User's Manual

DXAdvanced R4

DX1000/DX1000N/DX2000 Advanced Security Function (/AS1)

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Thank you for purchasing the Daqstation DX1000, DX1000N, or DX2000 (hereafter referred to as the DX).

This manual describes the operating procedure for the DX advanced security function (/AS1 option). Please use this manual in conjunction with the DX User's Manual (IM04L41B01-01E or IM04L42B01-01E).

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions.
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Revisions

1st edition: March 2010
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Conventions Used in This Manual

Unit

K	Denotes 1024. Example: 768 KB (file size)
k	Denotes 1000.

Markings

⚠ *Improper handling or use can lead to injury to the user or damage to the instrument.* This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION Calls attentions to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

Note Calls attention to information that is important for proper operation of the instrument.

Subheadings

Bold characters Denotes key or character strings that appear on the screen. Example: **Volt**

Ⓐⓐ#️⃣1️⃣ Indicates character types that can be used. Ⓐ Uppercase alphabet, ⓐ lowercase alphabet, #️⃣ symbols, 1️⃣ numbers.

Procedure Carry out the procedure according to the step numbers.
Explanation All procedures are written with inexperienced users in mind; depending on the operation, not all steps need to be taken. Explanation gives information such as limitations related the procedure.

Setup Screen Indicates the setup screen and explains the settings. A detailed description of the function is not provided in this section. For details on the function, see chapter 1.
Setup Items

Applicable Recorders

The models listed below can be equipped with the advanced security function. In this manual, the terms "DX1000" and "DX2000" refer to the following models.

Notation in This Manual	Models
DX1000	DX1006, DX1012, DX1006N, and DX1012N with release number 4 and later
DX2000	DX2010, DX2020, DX2030, DX2040, and DX2048 with release number 4 and later

What This Manual Explains

This manual primarily explains the login, audit trail, and signature functions of the advanced security option. For details on other operations, see the *DX1000/DX1000N User's Manual (IM04L41B01-01E)* or the *DX2000 User's Manual (IM04L42B01-01E)*. For details on the DX's communication functions, see the *DX1000/DX1000N/DX2000 Communication Interface User's Manual (IM04L41B01-17E)*.

This manual explains how to use the advanced security function on the DX1000. For the cases where the usage differs for the DX2000, this manual also explains how to use the advanced security function on the DX2000.

The following terms are used for references to other manuals:

Notation	Description
User's Manual	Refers to DX User's Manual IM04L41B01-01E or IM04L42B01-01E.
Operation Guide	Refers to DX Operation Guide IM04L41B01-02E or IM04L42B01-02E.
Communication Manual	Refers to DX Communication Interface User's Manual IM04L41B01-17E.
Multi Batch Manual	Refers to Multi Batch User's Manual IM04L41B01-03E.
Custom Display Manual	Refers to Custom Display User's Manual IM04L41B01-04E.
DAQSTANDARD Viewer Manual	Refers to DAQSTANDARD Viewer User's Manual IM04L41B01-63EN.

Revision History

Edition	DX	Description
1	Release number 4 (Version 4.0x) Style number 3	Newly published.
2	Same as edition 1.	Additions and improvements to explanations.

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1.1   Using the Advanced Security Function

This section gives a general overview of how to use the advanced security function.

Operation Overview

Configuring Functions

First, you need to configure the DX functions. You have to configure the measurement settings and register DX users. After you register users, to use the DX, you will need to log in to it by entering a user name, user ID, and password.
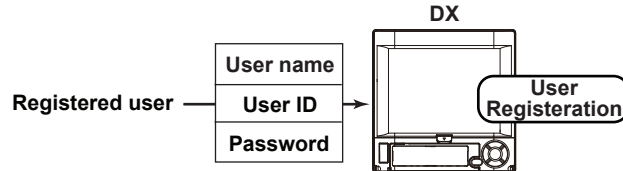
History of the setting changes is recorded in the change settings log. After the settings have been changed, this log is saved to a CF card along with the setup file.
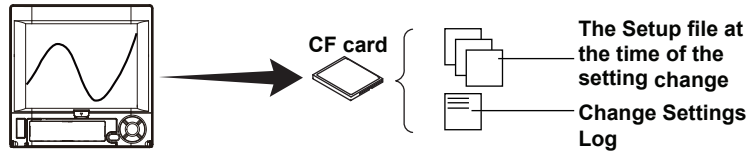
Measurement

Measured data (display or event data, see section 1.2) is saved to the DX internal memory and to files on an external storage medium. The measured data file includes the settings at the time of measurement, a history of the operations (operation log), and login (user) information.
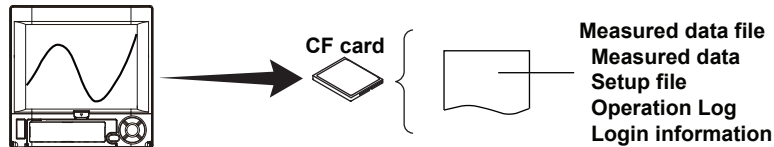
Signing Files

You can check the measured data and the operation log and add pass or fail data to the measured data file. This is referred to as "signing." A file can only be signed by users who have permission to sign it.

On the DX, you can only sign measured data files in the internal memory. You can sign measured data files that have been saved to an external storage medium using the attached PC software, DAQSTANDARD.
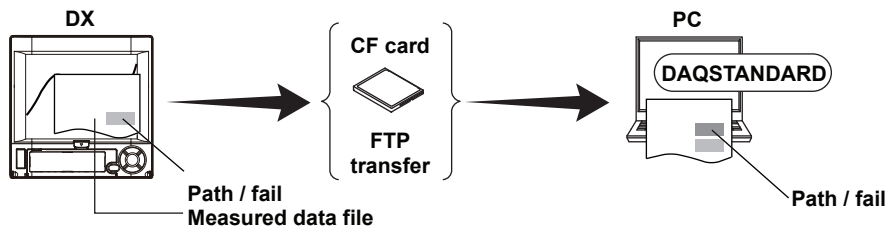
DX Operation Range

The DX Manages Measured Data in Its Internal Memory

- You cannot change measured data files in the internal memory. You cannot delete measured data files without initializing the internal memory.
- On the DX, you can only sign measured data files in the internal memory.
- When the measured data in the internal memory is saved to a file on an external storage medium and there is already a file with the same name, that file is overwritten.

You Cannot Use the DX to Change a Measured Data File That Has Been Saved to an External Storage Medium

- You can view a measured data file that has been saved to an external storage medium on the DX, but you cannot change or delete it.
- The DX cannot format external storage media.

PC Software

You can use the attached PC software, DAQSTANDARD, to create DX setup data and display and sign measured data.

For details, see the *DAQSTANDARD Viewer Manual*.

Terms Used in This Manual

Administrator (See section 1.3)

A type of user that can be registered on the DX. This type of user can perform any operation.

Audit Trail Function (See section 1.5)

This function saves information that can be used to retrace past operations.

Auto Save (See section 1.2)

A method for automatically saving the data in the internal memory to the CF card.

Change Settings Log (See section 1.5)

A log that lists setting changes in a specified format in the order that they occurred.

Login and Logout (See section 1.3)

Logging in is the act of entering a user name, user ID, and password that are registered on the DX so that you can operate it. Logging out is the act of clearing the logged in status.

Login Information (See section 1.5 in the *DAQSTANDARD Viewer manual*)

A user's password may change during operation. This can happen when the password expires. The login information is the user name and password information at the time that the measured data file was created. This information is saved in the measured data file. To sign a measured data file, you must log in as a user that is registered in the login information in that measured data file. You cannot view the login information.

