:55:36,00:02:08,0.1,2,00:01:34,1932,5000,38.6,☆☆☆,43.2,24:00:00,,,100.0,,1932,0,,,,,

2018/11/21,22:06:34,92.1,★★★,03:39:00,00:44:45,3.1,8,00:16:03,2003,5000,40.1,☆☆☆,39.7,24:00:00,,,100.0,,2003,0,,,,,

2018/11/22,21:29:59,89.6,★★☆,04:00:21,01:28:57,6.2,22,00:24:06,2063,5000,41.3,☆☆☆,37.5,24:00:00,,,100.0,,2063,0,,,,,

2018/11/23,21:16:41,88.7,★★☆,08:55:36,01:05:29,4.5,13,00:34:08,2438,5000,48.8,☆☆☆,31.4,24:00:00,,,100.0,,2438,0,,,,,

2018/11/24,19:57:39,83.2,★★☆,00:20:43,02:06:35,8.8,34,00:41:19,3407,5000,68.1,☆☆☆,21.1,24:00:00,,,100.0,,3407,0,,,,,

2018/11/25,18:13:39,75.9,★☆☆,01:24:52,01:47:04,7.4,24,00:33:00,4324,5000,86.5,★★☆,15.2,24:00:00,,,100.0,,4324,0,,,,,

2018/11/26,08:27:29,98.6,★★★,03:54:42,00:00:00,0.0,0,00:00:00,1827,5000,36.5,☆☆☆,16.7,08:34:48,,,100.0,,1827,0,,,,,

2018/11/27,,,,,,,,,,,,,,,,,,,,,,,,

2018/11/28,,,,,,,,,,,,,,,,,,,,,,,,

2018/11/29,,,,,,,,,,,,,,,,,,,,,,,,

2018/11/30,,,,,,,,,,,,,,,,,,,,,,,,

(5) Single equipment - operating state monitor

You can check the operating state (statistical information) of signal lamp in graph form. The data can be displayed by day or month.

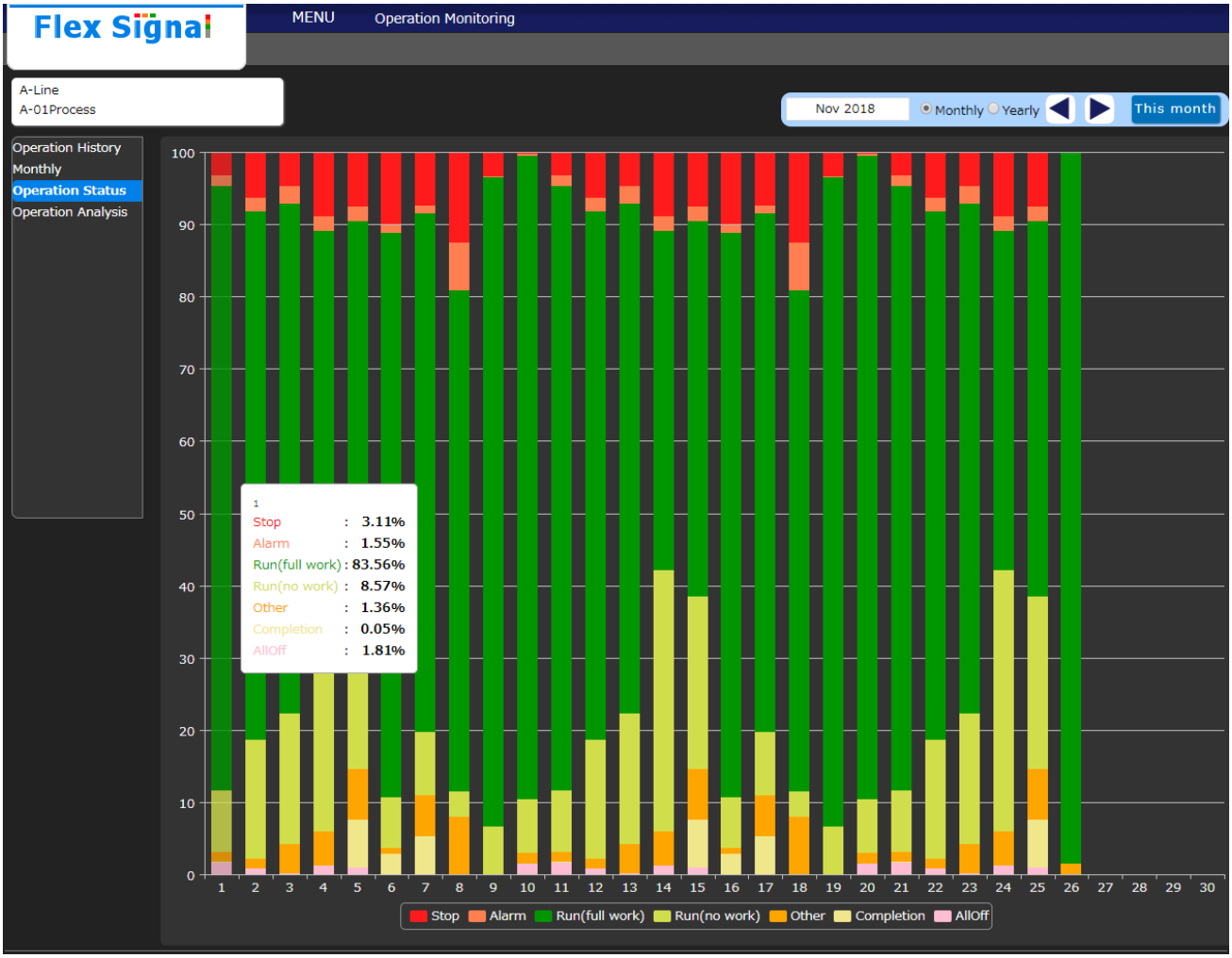
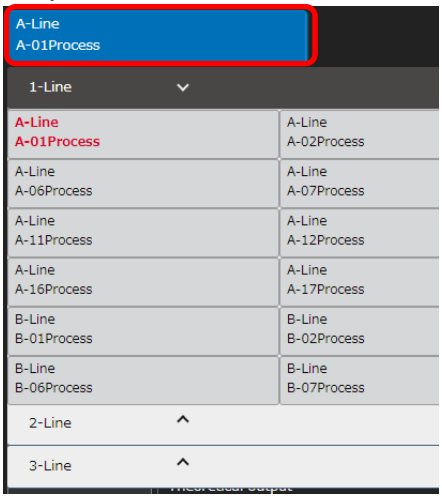
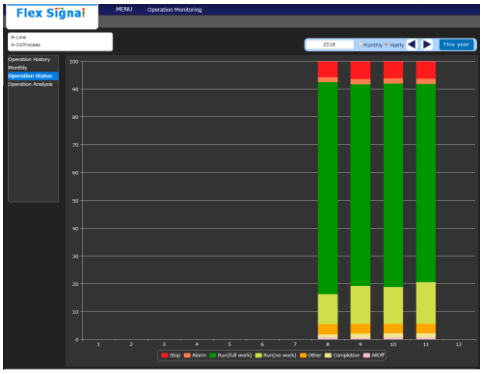
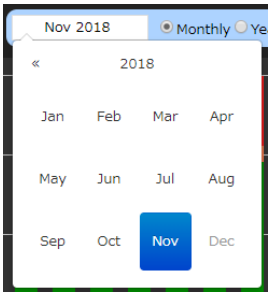
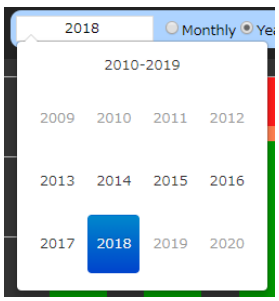
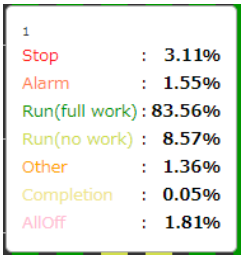


Figure 9: Operating state monitor screen

Table 10: Description of the operating state monitor screen

No.	Item		Description
1	Signal light selection	-	Select the signal lamp to be displayed. Click the displayed signal lamp name to display the signal lamp list.  Click to select the signal lamp name. * The displayed signal lamp list is determined according to the general monitor settings.
2	Graph display format	-	Select the display format of operating state graphs. When you select "Daily," the graph is displayed by day (Figure 9). When you select "Monthly," the graph is displayed by month (figure below). 
3	Target year and month	-	Select the target year and month on the calendar. When you select a year or month, each of the following calendars appears. * When you select "Monthly," you cannot select a month.  

4	This month	-	Displays the (daily) operating state for this month. This item is displayed only when "Daily" is selected.
5	This year	-	Displays the (monthly) operating state for this year. This item is displayed only when "Monthly" is selected.
6	Refresh	-	Refreshes the operating state in the selected target year and month.
7	Menu	Operation history	Displays the operation history monitor.
8	Menu	Monthly report	Displays the monthly report monitor.
9	Menu	Operation state	Displays the operating state monitor for the target date.
10	Menu	Operation analysis	Displays the operation analysis monitor.
11	Operating state graph		Displays the operating state of a signal lamp in a bar graph. When you place the cursor on each date in the bar graph, the breakdown of the operating state on the target date is displayed. 

(6) Single equipment - operation analysis monitor

You can analyze data for analysis items of signal lamps. You can freely specify the display time range.