Manual Save (See section 1.2)

A method for specifying an external storage medium and saving unsaved data in the internal memory to files on the storage medium when a given operation is carried out.

Media FIFO (First in first out) (See section 1.2)

A method for saving a new file to the CF card when there is not enough space, in which the oldest file is deleted and then the new file is saved.

Memory Start, Memory Stop, and Memory Sampling (See section 1.2)

Memory sampling is the acquisition of measured data. Measured data is recorded on the DX as display or event data. The starting and stopping of memory sampling are referred to as "memory start" and "memory stop."

Multi Login (See section 1.3)

A function that enables multiple users to log in at the same time. Users can log in to the DX at the same time through key operations, Ethernet communication, and serial communication.

Operation Log (See section 1.5)

A log that lists operations in a specified format in the order that they occurred.

Password Management Function (See section 1.4)

A function for managing the users who can access the DX by using a KDC server connected to the network.

Signature Function, Signing (See section 1.6)

A function for checking saved data and adding pass-or-fail approval information and the user name to the data, or the act of adding such information. Equivalent to a digital signature.

User (See section 1.3)

A type of user that can be registered on the DX. The operations that this type of user can perform are limited.

User Privileges (See section 1.3)

The range of operations that a user can perform.

1.2 Recording and Saving Data

This section explains the types of data that a DX with the /AS1 advanced security option can record and how to save them.
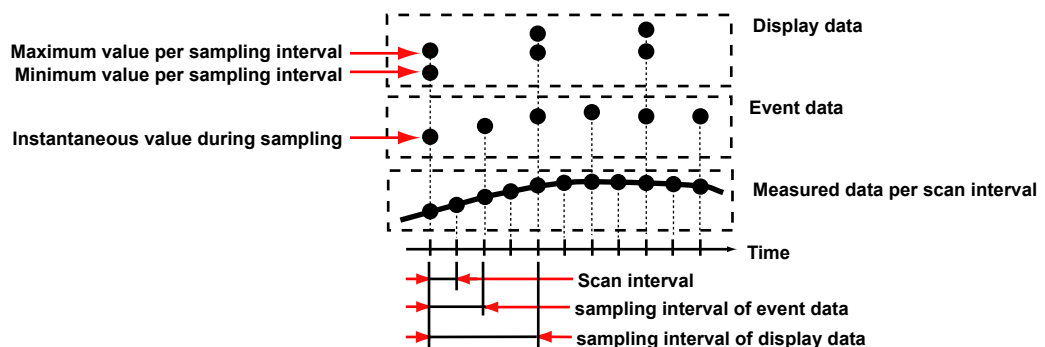
Data Types

The types of data that the DX can store to files are listed below. For information about file name extensions, see page 1-9.

Data Type	Description
Display data	•This is the waveform data that appears on the trend display. Measured data is recorded at the set sampling interval. The sampling interval is determined by the trend update interval. •The maximum and minimum values measured within each sampling interval are saved. •You can write a header character string into the file (shared with other files). •The file contains alarm and message information, an operation log, login information, and setup data. •The data format is binary (undisclosed). The data is encrypted.
Event data	•Measured data acquired at the set sampling interval. •You can write a header character string into the file (shared with other files). •The file contains alarm and message information, an operation log, login information, and setup data. •The data format is binary (undisclosed). The data is encrypted.
Manual sampled data	•The instantaneous measured data values when a manual sample operation is performed. •You can write a header character string into the file (shared with other files). •The data format is text.
Report data (/M1 and /PM1 options)	•Hourly, daily, weekly, and monthly data. Report data is recorded at specific intervals (once a day, once a week, and so on). •You can write a header character string into the file (shared with other files). •The data format is text. •You can create reports in XML spreadsheet format.
Snapshot data (screen-image data)	•DX screen-image data. •Can be saved to a CF card. •The data format is PNG.
Setup data	•The DX setting data. •The data format is binary (undisclosed). The data is encrypted.
Custom display setup data	•The custom display setup data. •The data format is text.
Change Settings Log	•A history of setting changes. •The data format is text.

- **Display data and event data**
  Display data is similar to the conventional chart-sheet recording of the past. Event data is useful when you want to record measured data in detail.

Maximum value per sampling interval
Minimum value per sampling interval

Instantaneous value during sampling

Display data

Event data

Measured data per scan interval

Time

Scan interval
sampling interval of event data
sampling interval of display data

Data Recording and Storage Flowchart

Measured data is recorded to internal memory and then saved to external memory.
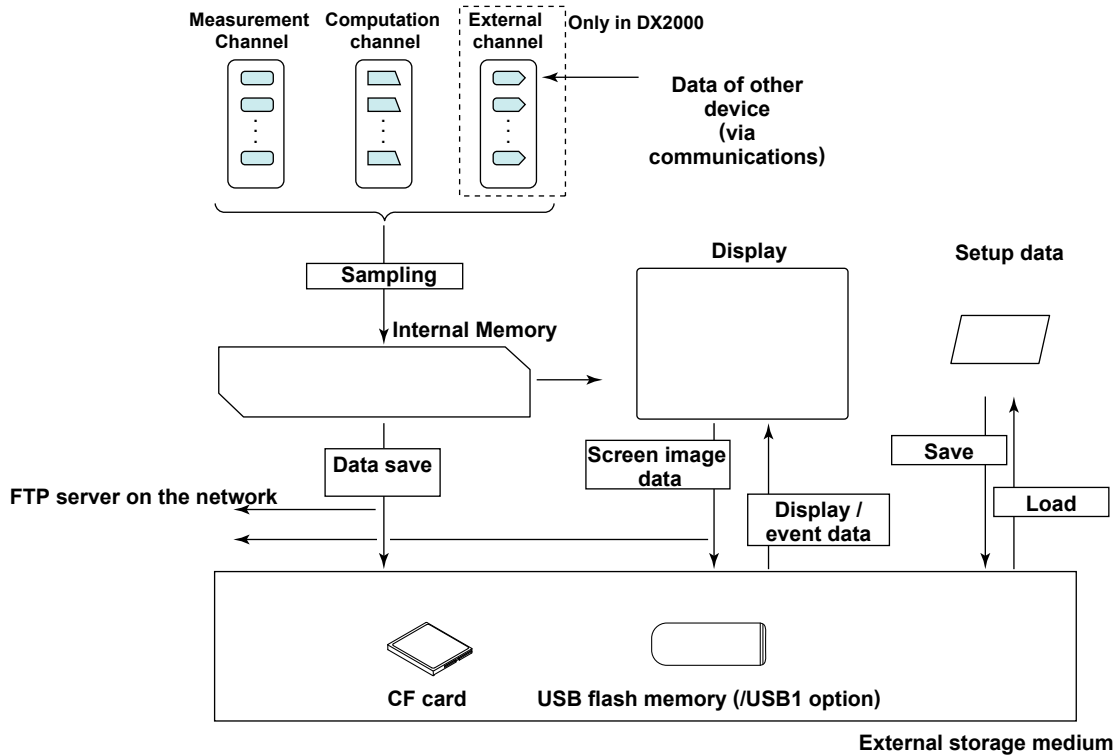
Internal Memory

Display data and event data are saved as files in internal memory. They are also saved as files to an external storage medium.