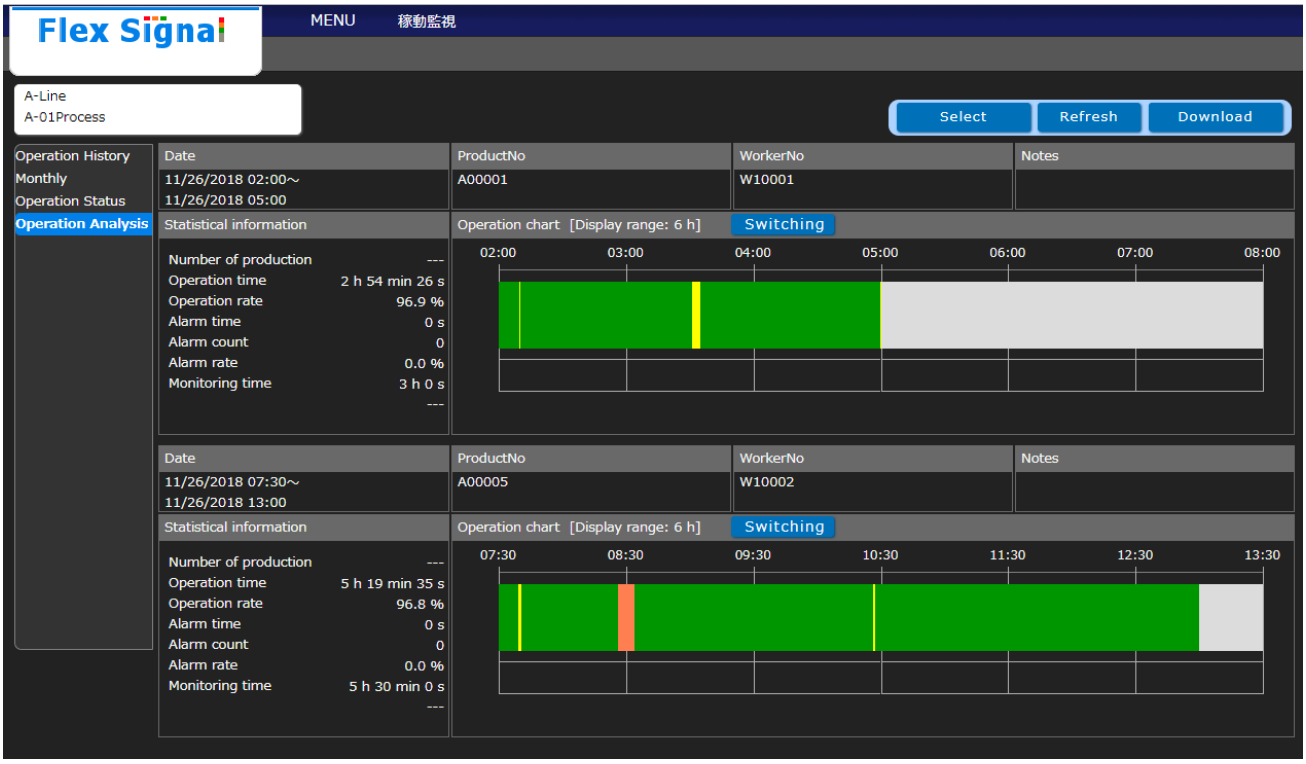
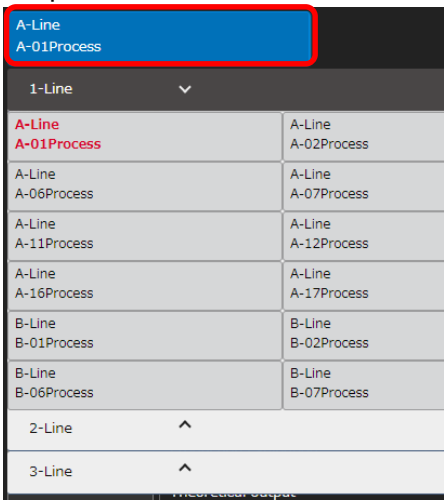
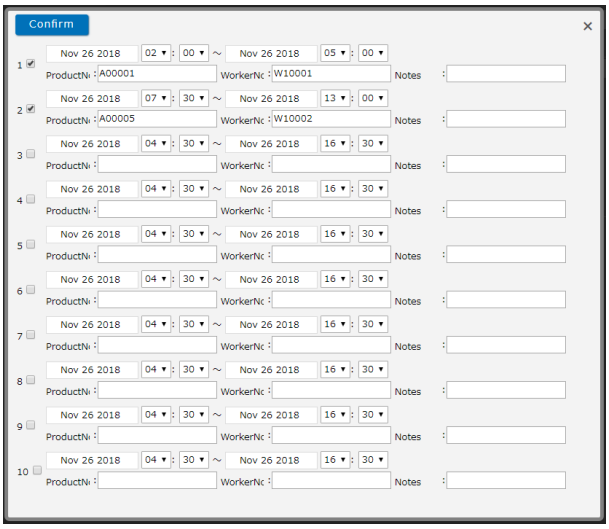
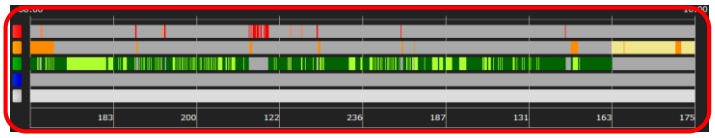


Figure 9: Operating state monitor screen

Table 11: Description of the operating state monitor screen

No.	Item		Description
1	Signal light selection	-	Select the signal lamp to be displayed. Click the displayed signal lamp name to display the signal lamp list.  Click to select the signal lamp name. * The displayed signal lamp list is determined according to the general monitor settings.
2	Select	-	Specify the date/time and analysis remark items to be displayed. Click the Confirm button to apply the settings. Up to 10 items can be displayed. Select the check box at the right of the number to display each item. 
3	Refresh	-	Refreshes the operation analysis of the selected displayed data.
	Download	-	Downloads the displayed date/time, analysis remark, statistical information, and operation history in the CSV format.

	Date	-	Displays the date/time. You can specify or change this item from "Select displayed data."
	Analyze remarks	-	Displays the analysis remark. You can specify or change this item from "Select displayed data." The analysis remark title can be specified as described in "1-7 (4) Group settings - Individual signal light settings."
	Statistical information	-	Displays the analysis display items. The analysis display item settings can be specified as described in "1-7 (4) Group settings - Individual signal lamp settings."
	Operation chart	Switch display	Select this button to switch the display method of the operation chart. You can display the on or flash state of each color signal lamp in the chart (figure below) or display the colors selected in "Display color" under "Component color" in the chart (Figure 9 in 1-6). * Unused signal lamps and buzzers are not displayed. 
	Statistical information	-	Displays the analysis display items. The analysis display item settings can be specified as described in "1-7 (4) Group settings - Individual signal lamp settings."

[Data downloaded for operation analysis]

The CSV data consists of the following three items. One analysis data unit has 11 columns, which are output side by side.

Table 12: Description of CSV items

Number of rows	Item name	Description
Row 1	Header section	The signal lamp name, date/time, and analysis remark are output.
Rows 2 to 9	Statistical data item	Statistical data information set as analysis display items is output.
Rows 10 to 16	Spare	
From Row 17	Signal event data item for which a component color is set	Detailed on/off information is output using the colors selected in "Display color" under "Component color."

Details of each item are as shown below.

Table 13: Details of statistical data items

Column	Name	Description
1	Statistical data item name	The title of statistical data is output.
2	Statistical data	The calculated statistical data value is output.
3	Spare	
4	Spare	
5	Spare	
6	Spare	
7	Spare	
8	Spare	

Table 14: Details of signal event data items for which component colors are set

Column	Name	Description
1	Start date/time	The time at which the status indicated by the component color occurred is output.
2	End date/time	The time at which the status indicated by the component color ended is output.
3	Time	The duration of the status indicated by the component color is displayed in seconds.
4	Red signal light signal value No.	The signal value is output. (2: On, 4: Flash)
5	Yellow signal light signal value No.	The signal value is output. (2: On, 4: Flash)
6	Green signal light signal value No.	The signal value is output. (2: On, 4: Flash)
7	Blue signal light signal value No.	The signal value is output. (2: On, 4: Flash)
8	White signal light signal value No.	The signal value is output. (2: On, 4: Flash)
9	Buzzer value No.	The buzzer value is output. (1: On)
10	Component color setting	The component color management name and color information are output.

[Sample downloaded operation analysis data] (Format: CSV, Character encoding: UTF-8, Line feed code: CRLF)

```
Manufacturing line A inspection Process 01,2018/11/26 02:00,2018/11/26
05:00,ProductNo:A00001,WorkerNo:W10001,Notes:,,,,,,2018/11/26 07:30,2018/11/26
13:00,ProductNo:A00005,WorkerNo:W10002,Notes:,,,,,
Number of production,,,,,,,,,,,,,,,,,,,,
Operation time,02:54:26,,,,,,,,,,05:19:35,,,,,,,,
Operation rate,96.9,,,,,,,,,,96.8,,,,,,,,
Alarm time,00:00:00,,,,,,,,,,00:00:00,,,,,,,,
Alarm count,0,,,,,,,,,,0,,,,,,,,
Alarm rate,0.0,,,,,,,,,,0.0,,,,,,,,
Monitoring time,03:00:00,,,,,,,,,,05:30:00,,,,,,,,
,,,,,,,,,,,,,,,,,,,,
,,,,,,,,,
,,,,,,,,,
,,,,,,,,,
,,,,,,,,,
,,,,,,,,,
,,,,,,,,,
,2018/11/26 02:00:00,2018/11/26 02:09:22,562,,,2,,,,::OnGreen::::,2018/11/26 07:30:00,2018/11/26 07:38:50,530,,,2,,,,::OnGreen::::
,2018/11/26 02:09:22,2018/11/26 02:10:14,52,,4,,,,,:YellowFlash:::::,2018/11/26 07:38:50,2018/11/26 07:40:41,111,,4,,,,,:YellowFlash:::::
,2018/11/26 02:10:14,2018/11/26 03:30:45,4831,,,2,,,,::OnGreen::::,2018/11/26 07:40:41,2018/11/26 08:26:09,2728,,,2,,,,::OnGreen::::
,2018/11/26 03:30:45,2018/11/26 03:34:46,241,,4,,,,,:YellowFlash:::::,2018/11/26 08:26:09,2018/11/26 08:33:31,442,4,,,,,,RedFlash::::::
,2018/11/26 03:34:46,2018/11/26 04:59:19,5073,,,2,,,,::OnGreen::::,2018/11/26 08:33:31,2018/11/26 10:26:20,6769,,,2,,,,::OnGreen::::
,2018/11/26 04:59:19,2018/11/26 05:00:00,41,,4,,,,,:YellowFlash:::::,2018/11/26 10:26:20,2018/11/26 10:27:32,72,,4,,,,,:YellowFlash:::::
,,,,,,,,,,,2018/11/26 10:27:32,2018/11/26 13:00:00,9148,,,2,,,,::OnGreen::::
```

1-7. Options

(1) Administrator authentication

When you select the "Options" menu button, the following screen may appear. Enter the administrator password and press "OK." The initial administrator password is admin.

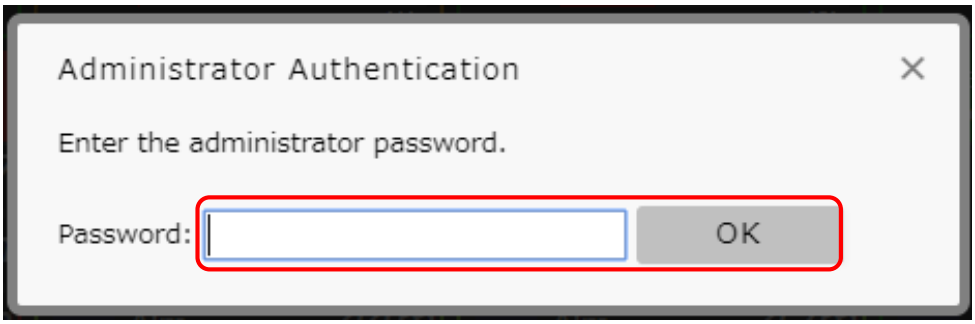


Figure 1: Administrator authentication screen

(2) Signal Tower settings - group settings

You can add or name groups.

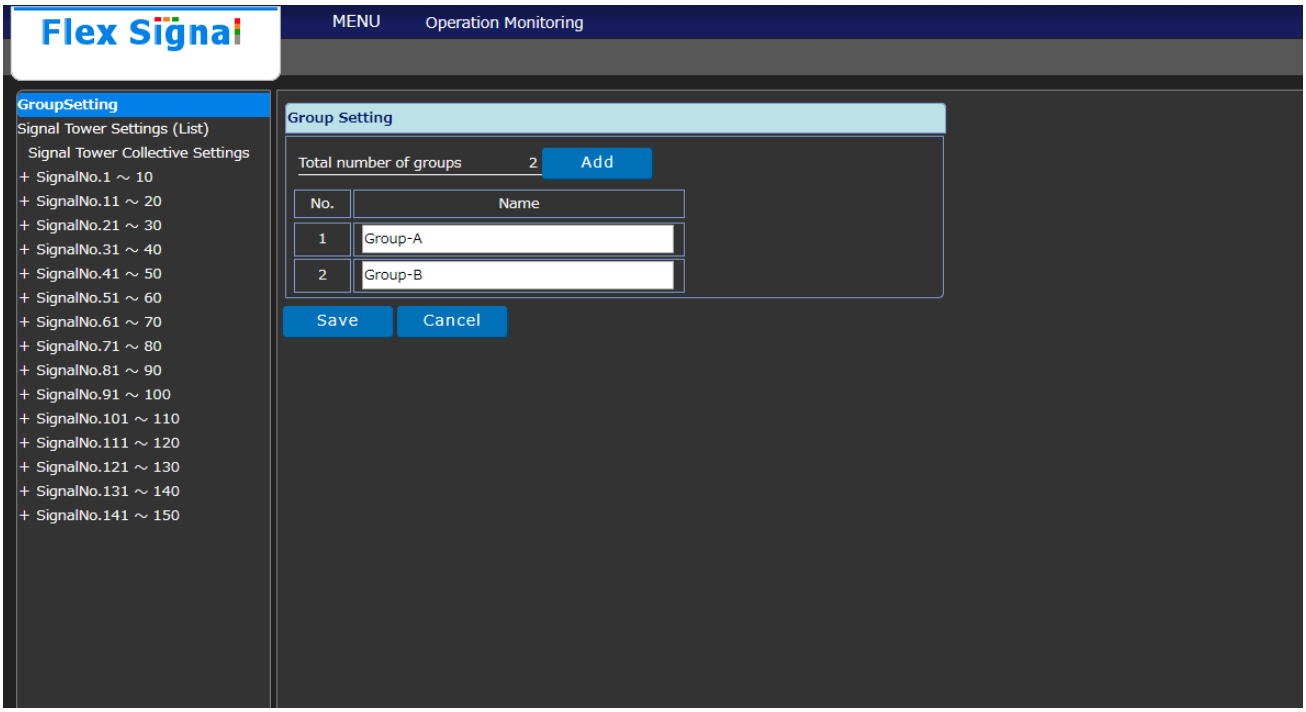


Figure 2: Group settings screen

Table 2: Description of signal Tower Collective settings

No.	Item		Description
1	Group settings	Total number of groups	Displays the total number of groups.
2	Group settings	Add	Adds groups.
3	Group settings	No.	Displays the group No.
4	Group settings	Name	Specify the group name.
5	Save	-	Registers group settings.
6	Cancel	-	Cancels currently edited group settings.

(3) Signal tower settings - signal tower collective settings

You can specify settings for multiple signal lamps at once.

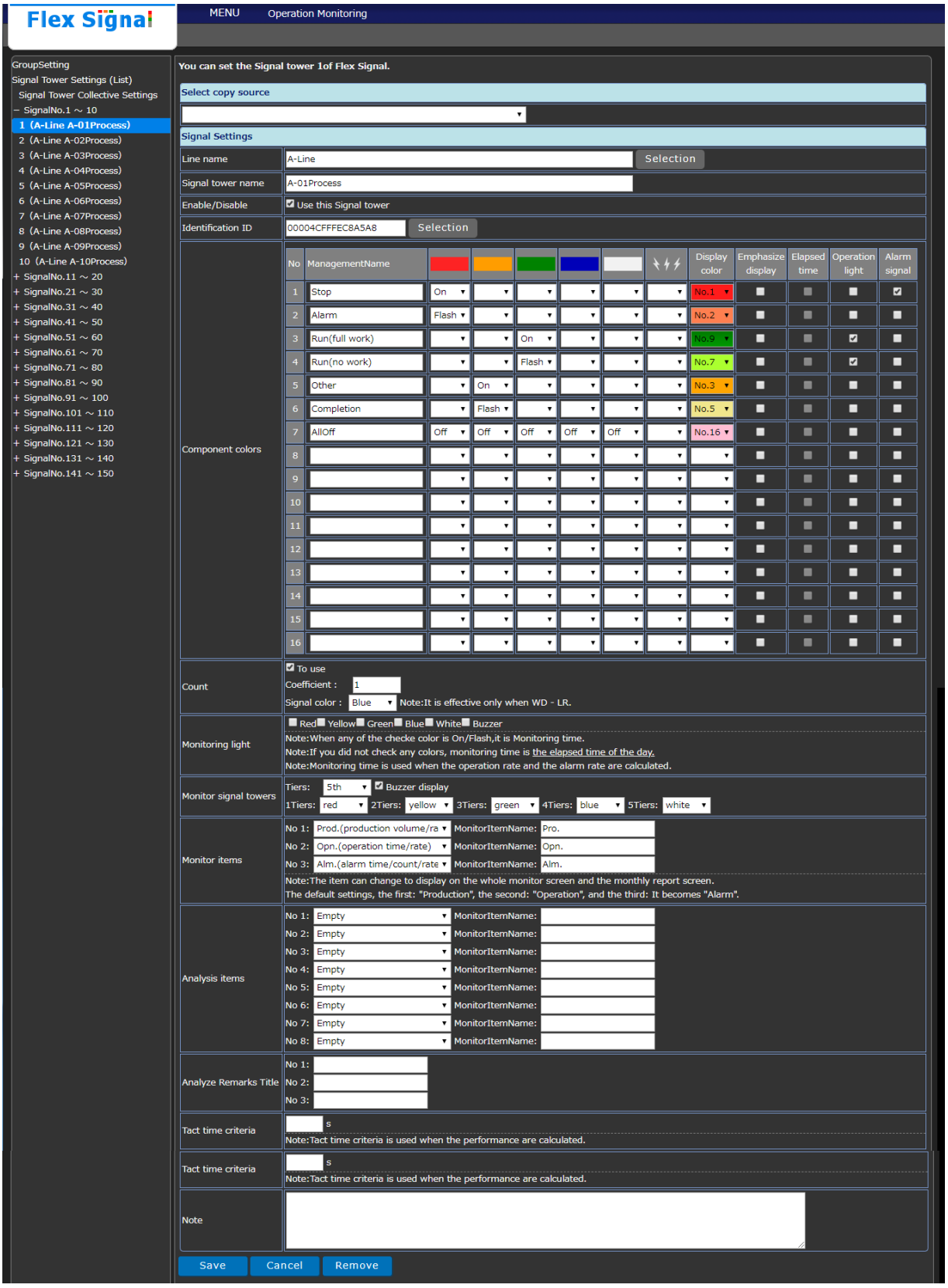


Figure 3: Signal tower collective settings

Table 2: Description of signal tower collective settings

No.	Item		Description
1	Select copy source	-	Select the device you want to copy. The settings for the selected device are displayed for all the items.
2	Collective Target	-	Select the signal lamps you want to configure. You can easily select or deselect all the signal lamps by using "Select all" or "Deselect all."
3	Signal settings	Line name	Specify the line name. Specify a name that clearly indicates the line group that the signal lamp belongs to.
4	Signal settings	Signal tower name	Specify the signal lamp name. Specify a name that clearly indicates the signal lamp.
5	Signal settings	Component colors	Specify the component color of the signal lamp; the on, flash or off state of each color; the management name indicated by the on/off combination of the buzzer; display color; highlighting; display of the elapsed time; operation lamp target selection; and error lamp target selection. When the on, flash or off state or the on or off state is not specified, specify "(blank)" for each color. Highlighting emphasizes the status indicated by the target component color on the general monitor. The time elapsed after the status indicated by the target component color started is displayed on the general monitor. Select the "Operation lamp" check box to use the operation lamp for the status indicated by the target component color. Select the "Error lamp" check box to use the error lamp for the status indicated by the target component color. * "All off" indicates that all the colors of the signal lamp are set to off. * When you select the on, flash or off state, be sure to set a display color. * You cannot just set the buzzer without setting the on, flash or off state for any signal lamp. * You can select multiple operation lamps. * You can select multiple error lamps. * Whether to display the elapsed time can be specified only when "Highlight" is selected. The component colors are in descending priority order from No. 1 (No. 1 > No. 2 > - - - > No. 16). For the following signal lamp statuses and component colors, the component color setting for No. 1 takes priority and the red lamp flash.

			Signal lamp status: Red lamp flash and yellow lamp flash Component color settings: No. 1 Red lamp: "Flash," Other signal lamps: "(Blank)" No. 2 Yellow lamp: "Flash," Other signal lamps: "(Blank)"
6	Signal settings	Count	Specify whether to use the count function and the coefficient. When not using this function, clear the "Use" check box. When the "Use" check box is not selected, the information related to the production volume (production volume, production achievement rate, production evaluation, and production cycle time) is not displayed. If the coefficient is not specified, calculation is performed using 1 as the coefficient. * The signal lamp color used for the count function cannot be used as the component color. * For WD-LR: Specify the signal lamp color used for the count function.
7	Signal settings	Monitoring light	Select the color used as the reference of the monitoring time. The monitoring time is the total time for which one of the selected component color signals is in the on or flash state. If a color is not selected, the monitoring time is the elapsed time on that day.
8	Signal settings	Monitor signal towers	Specify the general monitor screen, whether to display the buzzer displayed in the signal lamp settings (list), the number of displayed tiers of the signal lamp, and the color for each tier of the signal lamp.
9	Signal settings	Monitor display item	Specify the general monitor screen and the item being monitored for each signal lamp displayed on the monthly report screen.
10	Signal settings	Empty	No data is displayed.
11	Signal settings	Prod. (production volume / rate)	Displays the production volume and production achievement rate (bar display).
12	Signal settings	Opn. (operation time / rate)	Displays the operating time and operation rate (bar display).
13	Signal settings	Alm. (alarm time / count / rate)	Displays the abnormal time, error count, and error rate (bar display).
14	Signal settings	Production target	Displays the target production volume.
15	Signal settings	Monitoring time	Displays the monitoring time.
16	Signal settings	Production volume	Displays the production volume.
17	Signal settings	Production rate	Displays the production achievement rate (bar display). * Not displayed for shift display.
18	Signal settings	Operation time	Displays the operating time.
19	Signal settings	Operation rate	Displays the operation rate (bar display).

20	Signal settings	Alarm time	Displays the abnormal time.
21	Signal settings	Alarm count	Displays the error count.
22	Signal settings	Alarm rate	Displays the error rate (bar display).
23	Signal settings	Component colors 1 to 16 (time)	Displays the duration of the statuses indicated by component colors 1 to 16.
24	Signal settings	Component colors 1 to 16 (count)	Displays the number of occurrences of the statuses indicated by component colors 1 to 16.
25	Signal settings	Performance	Displays the performance. * Not displayed for shift display.
26	Signal settings	OEE	Displays the total equipment efficiency. * Not displayed for shift display.
27	Signal settings	Quality	Displays the quality. * Not displayed for shift display.
28	Signal settings	Good products	Displays the number of good products. * Not displayed for shift display.
29	Signal settings	Defective products	Displays the number of defective products. * Not displayed for shift display.
30	Signal settings	Theoretical output	Displays the number of producible products. * Not displayed for shift display.
31	Signal settings	Product tact time	Displays the production cycle.
32	Signal settings	Differences	Displays differences. * Not displayed for shift display.
33	Signal settings	Monitor item name	Specify a name for the display item. * You can register a name consisting of up to four characters.
34	Signal settings	Analysis items	Specify the analysis display items for each signal lamp displayed on the operation analysis screen.
35	Signal settings	Tact time criteria	Specify the cycle time to calculate performance.
36	Signal settings	Note	Enter a description or special notes on the signal lamp, if any.
37	Save	-	Registers settings for the target signal lamps all at once.
38	Remove	-	Deletes and disables all the settings for the target signal lamps.

(4) Signal tower settings - individual signal light settings

Settings related to the signal lamps can be individually specified.