Directory on the external storage medium
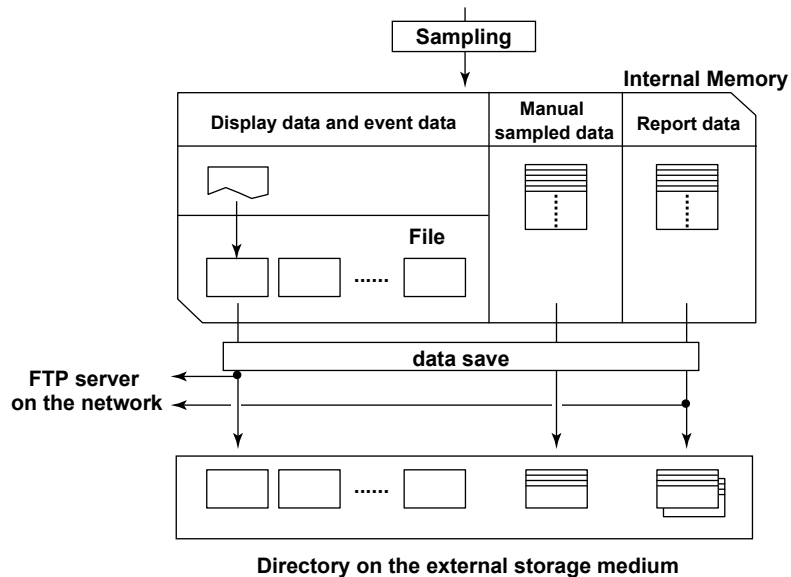
Display, Event, and Setup Data File Encryption

Display, event, and setup data files are encrypted. You cannot change their data or delete them.

Display and Event Data Recording Methods

For the setting procedure, see section 6.1 in the *User's Manual*.

For operating instructions, see section 6.4 in the *User's Manual*.

Type of Data to Record

You can choose to record display or event data.

* **Choosing What Type of Data to Record**

  Record the type of data that meets your needs. Use the following examples for reference.

  Example 1: Record continuous waveform data only, just like conventional chart sheet recording instruments.

  Record display data.

  Example 2: Continuously record data that is as detailed as possible.

  Set the sampling interval and record event data.

Internal Memory

The measured data is partitioned and saved to files at set intervals. If the internal memory is full or if the number of display-data files and event-data files exceeds 400, files are overwritten from the oldest file.

Recording Conditions of Display Data

Item	Description
Channel type	You can set the channel type to measurement, computation, or extended input.
Sampling interval	Determined by the "trend refresh interval" (see the following diagram). You cannot choose a display-data sampling interval that is higher than the scan interval.
File generation	Files are generated at the set file-save interval.

Files are also generated in these cases:

- When you generate a file manually.
- When sampling stops (memory stop).
- When a file is generated through the use of the event-action feature.
- After the DX recovers from a power failure.

Memory start/stop	Pressing the START key starts recording (memory start). Pressing the STOP key ends recording (memory stop).

Trend update interval vs. display data sampling interval

Trend interval	5 s[*1]	10 s[*1]	15 s[*2]	30 s	1 min
Sampling interval	125 ms	250 ms	500 ms	1 s	2 s
Trend interval	2 min	5 min	10 min	15 min	20 min
Sampling interval	4 s	10 s	20 s	30 s	40 s
Trend interval	30 min	1 h	2 h	4 h	10 h
Sampling interval	1 min	2 min	4 min	8 min	20 min

*1 Selectable on the DX1002, DX1004, DX1002N, DX1004N, DX2004, and DX2008.

*2 Selectable in fast sampling mode on the DX1006, DX1012, DX1006N, DX1012N, DX2010, DX2020, DX2030, DX2040, and DX2048.

Recording Conditions of Event Data

Item	Description
Channel type	Same as display data.
Sampling interval	Choices are available in the range of 25 ms to 30 min. You cannot choose a sampling interval that is higher than the scan interval.
File generation	A file is generated when the set data length is reached.
	Files are also generated in these cases:
	• When you generate a file manually.
	• When sampling stops (memory stop).
	• When a file is generated through the use of the event-action feature.
	• After the DX recovers from a power failure
Mode	Free (always recording)
	Pressing the START key starts recording. Pressing the STOP key ends recording.
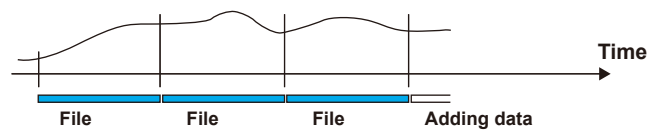
Creating Files through Key Operation

You can use key operations to generate files.
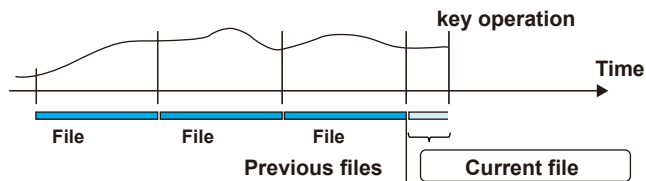
For operating instructions, see section 6.4 in the *User's Manual*, "Starting/Stopping the Recording and Saving the Measured data."

Manual Sampled Data

Manually sampled data is stored to internal memory. When the number of manual-sampled-data exceeds 400, the oldest data are overwritten.
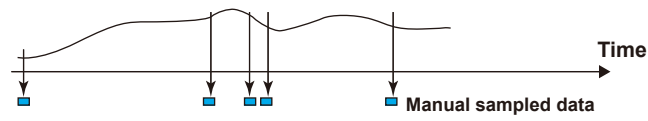
For operating instructions, see section 6.5 in the *User's Manual*.

Report Data

Report data is stored to internal memory. When the number of report data files exceeds 100, the oldest data files are overwritten.
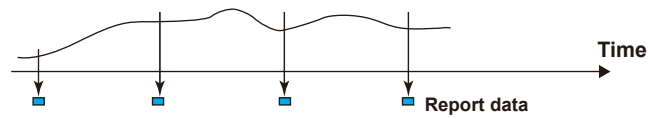
For the setting procedure and operating instructions, see section 9.5 in the *User's Manual*.

Directories and File Saving on External Storage Medium

Types of External Storage Medium

- CF card (32 MB or more)
- USB flash memory (/USB1 option)

CF Card Directory

The directories and files of the CF card that the DX automatically saves to are indicated below.

Root directory

— Setup files

Setup files stored using key operation

For the operating procedure, see section 6.9 in the *User's Manual*.

SET0 directory

- Stores the following files when settings are changed.
  - Setup files
  - Change settings log files
- Has media FIFO action.
- For details, see section 1.5.

Data save destination directory

- Stores the following files.
  - Display data files
  - Event data files
  - Manual sampled data files
  - Report data files
  - Snapshot Data files
- Initial setting of the directory name is "DATA0".
- Has media FIFO action.

For the setting procedure, see section 6.2 in the *User's Manual*.

Data save destination directory by the key operation

Creates a directory and stores the following files when the key operation is carried o
Display data, Event data, Manual sampled data, Repor data
For the operating procedure, see section 4.8 in the *User's Manual*.

Saved Files

DXs with the /AS1 advanced security option create the following types of files.