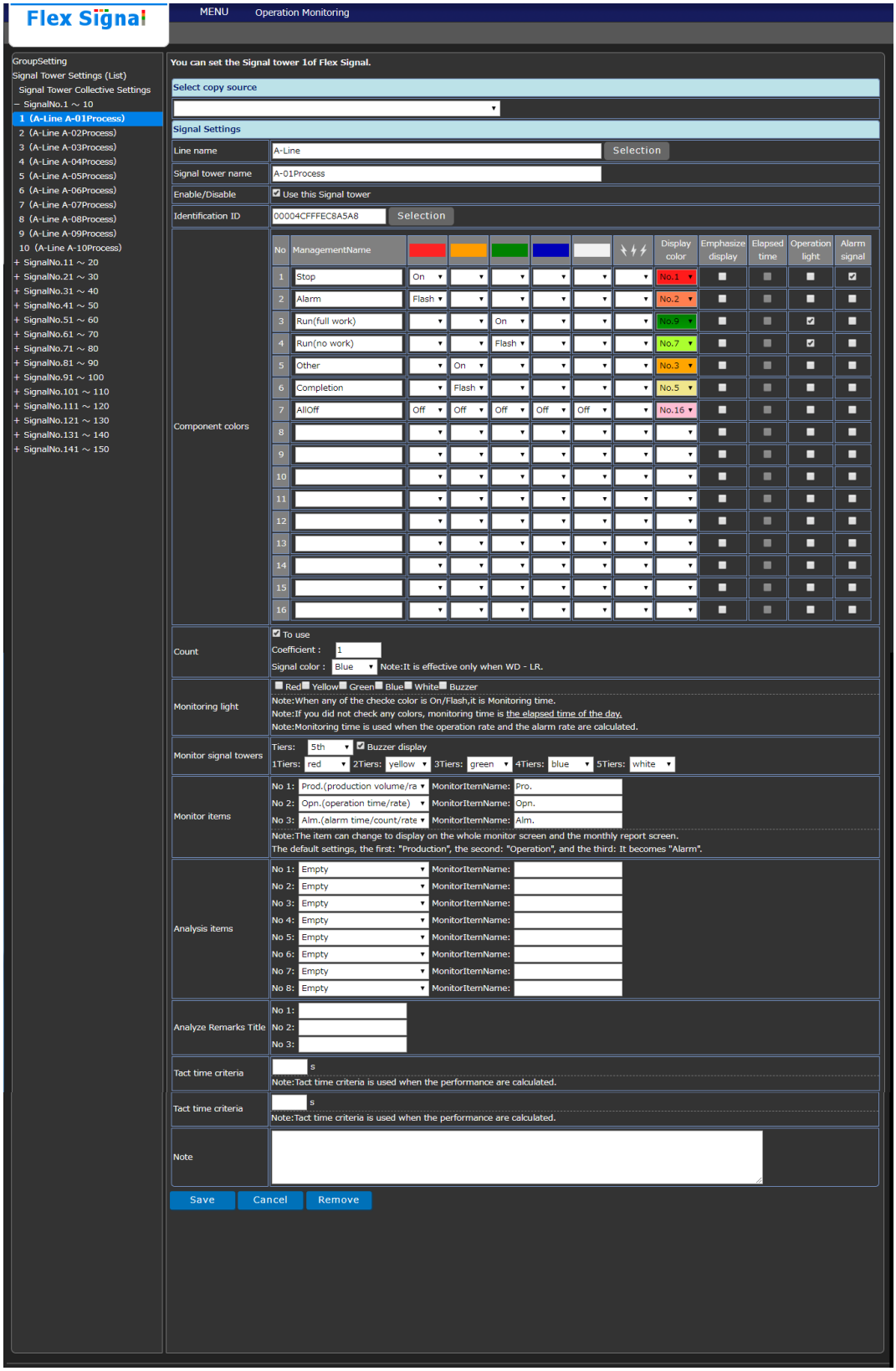


Figure 4: Individual signal light settings

Table 3: Description of individual signal light settings

No.	Item		Description
1	Select copy source	-	Select the device you want to copy. The settings for the selected device are displayed for all the items.
2	Signal settings	Line name	Specify the line name. Specify a name that clearly indicates the line group that the signal lamp belongs to.
3	Signal settings	Signal tower name	Specify the signal lamp name. Specify a name that clearly indicates the signal lamp.
4	Signal settings	Component colors	Specify the component color of the signal lamp; the on, flash or off state of each color; the management name indicated by the on/off combination of the buzzer; display color; highlighting; display of the elapsed time; operation lamp target selection; and error lamp target selection. When the on, flash or off state or the on or off state is not specified, specify "(blank)" for each color. Highlighting emphasizes the status indicated by the target component color on the general monitor. The time elapsed after the status indicated by the target component color started is displayed on the general monitor. Select the "Operation lamp" check box to use the operation lamp for the status indicated by the target component color. Select the "Error lamp" check box to use the error lamp for the status indicated by the target component color. * "All off" indicates that all the colors of the signal lamp are set to off. * When you select the on, flash or off state, be sure to set a display color. * You cannot just set the buzzer without setting the on, flash or off state for any signal lamp. * Whether to display the elapsed time can be specified only when "Highlight" is selected. * You can select multiple operation lamps. * You can select multiple error lamps. The component colors are in descending priority order from No. 1 (No. 1 > No. 2 > - - - > No. 16). For the following signal lamp statuses and component colors, the component color setting for No. 1 takes priority and the red lamp flash. Signal lamp status: Red lamp flash and yellow lamp flash Component color settings: No. 1 Red lamp: "Flash," Other signal lamps: "(Blank)" No. 2 Yellow lamp: " Flash," Other signal lamps: "(Blank)"

5	Signal settings	Count	When not using this function, clear the "Use" check box. When the "Use" check box is not selected, the information related to the production volume (production volume, production achievement rate, production evaluation, and production cycle time) is not displayed. If the coefficient is not specified, calculation is performed using 1 as the coefficient. * The signal lamp color used for the count function cannot be used as the component color. * For WD-LR: Specify the signal lamp color used for the count function.
6	Signal settings	Monitoring light	Select the color used as the reference of the monitoring time. The monitoring time is total time for which one of the selected component color signals is in the on or flash state. If a color is not selected, the monitoring time is the elapsed time on that day.
7	Signal settings	Monitor signal towers	Specify the general monitor screen, whether to display the buzzer displayed in the signal lamp settings (list), the number of displayed tiers of the signal lamp, and the color for each tier of the signal lamp.
8	Signal settings	Monitor item	Specify the general monitor screen and the item being monitored for each signal lamp displayed on the monthly report screen.
9	Signal settings	Empty	No data is displayed.
10	Signal settings	Prod. (production volume / rate)	Displays the production volume and production achievement rate (bar display).
11	Signal settings	Opn. (operation time / rate)	Displays the operating time and operation rate (bar display).
12	Signal settings	Alm. (alarm time / count / rate)	Displays the abnormal time, error count, and error rate (bar display).
13	Signal settings	Production target	Target production volume
14	Signal settings	Monitoring time	Displays the monitoring time.
15	Signal settings	Production volume	Displays the production volume.
16	Signal settings	Production rate	Displays the production achievement rate (bar display). * Not displayed for shift display.
17	Signal settings	Operation time	Displays the operating time.
18	Signal settings	Operation rate	Displays the operation rate (bar display).
19	Signal settings	Alarm time	Displays the abnormal time.
20	Signal settings	Alarm count	Displays the error count.
21	Signal settings	Alarm rate	Displays the error rate (bar display).
22	Signal settings	Component colors 1 to 16 (time)	Displays the duration of the statuses indicated by component colors 1 to 16.
23	Signal settings	Component colors 1 to 16 (count)	Displays the number of occurrences of the statuses indicated by component colors 1 to 16.
24	Signal settings	Performance	Displays the performance. * Not displayed for shift display.
25	Signal settings	OEE	Displays the total equipment efficiency.

			* Not displayed for shift display.
26	Signal settings	Quality	Displays the quality. * Not displayed for shift display.
27	Signal settings	Good products	Displays the number of good products. * Not displayed for shift display.
28	Signal settings	Defective products	Displays the number of defective products. * Not displayed for shift display.
29	Signal settings	Theoretical output	Displays the number of producible products. * Not displayed for shift display.
30	Signal settings	Product tact time	Displays the production cycle.
31	Signal settings	Differences	Displays differences. * Not displayed for shift display.
32	Signal settings	Monitor item name	Specify a name for the display item. * You can register a name consisting of up to four characters.
33	Signal settings	Analysis items	Specify the analysis display items for each signal lamp displayed on the operation analysis screen.
34	Signal settings	Tact time cycle	Specify the cycle time to calculate performance.
35	Signal settings	Note	Enter a description or special notes on the signal lamp, if any.
36	Save	-	Registers settings for the target signal lamps all at once.
37	Remove	-	Deletes and disables all the settings for the target signal lamps.

(5) Basic settings menu

The left section of the basic settings screen displays the menus for all the basic settings screens. When you click a menu, each settings screen appears.

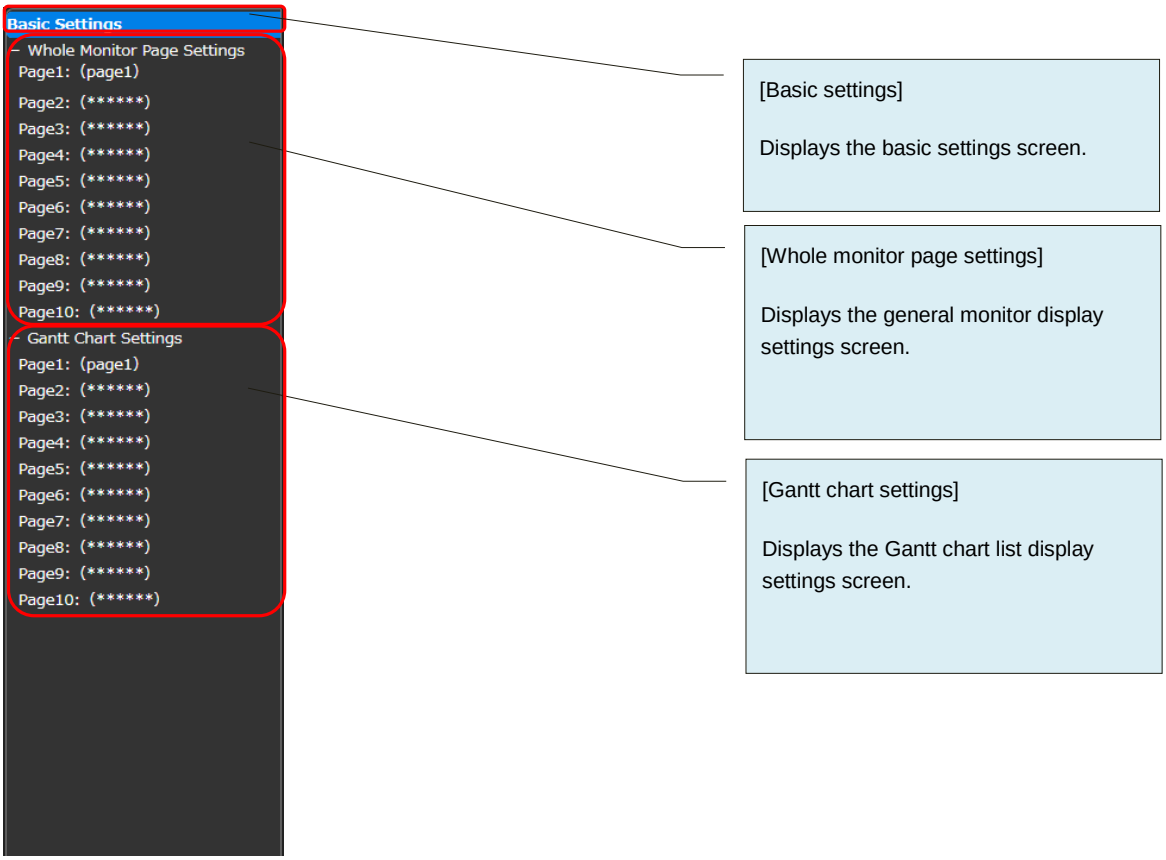


Figure 5: Basic settings menu

(6) Basic settings

Specify basic settings for Flex Signal.

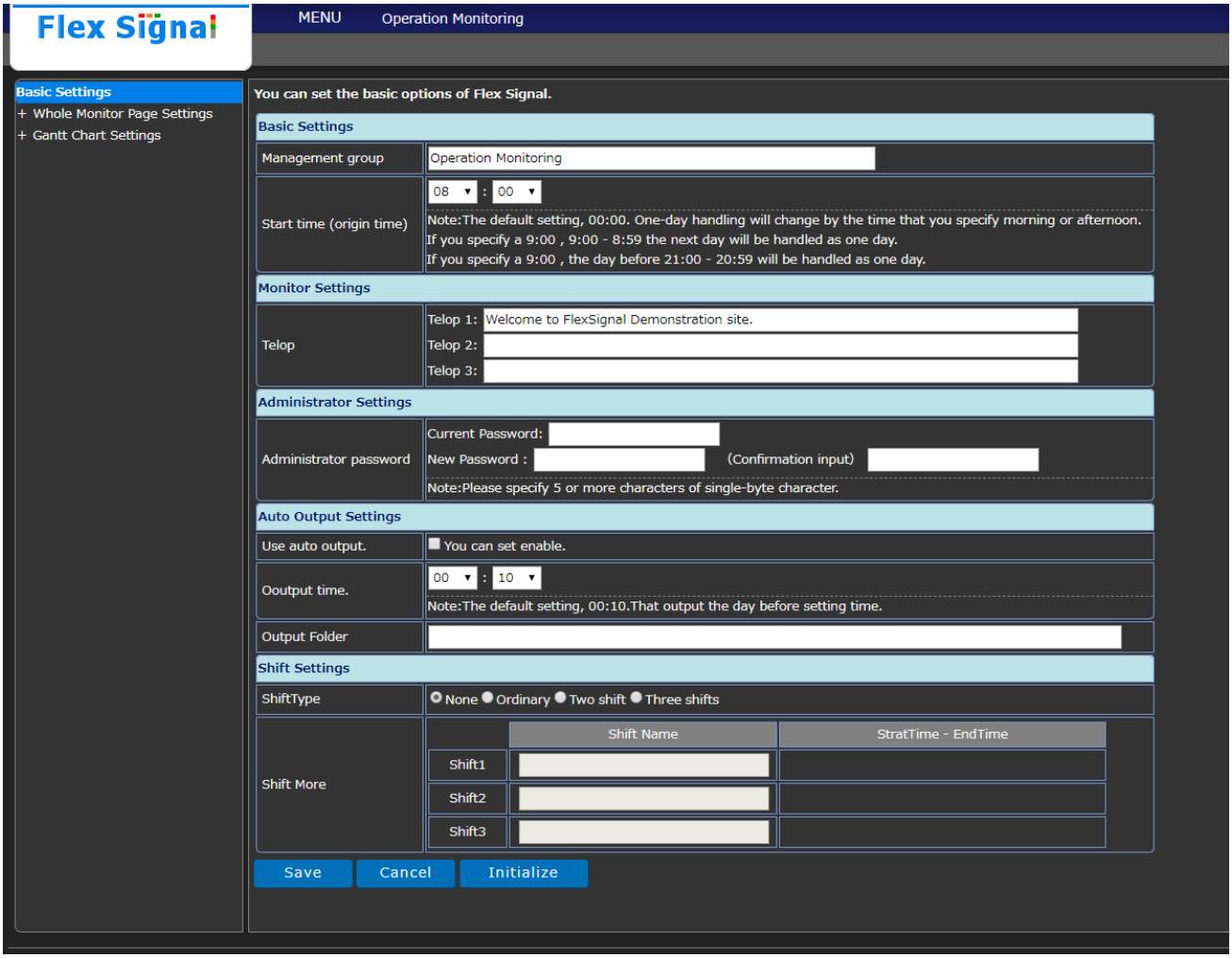


Figure 6: Basic settings

Table 4: Description of the basic settings

No.	Item		Description
1	Basic settings	Management group	Specify the management name. You can use any name desired. The management group name is displayed at the right of the "MENU" button at the top of the screen.
2	Basic settings	Start time (origin time)	Specify the start time (origin time) of a day. Specify the time you want to set as the origin of a day. How a day is managed depends on whether the specified time is before or after noon. If you specify 09:00, a day starts at 9:00 and ends at 8:59 on the following day. If you specify 21:00, a day starts at 21:00 on the previous day and ends at 20:59.
3	Basic settings	Telops 1 to 3	The text for up to three different telops can be specified. Telops 1, 2, and 3 scroll in order from right to left at the top of the screen.
4	Administrator settings	Administrator password	Specify the system administrator password. You can password protect "MENU" - "Options." The initial password is admin.
5	Auto output settings	Use auto output	Specify whether to automatically output daily reports. Select the check box to enable this item.
6	Auto output settings	Output time	Specify the output time. The initial setting is 00:10.
7	Auto output settings	Output folder	Specify the path to the output folder. Example: C:\Sample\text
8	Shift settings	Shift Type	Select the shift category. The initial setting is "None."
9	Shift settings	Shift More	Specify the shift name, start time, and end time. The shift items not selected in the shift category cannot be entered.
10	Save	-	Registers settings.
11	Cancel	-	Discards the current edits to the settings and updates the registration.
12	Initialize	-	Restores the settings at the time of shipment.

(7) Basic settings - whole monitor page settings

Specify general monitor display settings.

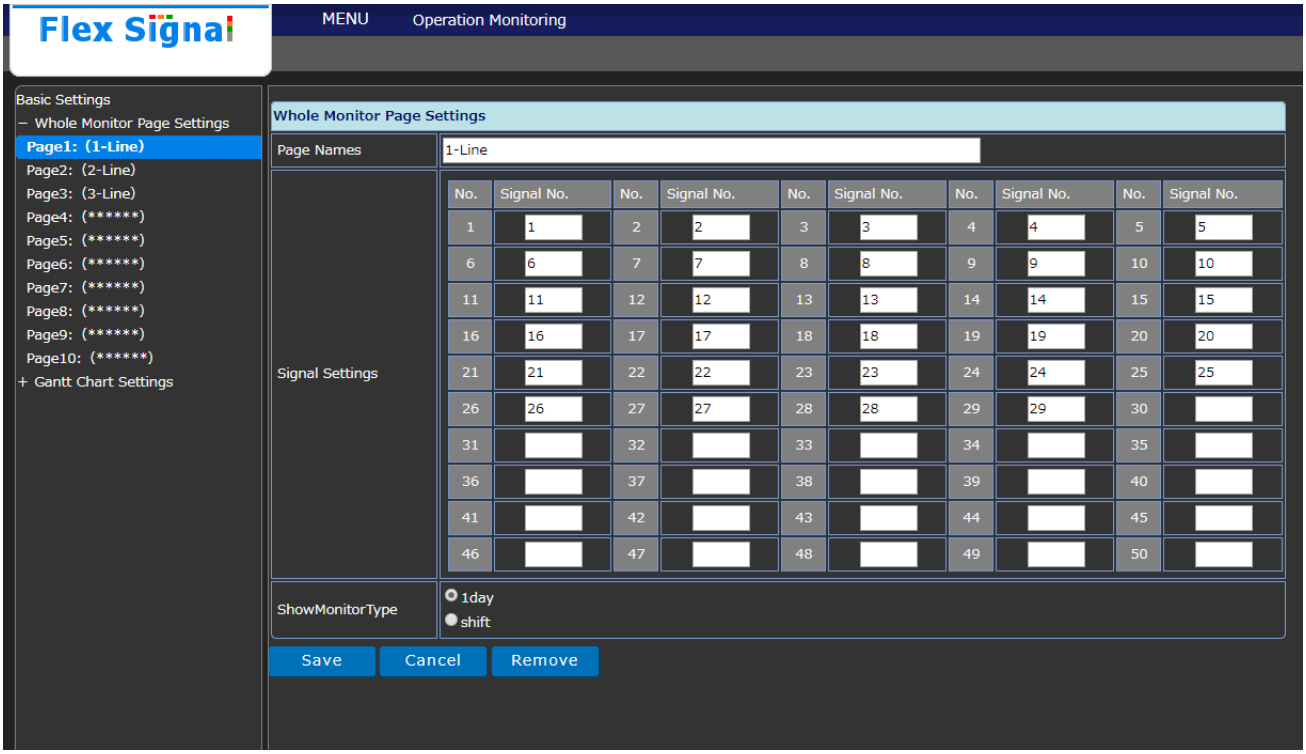


Figure 7: Whole monitor page settings

Table 5: Description of the Whole monitor page settings

No.	Item		Description
1	Whole monitor page settings	Page names	Specify the page name. You can use any name desired. After being registered, the page name is displayed on the "MENU" - "Monitor/general monitor" submenu at the top of the screen.
2	Whole monitor page settings	Signal settings	Specify the signal lamp No. displayed on the general monitor.
3	Whole monitor page settings	Show monitor type	Specify the monitor display range. One-day display: Displays data for one day. Shift display: Displays data in the shift category that includes the current time.
4	Save	-	Registers settings.
5	Cancel	-	Discards the current edits to the settings and updates the registration.
6	Remove	-	Deletes the settings and disables the page display settings.

(8) Basic settings - Gantt chart settings

You can specify the Gantt chart list display settings.