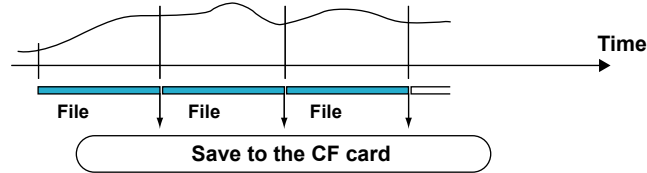| Type	Extension	Notes
Display data file	DSD	-
Event data file	DSE	-
Setup file	PEL	See page 1-16 and section 1.5.
Change settings log file	TXT	See section 1.5.
Manual sampled data file	DAM	-
Snapshot data file	PNG	-
Report data file	DAR	-
Report data file	xml	For use with the report template function
Custom display setup data file	CDC	See the *Custom Display Manual, IM04L41B01-04EN*.

Saving Data to External Storage Medium

Auto Save

Display data, event data, manual sampled data, and report data is automatically saved.
Keep the CF card inserted into the drive at all times. The data in the internal memory is automatically saved to the CF card.

For the setting procedure, see section 6.1 in the *User's Manual*.

Data Type	Description
Display data	Files are saved as soon as they are generated.

Time

File　File　File

Save to the CF card

Data Type	Description
Event data	Same as display data.
Manual sampled data	A manual-sampled-data file is generated on the CF card when manual sampling first occurs. Data is added to that file whenever manual sampling occurs. A new file is created after manual sampled data has been stored 100 times. For operating instructions, see section 6.5 in the *User's Manual*
Report data	Report data is stored in a report data file that is generated on the CF card when report data is first produced. Report data is added to this file at the report filing time. **Report File Division** At the set time, the DX stops recording to the current file and begins recording to a new file. Files can be divided in the following ways. Also, when recording is stopped (memory stop), all report files are divided. **Report Template Function** When the report file is divided, a report data file of the format specified by the XML spreadsheet template is created. This function is disabled in the cases listed under "Seprt2" below. For the setting procedure, see sections 9.5 and 9.6 in the *User's Manual*.

Report Type	Report File		
	Separate	**Combine**	**Seprt2**
Hourly report	hourly reports for a day	hourly reports for a day	hourly reports for a day
Daily report	daily reports for a month	daily reports for a month	daily reports for a month
Hourly and daily reports	A file for each daily report hourly reports for a day	hourly reports for a day and a daily report	daily reports for a month hourly reports for a day
Daily and weekly reports	a file for each weekly report daily reports for a week	daily reports for a week and a weekly report	weekly report (not divided)[1] daily reports for a week
Daily and monthly reports	a file for each monthly report daily reports for a month	daily reports for a month and a monthly report	monthly report (not divided)[1] daily reports for a month

*1 When media FIFO is enabled, files are divided at approximately every 100 KB.

Data Saved to Display and Event Data Files
The following data is saved to display and event data files

Contents of the display data and event data files

* **Header string (see section 6.2 in the *User's Manual*)**
* **Batch information (when the batch function is in use, see section 1.5 "Batch Function" in the *User's Manual*)**
* **Measured / computed data**
* **Setup data**
* **Login information (see "Terms Used in This Manual" in section 1.1)**
* **Operation Log (see section 1.5, "Audit Trail Function")**
* **Alarm summary**
* **Message summary**

* **Approval information (see section 1.6, "Signature Function (Digital Signature)")**

Save Destination
Files are saved to a CF card.

Directory That Data Is Saved To
You can specify the name of the directory that data will be saved to (the default directory is "DATA0"). The DX will create the directory on the CF card and save data to it.
For the setting procedure, see section 6.2 in the *User's Manual*.

Save Operation (When not using media FIFO)
If there is not enough free space on the CF card, the DX cannot save the data in the internal memory to the CF card. Before the internal memory data is overwritten, change CF cards and save the data.

Save Operation (Always retain most recent data file/media FIFO)
When the DX saves data files automatically to the CF card, it can save them so that the newest data files are always retained. With this method, you can use the DX continuously, without changing the CF card.
For the setting procedure, see section 6.2 in the *User's Manual*.
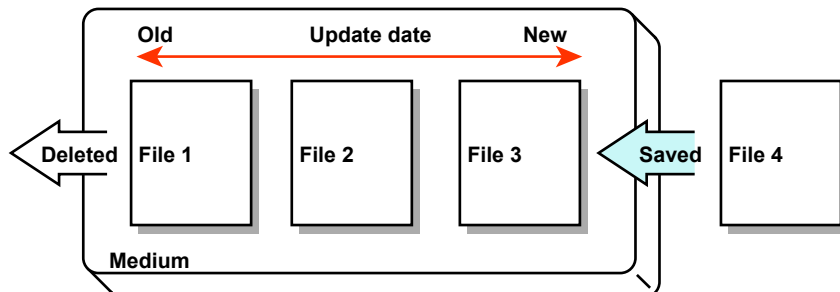
• **Operation**

When the DX is saving data to the CF card, if there is not enough space to save a new file, the DX deletes the oldest files and then saves the new file. This operation is referred to as FIFO (first in first out).

- FIFO is only used when the following files are saved automatically. When files are saved using other methods, FIFO is not used.
  Display data files, event data files, report data files, manual-sampled-data files, and snapshot data files.
- Files subject to deletion
  All files in the destination directory, except for the ones listed below, are subject to deletion.
  Files not subject to deletion: Hidden files, read-only files, and files contained within subdirectories in the destination directory.
- The most recent 1000 files are retained. If there are more than 1000 files in the destination directory, even if there is enough free memory, older files will be deleted so that the file number remains at or below 1000.
- When there are more than 1000 files in the destination directory, one or more files are deleted before the new file is saved. The number of files does not remain at or below 1000 in this case.

Manual Save (Collectively storing unsaved data)

Display data, event data, manual sampled data, and report data is saved.

Unsaved data in the internal memory is saved to an external storage medium connected to the DX when a given operation is carried out.
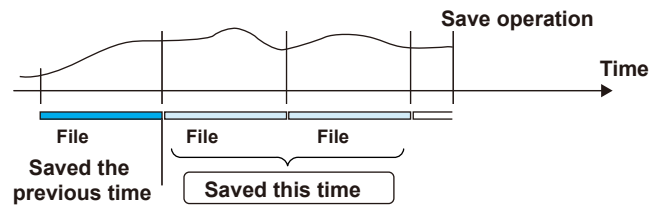
> **Note**
>
> When you use manual save, it is important that you save the data in the internal memory to the external storage medium before the data is overwritten. Be aware of the condition of the internal memory, and save data to the external storage medium at the appropriate times.

For the setting procedure, see section 6.2 in the *User's Manual*.
For operating instructions, see section 6.4 in the *User's Manual*.

Data Saved to Display and Event Data Files

The same as for auto save.

Save Destination

You can select a CF card or USB flash memory (/USB1 option).

Directory That Data Is Saved To

You can specify the name of the directory that data will be saved to (the default directory is "DATA0").
For the setting procedure, see section 6.2 in the *User's Manual*.

File Name

The DX can name measured data files that are automatically saved to the CF card in one of the following three ways.