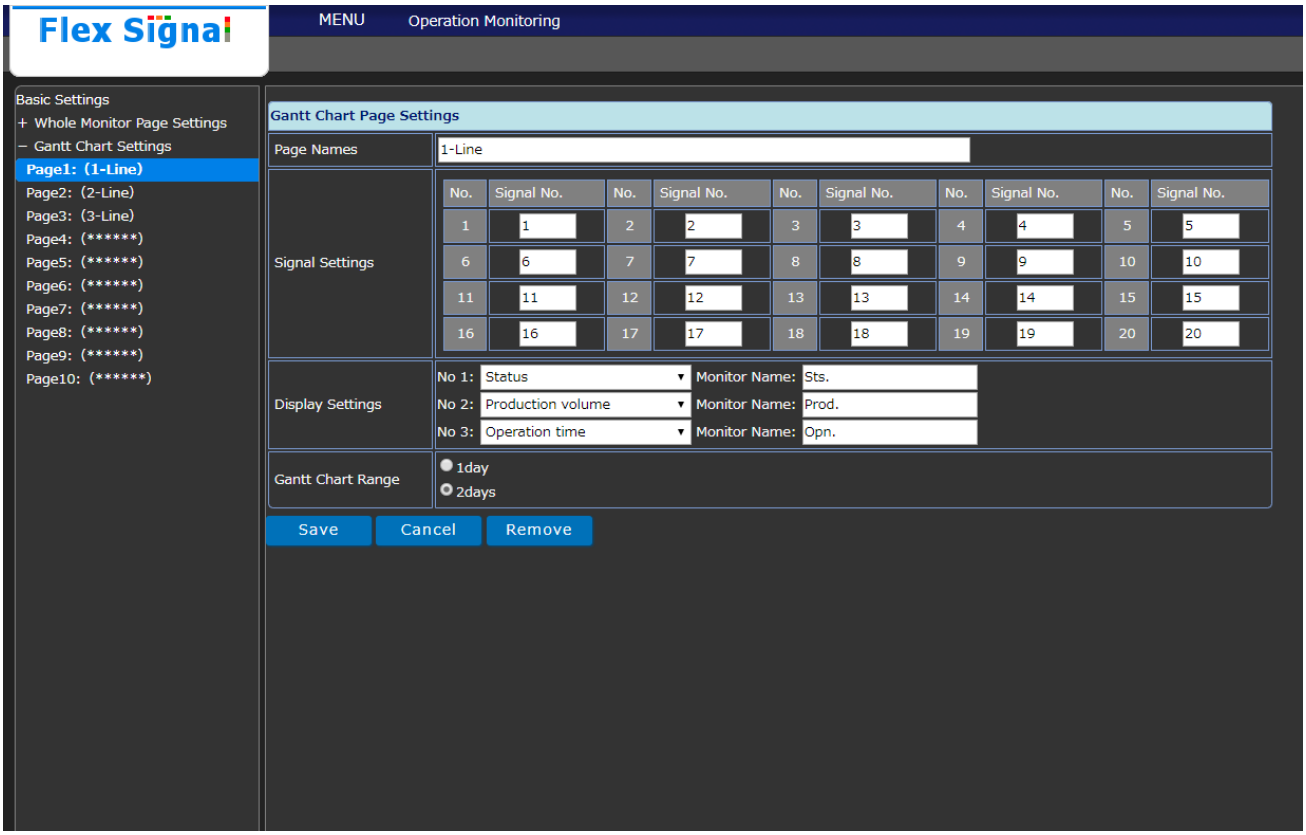


Figure 8: Gantt chart settings

Table 6: Description of the Gantt chart settings

No.	Item		Description
1	Gantt chart page settings	Page names	Specify the page name. You can use any name desired. After being registered, the page name is displayed on the "MENU" - "Monitor/chart list" submenu at the top of the screen and the menu on the screen described in "1-6(1) Gantt chart list monitor."
2	Gantt chart page settings	Signal settings	Specify the signal lamp number displayed on the screens described in "1-5(2) Chart list" and "1-6(1) Gantt chart list monitor."
3	Gantt chart page settings	Display settings	Specify the display settings for the items displayed on the screens described in "1-5(2) Chart list" and "1-6(1) Gantt chart list monitor."
4	Gantt chart page settings	Empty	No data is displayed.
5	Gantt chart page settings	Prod. (production volume / rate)	Displays the production volume.
6	Gantt chart page settings	Opn. (operation time / rate)	Displays the operating time.
7	Gantt chart page settings	Alm. (alarm time / count / rate)	Displays the abnormal time.
8	Gantt chart page settings	Production target	Displays the target production volume.
9	Gantt chart page settings	Monitoring time	Displays the monitoring time.
10	Gantt chart page settings	Production volume	Displays the production achievement rate.
11	Gantt chart page settings	Production rate	Displays the operation rate.
12	Gantt chart page settings	Alarm count	Displays the error count.
13	Gantt chart page settings	Alarm rate	Displays the error rate.
14	Gantt chart page settings	Component colors 1 to 16 (time)	Displays the duration of the statuses indicated by component colors 1 to 16. Component colors 1 to 16 can be specified as described in "1-7 (4) Group settings - Individual signal lamp settings."
15	Gantt chart page settings	Component colors 1 to 16 (count)	Displays the number of occurrences of the statuses indicated by component colors 1 to 16. Component colors 1 to 16 can be specified as described in "1-7 (4) Group settings - Individual signal lamp settings."
16	Gantt chart page settings	Status	Displays the status in real time. Each status is indicated by a component color. Component colors can be specified as described in "1-7 (4) Group settings - Individual signal lamp settings." * Not displayed on the Gantt chart list monitor.
17	Gantt chart page settings	Monitor name	Specify the name for the item to be displayed. * You can register a name consisting of up to four

			characters.
18	Gantt chart page settings	Gantt chart range	Specify the display range of the Gantt chart displayed in the chart list. When "Display for one day" is selected, the Gantt chart displays data for the current day. When "Display for two days" is selected, the Gantt chart displays data for the previous day and the current day. * This item is used in the chart list.
19	Save	-	Registers settings.
20	Cancel	-	Discards the current edits to the settings and updates the registration.
21	Remove	-	Deletes the settings and disables the page display settings.

(9) Operation evaluation settings - operation evaluation collective

Specify the grading with reference to the operation or production target.

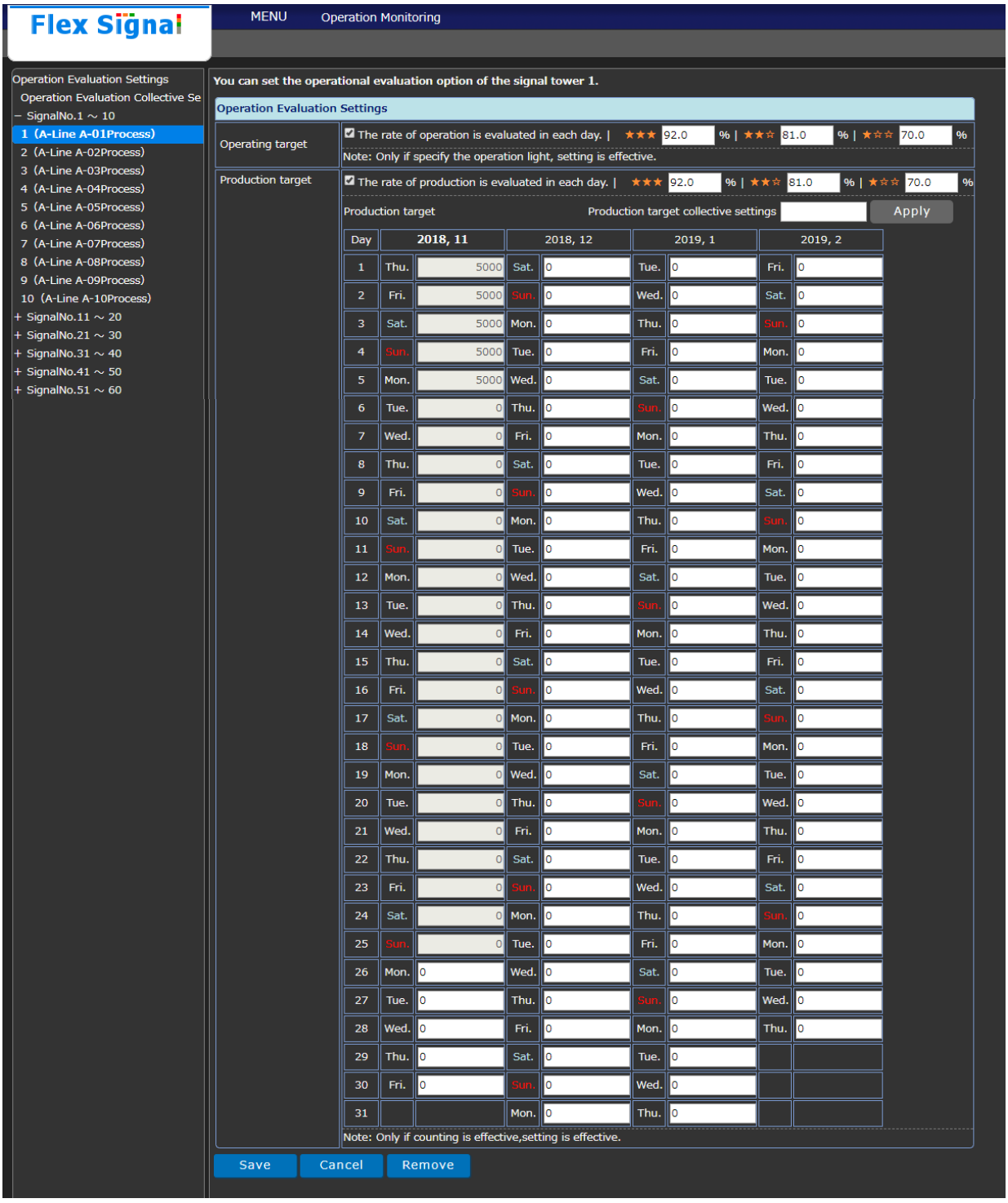


Figure 9: Individual operation evaluation collective

Figure 7: Description of individual operation evaluation collective

No.	Item		Description
1	Collective Target	-	Select the signal lamps you want to configure. You can easily select or deselect all the signal lamps by using "Select all" or "Deselect all."
2	Operation evaluation settings	Operating target	Specify whether to evaluate operation ("Evaluate the daily operation rate") and the operation grading values (three star grading). When evaluating operation, select the "Evaluate the daily operation rate" check box and specify the operation grading values.
3	Operation evaluation settings	Production target	Specify whether to evaluate production ("Evaluate the daily production achievement rate") and the production grading values (three star grading). You can specify the target production volume for the next four months including the current month. When evaluating production, select the "Evaluate the daily production achievement rate" check box and specify the production grading values and the production volume on each day.
4	Save	-	Registers settings.
5	Cancel	-	Discards the current edits to the settings and updates the registration.
6	Remove	-	Deletes settings.

(10) Operation evaluation settings - individual operation evaluation settings

Specify the grading with reference to the operation or production target.

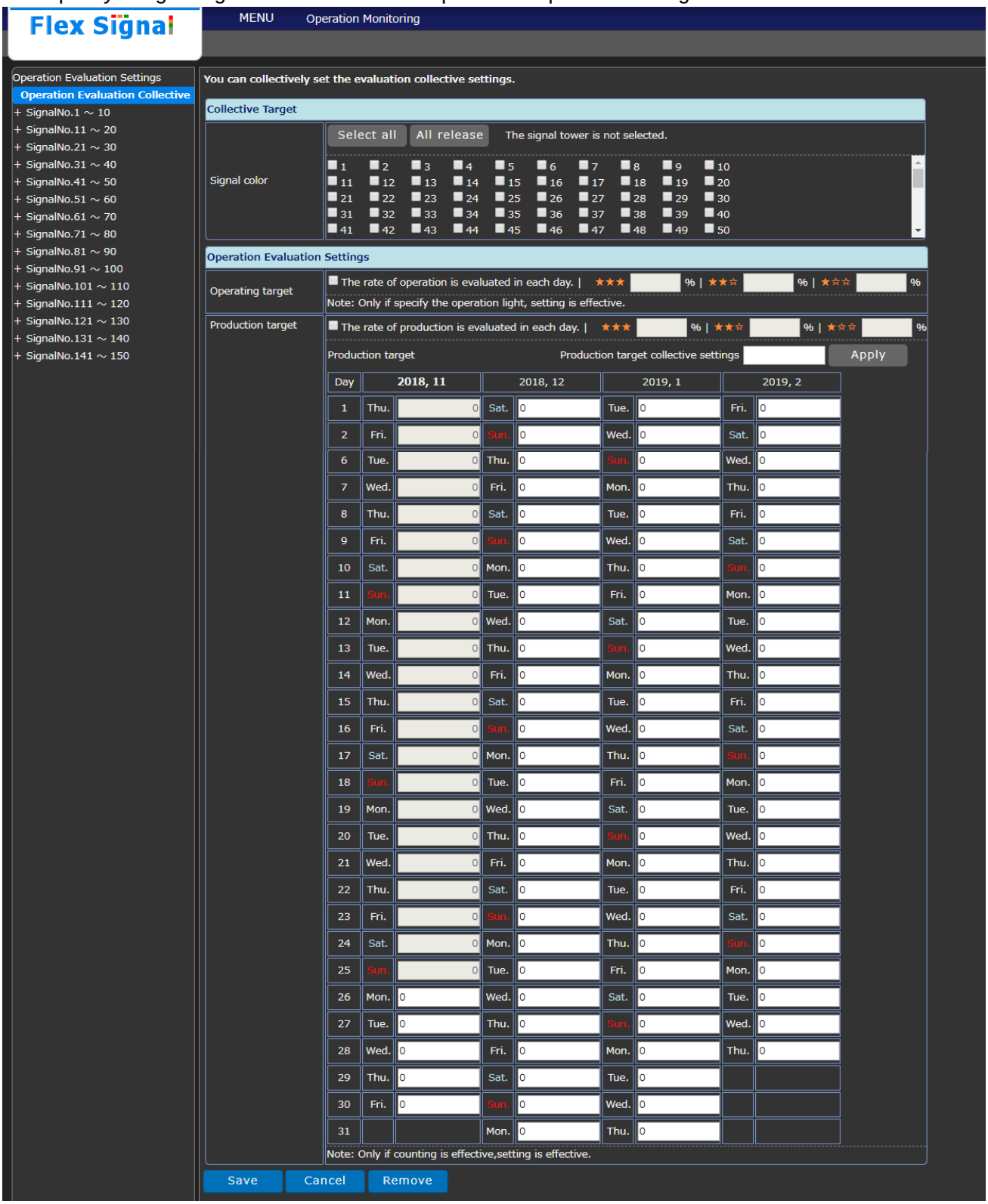


Figure 10: Individual signal lamp operation evaluation settings

Figure 8: Description of individual operation evaluation settings

No.	Item		Description
1	Operation evaluation settings	Operating target	Specify whether to evaluate operation ("Evaluate the daily operation rate") and the operation grading values (three star grading). When evaluating operation, select the "Evaluate the daily operation rate" check box and specify the operation grading values.
2	Operation evaluation settings	Production target	Specify whether to evaluate production ("Evaluate the daily production achievement rate") and the production grading values (three star grading). You can specify the target production volume for the next four months including the current month. When evaluating production, select the "Evaluate the daily production achievement rate" check box and specify the production grading values and the production volume on each day.
3	Save	-	Registers settings.
4	Cancel	-	Discards the current edits to the settings and updates the registration.
5	Remove	-	Deletes settings.

(11) Event settings - event basic settings

Specify the settings for the email server used at event notification and the settings for notification to the external signal lamp.

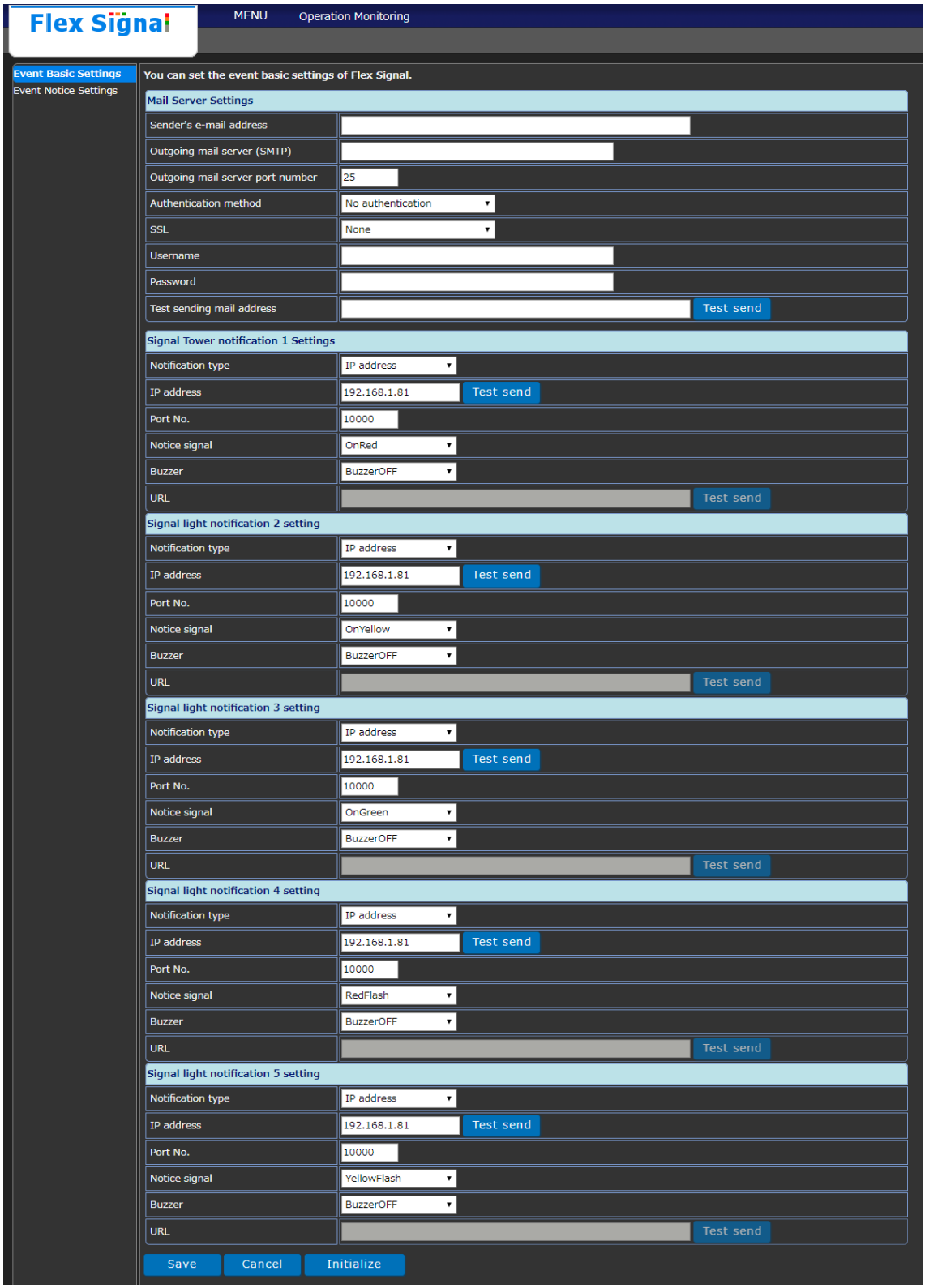


Figure 11: Event basic settings

Table 9: Description of event basic settings

No.	Item		Description
1	Email server settings	Sender's email address	Specify the source email address of the event notification email.
2	Email server settings	Outgoing mail server (SMTP)	Specify the transmission email server (SMTP) used for event email notification.
3	Email server settings	Outgoing mail server port number	Specify the port number of the transmission email server.
4	Email server settings	Authentication method	Specify the authentication method used for email transmission.
5	Email server settings	SSL	Specify whether to use SSL for email transmission.
6	Email server settings	User name	Specify the user name used for authentication at email transmission. * You do not have to enter this item if "Authentication method" is "No authentication."
7	Email server settings	Password	Specify the password used for authentication at email transmission. * You do not have to enter this item if "Authentication method" is "No authentication."
8	Email server settings	Test sending mail address	Specify the email address to which you want to send the test email. You can send the email by pressing the "Test transmission" button.
9	Settings for signal light notification 1 to 5	Notification type	Specify the signal lamp notification category. To use the IP address, port number, notification lamp, and buzzer, select "IP address." To use the URL, select "URL."
10	Settings for signal light notification 1 to 5	IP address	Specify the IP address of the external signal lamp to which event notification is sent from Flex Signal.
11	Settings for signal light notification 1 to 5	Port no.	Specify the port number of the external signal lamp.
12	Settings for signal light notification 1 to 5	Notice signal	Select the signal lamp that lights up or flash at event notification.
13	Settings for signal light notification 1 to 5	Buzzer	Specify to sound the buzzer at event notification.
14	Settings for signal light notification 1 to 5	Test send	Sends the signal lamp notification to the specified IP address. The notification lamp and buzzer follow the settings on this screen.

15	Settings for signal light notification 1 to 5	URL	Specify the URL to which event notification is sent from Flex Signal. * For details on the URL to be specified, see the manual for your network display lamp available from PATLITE.
16	Settings for signal light notification 1 to 5	Test send	Sends the signal lamp notification to the specified URL.
17	Save	-	Registers settings.
18	Delete	-	Deletes settings.
19	Initialize	-	Restores the settings at the time of shipment.

(12) Event settings - event notice settings

Specify the event notification settings.

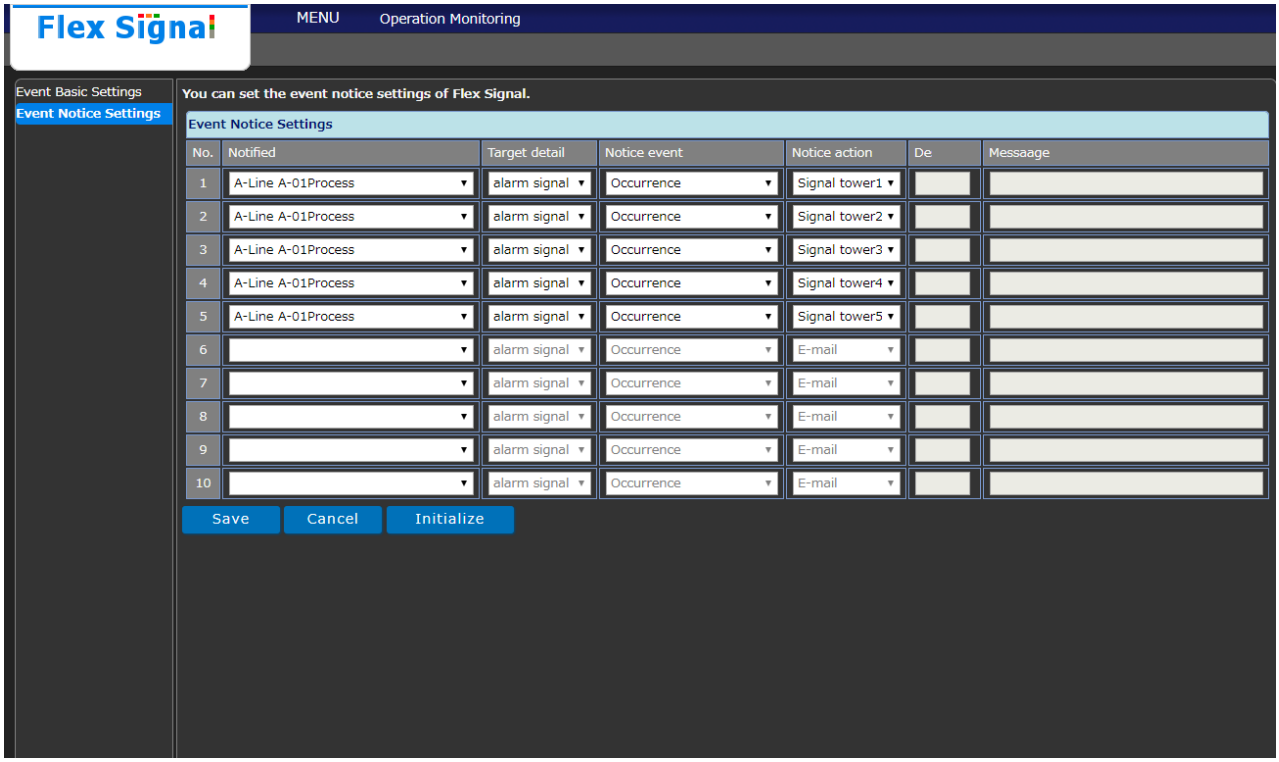


Figure 12: Event notice settings

Table 10: Description of event notice settings

No.	Item		Description
1	Event notice settings	Notified	Specify the signal lamp subject to event notification. If you are not going to send any notifications, leave it blank (initial setting). To set event notifications for all the signal lamps, select "All." To set event notification to one page on the general monitor, select a page name.
2	Event notice settings	Target detail	Specify the details of the signal lamp subject to event notification. To set event notification for the signal lamps used as error lamps, select "Error lamp." To set event notification for each component color, select "Component color 1 (to 16)."
3	Event notice settings	Notice event	Specify the event that serves as the notification trigger. "Generated" indicates that the error indicated by the signal lamp occurs. "Recovered" indicates that the normal status is recovered from the error indicated by the signal lamp.
4	Event notice settings	Notice action	Specify the operation at event notification. When you select "Email notification," an event notification email is sent to the destination email address. When you select "Signal lamp notification 1 (to 5)," notification is sent to the external signal lamp specified under basic event settings.
5	Event notice settings	Destination mail address	Specify the email address to which notification is sent. This item can be specified only when "Notification operation" is "Email notification." You can specify multiple email addresses by separating them with commas (,). You can enter up to 100 characters.
6	Event notice settings	Message	Specify the body of the notification email. This item can be specified only when "Notification operation" is "Email notification." You can enter up to 100 characters.
7	Save	-	Registers settings.
8	Delete	-	Deletes settings.
9	Initialize	-	Restores the settings at the time of shipment.

(13) Defective products settings

Specify the number of defective products.