Structure	Description	
Date	**Display data** **Event data** **Manual sampled data** **Snapshot data**	`[7-digit]` `[Specified string]` `[Date]` `.` `[Extension]` Ex.: 000123_AAAAAAAAAA050928_174633.DSD
	Report data	`[7-digit]` `[Specified string]` `[Date]` `[Type]` `.` `[Extension]` Ex.: 000123_AAAAAAAAAA050928_174633HD.DAR
Serial	**Display data** **Event data** **Manual sampled data** **Snapshot data**	`[7-digit]` `[Specified string]` `.` `[Extension]` Ex.: 000123_AAAAAAAAAA.DSD
	Report data	`[7-digit]` `[Specified string]` `[Type]` `.` `[Extension]` Ex.: 000123_AAAAAAAAAAHD.DAR
Batch name	**Display data** **Event data**	`[7-digit]` `[Batch name]` `.` `[Extension]` Ex.: 000123_BBBBBBBBBBBBBBBBBBBB.DSD
	Report data	`[7-digit]` `[Date]` `[Type]` `.` `[Extension]` Ex.: 000123_050928_174633HD.DAR
	Manual sampled data **Snapshot data**	`[7-digit]` `[Date]` `.` `[Extension]` Ex.: 000123_050928_174633.DAM

Item	Description		
7-digit	**Consists of a 6-digit number and 1-character delimiter.**		
	6-digit number	**A sequence number in the order of occurrence. The number ranges from 000001 to 999999. If the number reaches 999999, it returns to 000000.**	
	1-character delimiter	**Starts with '_' and takes on the following values: A to Z and 0 to 9.** **If a file with the same name exists in the specified directory, the file is saved by changing the delimiter to prevent overwriting.** **Example:** **If a file named "000123_AAAAAAAAAA.DSD" already exists, the file is saved to the name "000123AAAAAAAAAAA.DSD."**	
Date	**YYMMDD_hhmmss**	**YY: Year (lower two digits), MM: Month, DD: Day** **hh: Hour, mm: Minute, ss: Second**	
Specified string	**AAAAAAAAA•••A**	**Up to 16 alphanumeric characters can be used**	
Batch name	**BBBBBBBBBBBB•••B**	**Up to 40 alphanumeric characters can be used**	
Type	**H_, D_, W_, M_,** **HD, DW, DM**	**Report data type** **H_: Hourly, D_: Daily, W_: Weekly, M_: Monthly,** **HD: Hourly and daily, DW: Daily and weekly,** **DM: Daily and monthly**	
Extension	**Display data** **:DSD**	**Report data** **:DAR**	
	Event data **:DSE**	**Report data** **:xml**	(Report template; release numbers 4 and later)
	Manual sampled data **:DAM**	**Snapshot data :PNG**	

For information about snapshot data, see page 1-16.

1

Saving Data through Key Operation

The following data save operations can be performed whether the DX is in auto save or manual save mode.

For operating instructions, see section 4.8 in the *User's Manual*.

Save Operation	Description
All save	All the data in the internal memory is saved.
Selective save	The selected display data or event data file is saved.
Manual sampled data save	All manually sampled data in the internal memory is saved.
Report data save	All report data in the internal memory is saved.

Save Destination

You can select a CF card or USB flash memory (/USB1 option).

Directory That Data Is Saved To

A directory is made with the same name as the destination directory plus the date and time added on at the end. Then, data is saved to that directory.

Directory name: [Specified directory name]_YYMMDD_HHMMSS

Examples: Example: If a file is saved on September 30, 2005 at 17:06:42, the file will be saved to a directory with the name DATA0_050930_170642. (If DATA0 is the ordinary destination directory name).

> ### Note
> The number of directories that can be created on an external storage medium depends on the length of the directory names. When the specified directory name is 5 characters long, about 170 directories can be created. When it is 20 characters long, about 120 directories can be created. An error will occur if the limit is exceeded.

Other Types of Data That can Be Stored

Setup Data When the Settings Change and the Change Settings Log
For the description of functions, see section 1.5.
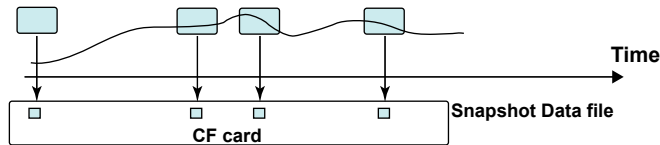
Setup Data
You can save the DX setup data to a CF card or to USB flash memory (/USB1 option). The setup data is saved to the root directory.

Name of the Setup data file	Specified . PEL
	Example: ABCD10005.PEL

For operating instructions, see section 6.9 in the *User's Manual*.

Snapshot Data
The DX display is saved to the CF card as a PNG file. It is saved in the same directory as display and event data. For information about file naming, see the previous page.

For operating instructions, see section 6.6 in the *User's Manual*.

Custom Display Setup Data
See the *Custom Display Manual*.

Saving Data through an Ethernet Network
You can use the FTP client function to automatically transfer and save the following data to an FTP server through an Ethernet network: display data, event data, report data (/M1 or /PM1 option), screen image data (snapshot data), setup data when the settings are changed, and the change settings log. You can also use the DX as an FTP server. You can access the DX from a personal computer and retrieve and store data files from both internal and external memory.
See the *Communication Manual*.

1.3　Login Function

With the login function, only registered users can operate the DX.

For the setting procedure, see section 2.1.

For operating instructions, see section 2.2.

Logging In and Out Using Keys

You need to enter user identification information (a user name, user ID, and password) to log in to the DX in the following cases.

DX Access Method	When It Is Necessary to Log In
Key operations	When the power is turned on.
	When logging in after exiting basic setting mode.
	When logging in after logging out.
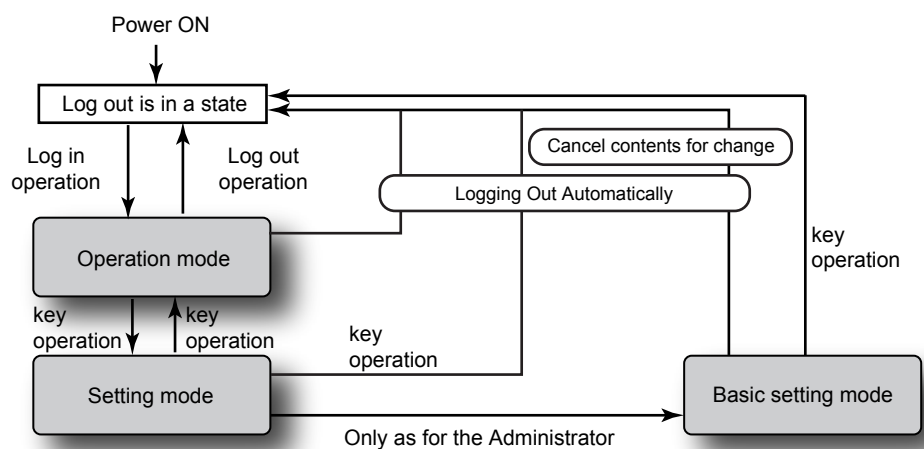
Auto Logout

You can set the DX to log a user out automatically after no key operations have been performed for a specified time. If you are automatically logged out of basic setting mode, the setting changes are cancelled.

Operations Available While Logged Out

You can configure the DX so that the DISP/ENTER key, arrow key, and favorite key can be used to switch the operation screen.

Logging In and Out through Communication

You need to log in as a registered user in the following cases.

For details about logging in through communication, see the *Communication Manual*.

DX Access Method	Function Accessed	Logging In
Ethernet	Setting and measurement server (setting and monitoring functions)	You need to enter user identification information (a user name, user ID, and password) to send commands. There is a special command for logging out
	Web server	You need to log in to the operator or monitor page as a Web-server user. To log out, close the Web page.
Serial	Setting and measurement function	You need to send a special command (the LL command) that contains the user identification information, followed by a list of the commands that you want to execute. You are logged out after the commands are executed. You can execute monitoring-function commands without logging in (you do not need to use the LL command)

User Levels

There are two user levels: "administrator" and "user."

Administrator

Item	Description	
Number of users that can be registered	5	
Login methods	Key	Administrators can log in using keys and perform all operations.
	Key+Comm	Administrators can log in using keys and communication commands and perform all operations.
	Web	Web-server users can access the operator and monitor pages
Identification information	User name	Up to 20 characters
	User ID	Up to 8 characters
		You can select whether or not to enter this item (user IDs are not used when the login method is Web)
	Password	Between 6 and 20 characters
	Period of password validity	You can set the period to 1, 3, or 6 months (there is no period of password validity when the login method is Web).

Note

When you use the login feature, at least one administrator who can log in to the DX through key operations needs to be registered. If no administrator who can log in to the DX through key operations is registered, the login function is invalid (you can operate the DX without logging in). You cannot use the signature function in this condition.

User

Administrators register users.

Item	Description	
Number of users that can be registered	90	
Login methods	Key	Logging in using keys. See "User Privileges."
	Key+Comm	Logging in using keys and communication commands. See "User Privileges."
	Comm	Logging in using communication commands. See "User Privileges."
	Web	Web-server users can access the monitor page
Identification information	The same as for administrators.	

User Privileges

The following operations can be enabled or disabled for each user. Operations performed using communication commands are included. Users cannot enter into basic setting mode.

Type	Operation
Key operations	START key
	STOP key
	MENU key (the operation to enter into setting mode)
	USER key
	DISP/ENTER key
	Favorite key

External device operations	External storage media
	    Manual saving of data
	    Loading of display and event data files
	    Saving and loading of setup data
	    Listing of files stored to memory

	Setup loading The loading of setup data or custom display setup data from an external storage medium

Functions	Alarm acknowledge
	    Alarm ACK operation (including individual alarm ACK operations in the overview display)
	    Alarm indication reset operation (alarm annunciator function)

	Message and batch
	    Writing of messages, free messages, and added messages
	    Writing of batch numbers, lot numbers, and batch comments, displaying of the text field screen, and text field input

	Computation (Math) Math-start, math-stop, math-reset, and math-ACK operations

	Data save
	    Display-data and event-data save operations
	    Manual sample operations
	    Snapshot operations
	    Timer reset operations
	    Match-time-timer reset operations
	    Event-edge switch operations (including operations from the custom display)
	    Save cancel operations

	E-mail/FTP
	    E-mail start and stop operations and test-mail transmission operations
	    FTP test operations
	    Manual network-information request and release operations

	Time settings
	    Adjusting of the time through access to an SNTP server
	    Setting of the time (setting mode)

	Screen operations
	    Favorite screen registration
	    4-panel display registration
	    Standard display registration
	    Trend interval switching
	    Custom-display action-part operations

	Calibration correction Calibration correction operations
Signature privileges	Signature operations

Explanation of user privileges
*   Operations performed using communication commands are also limited. However, operations can always be performed through Modbus communication, regardless of the settings.
    See section 3.2 in the *Communication Manual*
*   Operations assigned by the event action function are always performed, regardless of the operation-limitation settings.
*   Even if you lock computation, if the starting and resetting of computation are enabled for the START key operation, computation is reset or started when recording starts.
*   Even if you enable USER key operations, if you assign an operation that is locked to the USER key, that operation will not be performed when you press the USER key.
*   If you lock the DISP/ENTER key, you will not be able to show display selection menus. DISP/ENTER key execution operations and DISP/ENTER key operations in setting mode are not locked.
*   The operations that you can perform vary as shown in the table below depending on how you set the free/locked settings of Calibration and the MENU key (the operation to enter into setting mode).

MENU Key	Calibration	
	Locked	Free
Locked	You cannot perform any setting mode settings.	You can only perform calibration correction.
Free	You can perform all setting mode settings except for measurement-channel input-range settings and calibration-correction settings.	You can perform all setting mode settings.

User ID
You can choose whether or not to use a user ID.

User ID and Password
You cannot specify a user-ID and password pair that is already registered on the DX.

Period of Password Validity
You can set the period of password validity (but not for Web-server users).

Number of Password Retries and User Invalidation
When a user is prompted for a password, if he or she enters the wrong password consecutively for the specified number of times (password retry frequency), the user's account is invalidated, and the user cannot log in (Web-server users are not affected). An administrator can clear the "invalid user" status by setting the invalidated user's password to the default password.

Reusing User-Registration Settings
The user-registration settings are stored in setup data files. If you want to use the user-registration settings of one DX on another DX, you can load just the user-registration settings from the setup-data file. However, the passwords are not loaded. All the administrator and user passwords are set to their defaults.
For operating instructions, see section 6.9 in the *User's Manual*.

Login Restrictions

Logging in with the Same Name
You cannot log in with the same name.

Logging in Simultaneously
There are five methods for logging in using key operations or Ethernet or serial communication.
1. Logging in and out using keys
2. Logging in to the setting function of the setting and measurement server through Ethernet communication*
3. Using the LL command to log in to the setting and measurement function through serial communication*
4. Logging in to the monitoring function of the setting and measurement server through Ethernet communication*
5. Logging in to the Web server through Ethernet communication*

> *   For explanations and operating instructions, see the *Communication Manual*.

You can log in using methods 4 and 5 regardless of whether or not users have logged in using the other methods. The figure below shows how simultaneous use of the other three login methods is limited.
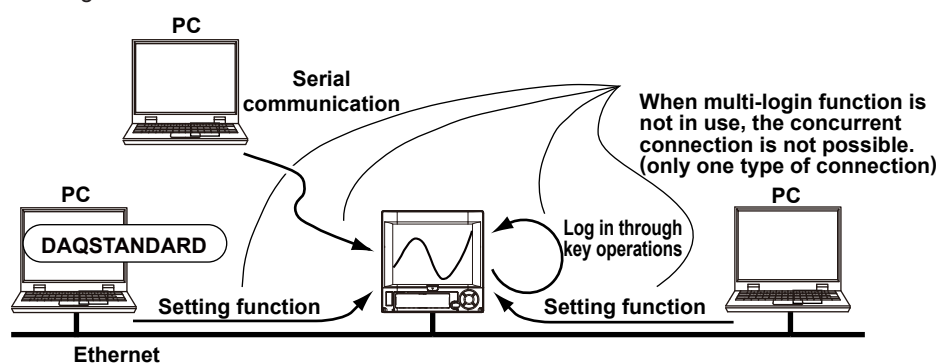
*   **When Using the Multi Login Function**
    At the same time, one user can log in through key operations, one through an Ethernet connection (to the setting function), and one through serial communication. However, when a user enters into setting mode or basic setting mode, the operations of the other users are limited.

DX Access Method	When Another User Is in Setting Mode or Basic Setting Mode
Key operations	None of the keys function.
Communication (Ethernet connection to the setting function)	All commands except for the monitoring-function commands return errors.*
Communication (serial)	All commands except for the monitoring function (equivalent to the Ethernet monitoring function) commands return errors.*

> *   For an explanation, see the *Communication Manual*.

- **When Not Using the Multi Login Function**

  Users cannot log in at the same time through key operations, an Ethernet connection (to the setting function), or serial communication. Only one user can log in to the DX at a time.

DX Access Method	When Another User Is Logged In
Key operations	None of the keys function.
Communication (Ethernet connection to the setting function)	You cannot log in or send commands.
Communication (serial)	You cannot log in or execute commands that you need to be logged in to perform. You can execute monitoring-function commands.

When Not Using Communication Login Function

The communication commands that you can perform are listed below.