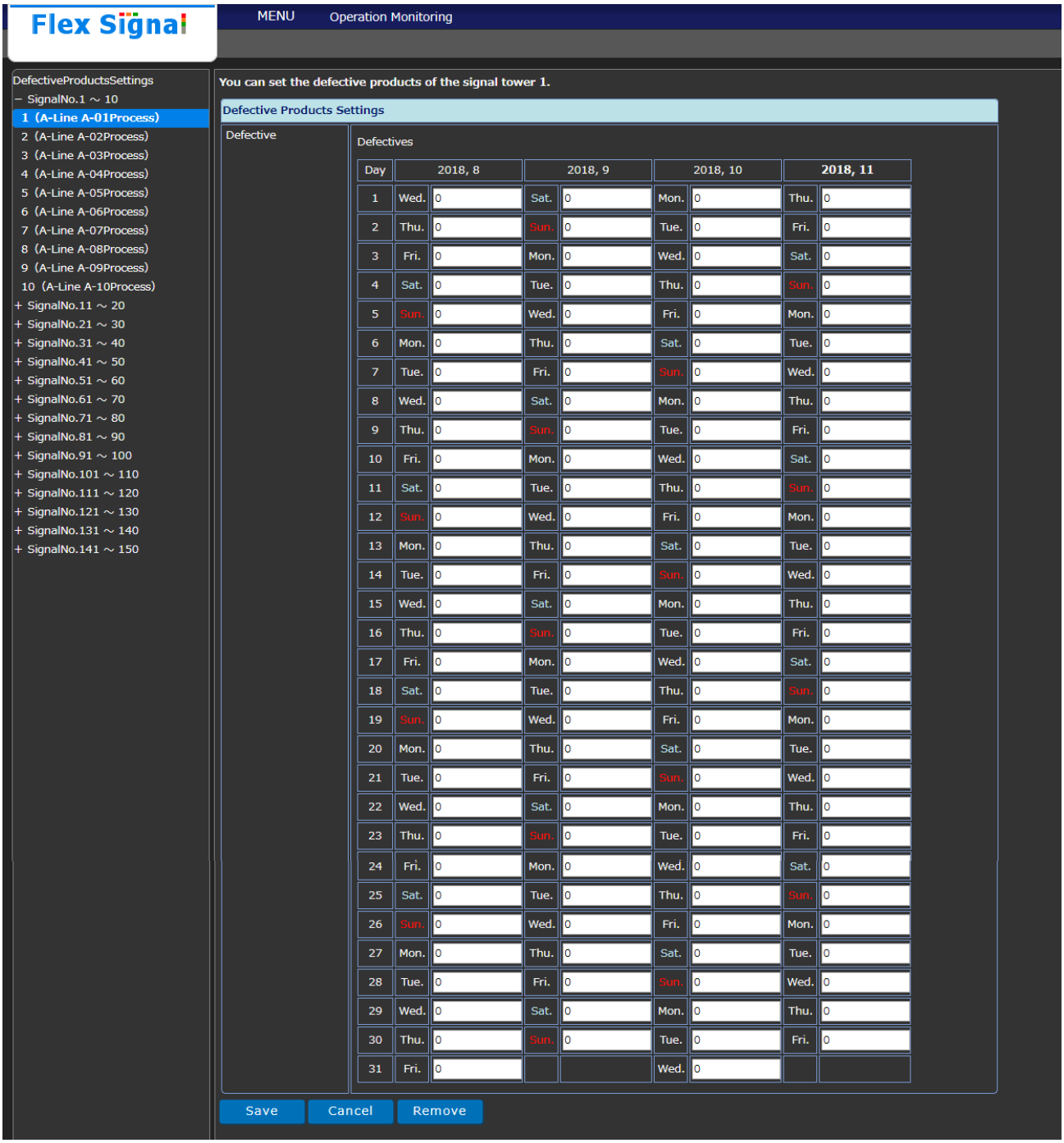


Figure 13: Defective products settings

Table 11: Description of Defective products settings

No.	Item		Description
1	Defective Products Settings	Defective	You can specify the number of defective products for the past four months including the current month. Enter the number of defective products on each day.
2	Save	-	Registers settings.
3	Cancel	-	Discards the current edits to the settings and updates the registration.
4	Remove	-	Deletes settings.

1-8. Other

(1) Terminal display

Specify the settings related to the screen display on the access terminal.

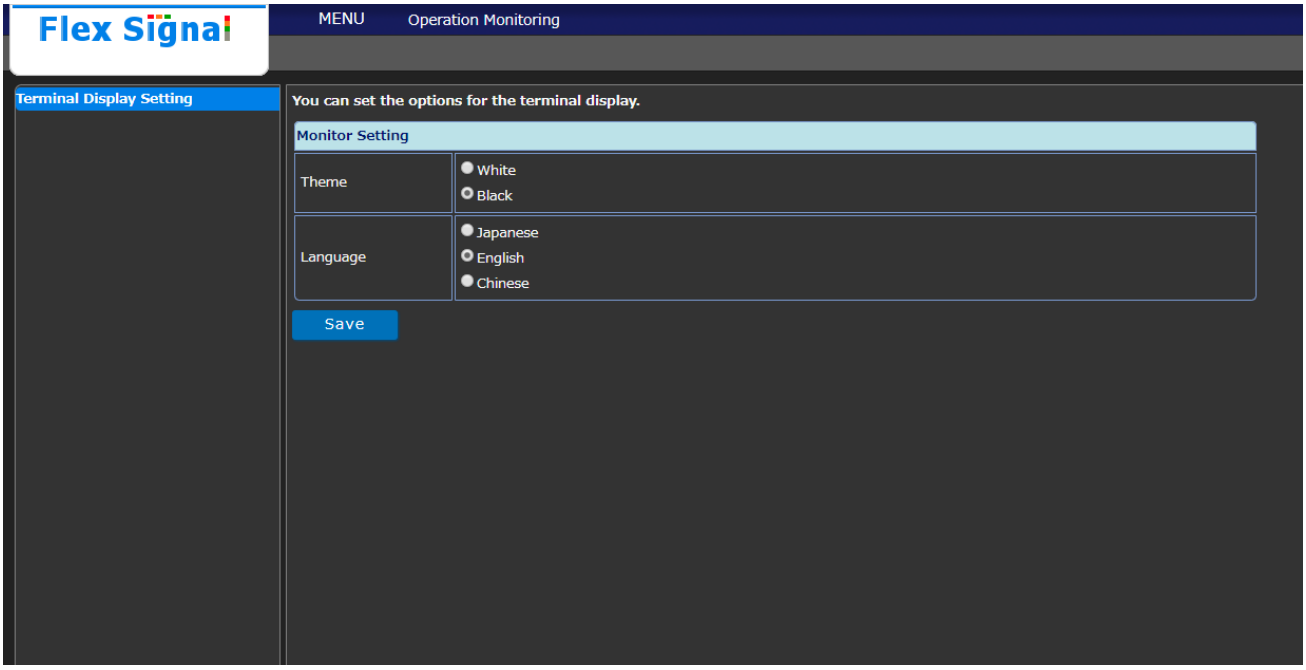


Figure 1: Terminal display settings

Table 1: Description of terminal display settings

No.	Item		Description
1	Monitor setting	Theme	Specify the screen theme. Select the base color. This theme only applies to the terminal whose screen is currently being accessed.
2	Monitor setting	Language	Specify the screen language. This language only applies to the terminal whose screen is currently being accessed.
3	Save	-	Registers settings.

(2) Help - system information

View system information.

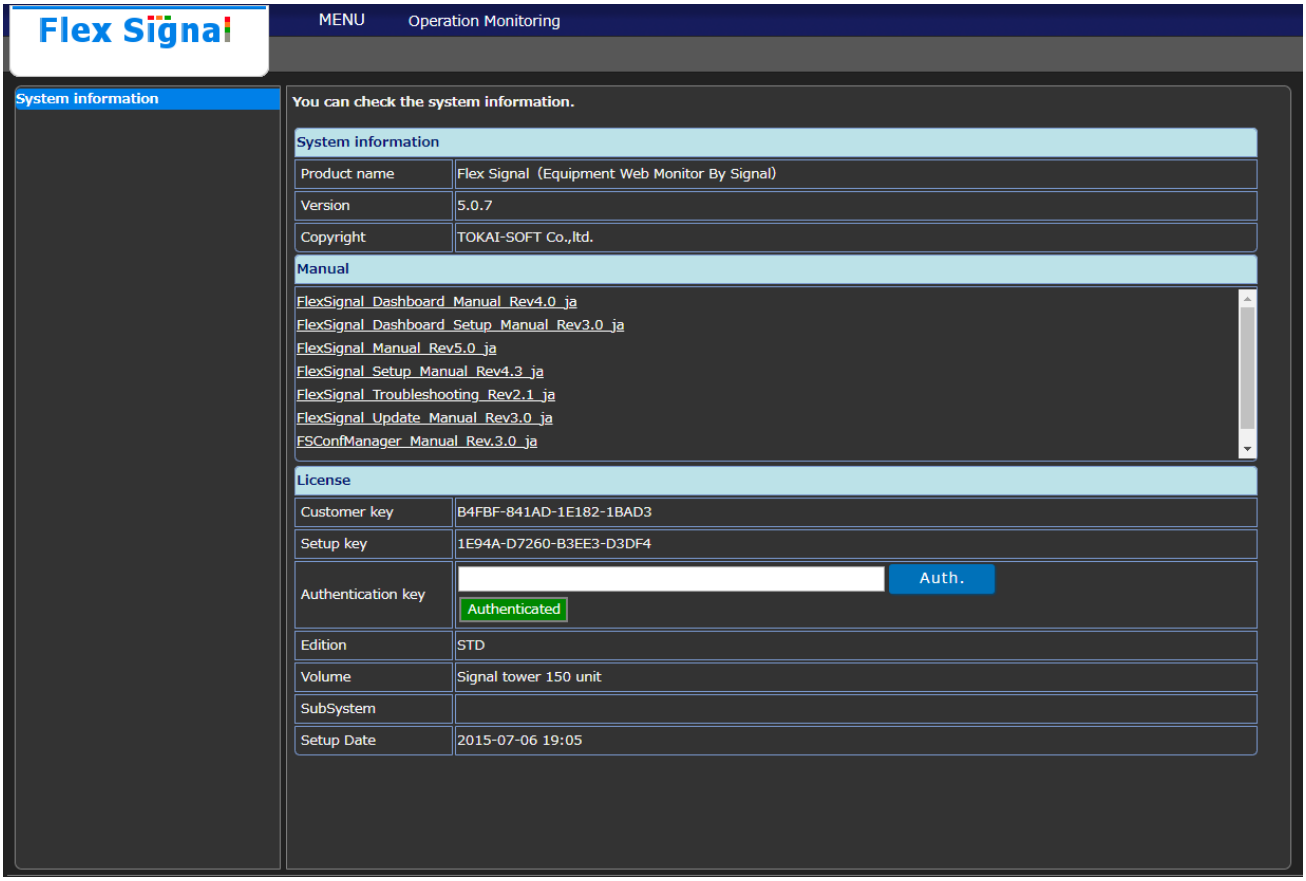


Figure 2: System information

Table 3: Description of system information

No.	Item		Description
1	System information	Product name	Displays the product name.
2	System information	Version	Displays version information.
3	System information	Copyright	Displays copyrights.
4	Manual	Each type of manual	You can read each type of manual.
5	License	Customer key	Displays the customer key.
6	License	Setup key	Displays the setup key.
7	License	Authentication key	Enter the authentication key. After installation, During the trial (expiration date : 2018-12-26 15:41) is displayed until the expiration date. When you are using Flex Signal for trial purposes, Flex Signal can be used until the expiration date. * The expiration date for trial use is one month after installation. When you enter the correct authentication key, Authenticated is displayed. Once authenticated, Flex Signal can be used indefinitely. After the expiration date, Unauthenticated is displayed. If Flex Signal is not authenticated, data for the signal lamps is no longer updated.
8	License	Edition	Displays the edition.
9	License	Volume	Displays the number of signal lamps that can be managed.
10	License	Subsystem	Displays the subsystem installation status. The background color of the subsystems where Flex Signal is installed is green as shown below. Dashboard The background color of the subsystems where Flex Signal is not installed is gray as shown below. Dashboard
11	License	Setup date	Displays the setup date.

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