- Ethernet communication

  You can connect to the setting and measurement server under the name "user." You can only use the monitoring-function commands.

- Serial communication

  You cannot use the LL command. You can only use the monitoring-function commands.

How the DX Operates When the Login Function Is Not Used

When the login function is not used (no administrators are registered):

- You do not need to log in. The DX switches to operation mode when you turn on the power or exit basic setting mode.
- You cannot use the signature function.
- You connect over the Ethernet to the setting and measurement server and execute commands in the same way as on a standard model.
- You execute serial commands in the same way as on a standard model.
- You cannot select the serial-communication barcode protocol.

1.4   Password Management Function

With this function, you can manage access to the DX by using the Kerberos v5 authentication protocol.

For the setting procedure and operating instructions, see chapter 3.

System Configuration

The following figure shows the configuration of the authentication system.
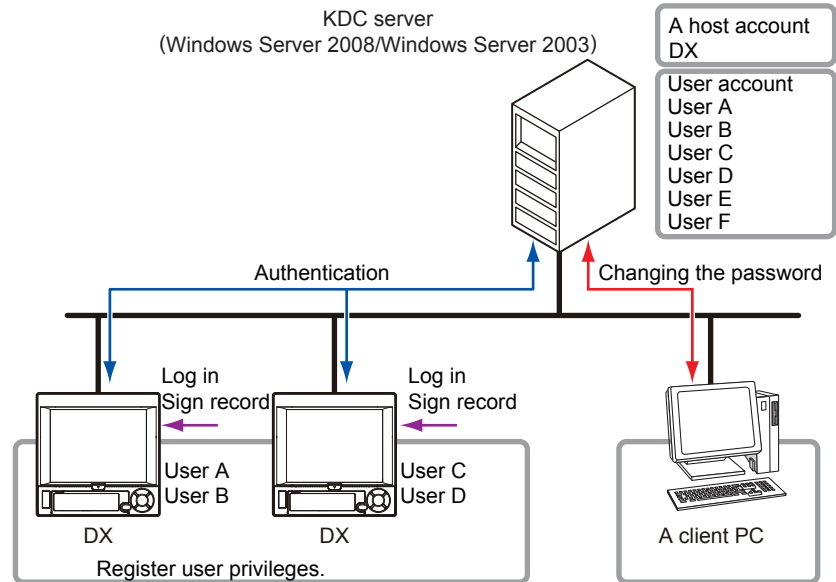
The authentication system consists of the devices listed below connected on an Ethernet.

*   KDC server

    Windows Server 2008 or Windows Server 2003. Manages the account of a DX on the network (host account) and the user accounts for operating the DX.

*   DX

    Of the user accounts on the KDC server, you can specify which accounts to use (login settings) on which DXs. You can also set different user privileges for each user on each DX.

*   Client PC for maintenance

    This device is used to change user account passwords and for other maintenance. It is not explained in this manual.

Operation

When you log in to the DX or use the signature function, you will be prompted for a user name and password (the password management function does not use user IDs). The DX will then perform the communication with the KDC server that is necessary for authentication. When authentication finishes, you can operate the DX. The server manages the passwords and their periods of validity. Web-server users are not managed by this function.

If the connection to the KDC server is broken, or if no users can be authenticated for some other reason, you can operate the DX using a special user account (root). See "Note" in section 3.2.

Note

*   For configuration instructions for Windows Server 2008/2003, see the *Communication Manual*.
*   Cross-realm authentication (authentication of different domain names) is not supported.
*   You cannot change user account passwords from the DX.

1.5   Audit Trail Function

This function records histories of the operations. It saves operation logs and change settings logs, and it saves setup files when the settings have changed. You do not need to perform any special settings to use this function.
The figure below indicates what items are recorded to the operation log and the change settings log.
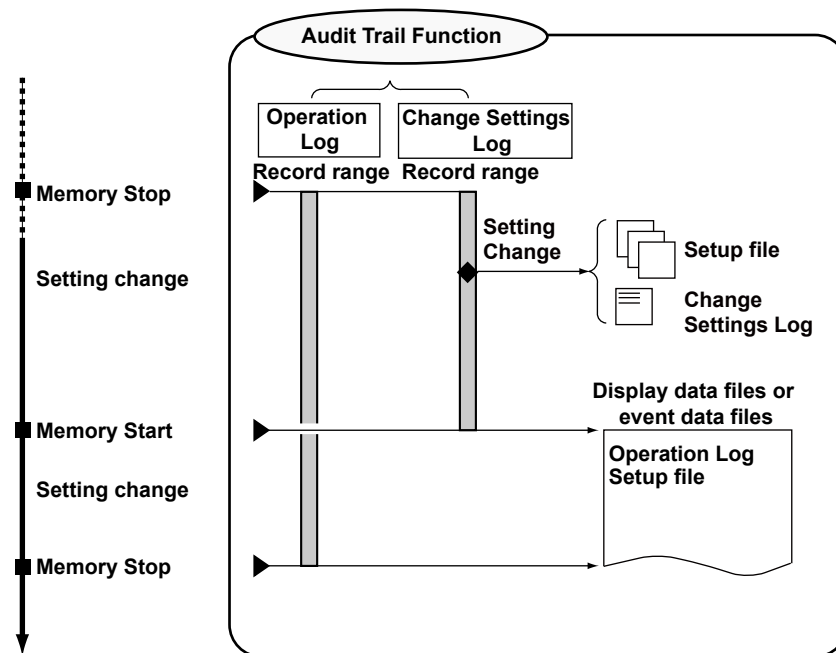
Information That Is Saved to Measured Data Files

When measured data files (display data or event data files) are saved, in addition to the measured data, a setup file and operation log are also saved.

Setup File
A file that contains the settings at the time recording started (memory start). If the settings are changed during recording (memory sampling), you can view the changes in the operation log.

Operation Log
A history of the operations.

Login Information
Information about the users who can operate the DX.

Operation Log

The DX operations are recorded in the operation log in the order that they occurred. The operation log is contained within the measured data file.
For information about the display, see section 2.3.
For information about the contents of the log, see appendix 1.

Recorded Operations
*   Operations that affect the measured data, such as memory start and message writing are recorded. Error messages are also recorded.
*   Key operations, communication operations, remote-control operations (/R1 and /PM1 options), event-action operations, and automatic DX operations (error messages, etc.) can be distinguished from each other.
*   Operations that do not affect the measured data, such as screen switching and display configuration changes, are not recorded.

For details, see appendix 1.

How the Operation Log Is Saved
*   The DX can record up to 2000 operation log entries in its internal memory. When the number of log entries exceeds 2000, the oldest log entries are overwritten.
*   The log of the operations from the previous memory stop to the current memory stop is stored in the measured data file (display or event data file). If the measured data file is divided, each time a file is created, the operation log up to that point is saved in the file.
*   When you use the multi batch function (/BT2 option), all the batch groups share the same operation log. The log entries from one memory stop to the next memory stop are saved.
*   You cannot just save the operation log in the internal memory to a CF card.

Viewing an Operation Log
*   You can display the operation log in the internal memory on the DX screen.
*   You can display the operation log in a measured data file on the DX screen or the DAQSTANDARD Viewer application.

How to Clear the Operation Log
*   The operation log in the internal memory is cleared when you initialize the settings in basic setting mode.
*   You cannot clear the operation log in a measured data file.

Login Information

A user's password may change during operation.The login information is the user name and the password at the time that the measured data file was created. To sign a measured data file, you must log in as a user that is registered in the login information in that measured data file. You cannot view the login information.
For information about the display, see the *DAQSTANDARD Viewer manual*.

Change-Settings Log and Setup Files When Recording (Memory Sampling) Is Not in Progress

When you change the settings, the changes are logged in the change settings log and the operation log. At the same time, a setup file is saved to the CF card. The date, user name, and affected setup file name are recorded in the change settings log, which is saved to the CF card.

For information about the display, see section 2.4.

Note

Make sure that the CF card is inserted when you change the settings. When the DX is unable to save a setup file, it displays an error message, and you will be unable to finish the process of changing the settings.

Logged Operations

Changes to the settings made in setting mode or basic setting mode are logged. Setup-file loading and setting initialization are also logged.

How Setup Files Are Saved

*   A setup file is saved to the CF card at the times listed below. This only happens if the settings have changed. If a CF card is not inserted when the DX tries to save a setup file, an error occurs.
    *   When you return from setting mode to operation mode
    *   When you switch from setting mode to basic setting mode
    *   When you exit basic setting mode
*   The directory "SET0" is automatically created on the CF card, and a setup file (.PEL extension) is saved.
*   The file name is generated automatically.

File Name	Description	
Mddhhmma.PEL	The date and time when the file was created	
	M	Month (1 to 9, X for October, Y for November, or Z for December)
	dd	Day
	hh	Hour
	mm	Minute
	a	Last digit of the year (0 to 9)
		If you change the settings consecutively within the span of a minute, a letter indicating the setting-change order (A to Z) appears instead of the last digit of the year.
Example: 30108150.PEL	A setup file created at 8:15 on March 1	

Viewing a Setup File

You can use the attached DAQSTANDARD application to view the setup file contents that correspond to an operation log.

For operating instructions, see the *DAQSTANDARD Viewer manual*.

How the Change Settings Log Is Saved

- The DX can record up to 200 change settings log entries in its internal memory. When the number of log entries exceeds 200, the oldest log entries are overwritten.
- A change settings log file (.TXT extension) is created in the SET0 directory on the CF card, and the logs are added to this file. When the number of logs reaches 100, a new file is created.
- The file name is generated automatically.

File Name	Description	
Mddhhmma.TXT	The date and time of the first log entry	
	M	Month (1 to 9, X for October, Y for November, or Z for December)
	dd	Day
	hh	Hour
	mm	Minute
	a	Last digit of the year (0 to 9)
Example: 40209250. TXT	A change settings log file whose first log entry was created at 9:25 on April 2	

Viewing a Change Settings Log

- You can display the change settings log in the internal memory on the DX screen.
- The change settings log is saved to the CF card in text format. You can display it using a text editor. You cannot view it on the DX.

How to Clear the Change Settings Log

The change settings log in the internal memory is cleared when you initialize the settings in basic setting mode.

Change-Settings Log When Recording (Memory Sampling) Is in Progress

Setting changes in setting mode and setting changes in basic setting mode result in different logging operations.

For information about the display, see section 2.4.

For information about setting changes during memory sampling, see section 6.4 in the *User's Manual*.

Setting Changes in Setting Mode

The setting changes are recorded in the operation log. You can configure the DX to automatically write into the measured data a message indicating that the settings have changed. The DX does not save a setup file.

Setting Changes in Basic Setting Mode

The setting changes are recorded in the operation log. At the same time, a setup file is saved to the CF card.

Logged Operations

The following setting changes can be logged during recording (memory sampling).

Settings	Operation mode
Date and time settings	Setting mode
Channel alarm settings	
Alarm delay time settings	
Calibration correction settings	
Destination directory settings	
Administrator settings	Basic setting mode
User settings	

How Setup Files Are Saved

- If settings have been changed when you exit basic setting mode, a setup file is saved to the CF card. If a CF card is not inserted when the DX tries to save a setup file, an error occurs.
- A setup file (.PEL extension) is saved to the SET0 directory on the CF card.
- The file name is generated automatically. The file name is generated in the same manner as that described in "Change-Settings Log and Setup Files When Recording (Memory Sampling) Is Not in Progress."

Viewing a Setup File

You can use the attached DAQSTANDARD application to view the setup file contents that correspond to the various change settings logs.
For operating instructions, see the *DAQSTANDARD Viewer manual*.

Setting Changes during Recording (Memory Sampling)

You can change the following settings and perform the following file operations during recording. Administrators can perform all operations. Users can only perform operations that have been permitted. The setting menu that appears varies depending on the operations that can be performed. In the setup displays in setting mode, you cannot set multiple consecutive channels (for example, channel 001 to channel 003) at the same time.

If you are using the multi batch function (/BT2 option), if even one batch group is being recorded, the DX is recording (memory sampling). During recording, the Multi batch tab does not appear in setting mode (you cannot change the Multi batch tab items for any of the batch groups).

Setting Changes

- Date and time settings
- Alarm settings
- Alarm delay time settings
- Calibration correction settings
- Destination directory settings
- Administrator settings*
- User settings*
    - *   See section 2.1.

File Operations

- Loading of display data files
- Loading of event data files
- Listing of the files on the external medium

SET0 Directory Operations

### Save Operation (When not using media FIFO)

If there is not enough free space on the CF card, the DX cannot save the data in the internal memory to the CF card. When this happens, an error occurs, and the save operation cannot be performed. Use another CF card to save the data.

Save Operation (Always retain most recent data file/media FIFO)

The newest data files are always kept on the CF card. With this method, you can use the DX continuously, without changing the CF card.

For the setting procedure, see section 6.2 in the *User's Manual*.
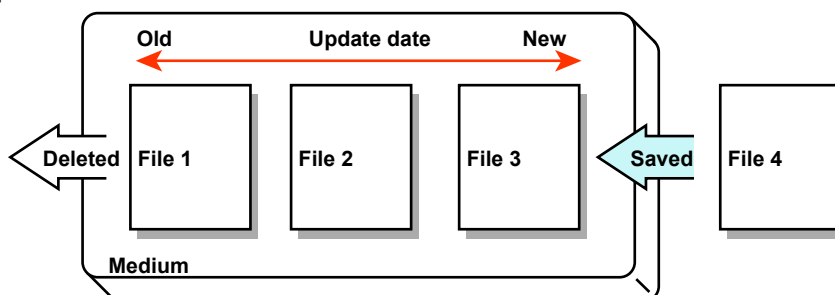
• **Operation**

If there is not enough space to save a new file, the DX deletes the oldest files and then saves the new file. This operation is referred to as FIFO (first in first out).

• FIFO is only used when the following files are saved automatically. When files are saved using other methods, FIFO is not used.
  Setup files and change settings log files

• Files subject to deletion
  All files in the destination directory, except for the ones listed below, are subject to deletion.
  Files not subject to deletion: Hidden files, read-only files, and files contained within subdirectories in the destination directory.

• The most recent 100 files are retained. If there are more than 100 files in the destination directory, even if there is enough free memory, older files will be deleted so that the file number remains at or below 100.

• When there are more than 100 files in the destination directory, one or more files are deleted before the new file is saved. The number of files does not remain at or below 100 in this case.

1.6   Signature Function (Digital signature)

Signing is the act of attaching the following approval information to a measured data file.
• Pass or fail judgment
• Comment
• Name of the user who attached the information and the date and time when the information was attached

For the setting procedure, see section 2.1.
For operating instructions, see section 2.3.

Signable Files

Display and event data files (.DSD and .DSE extensions) can be signed.

Two Process Types
Set the process type to choose what kind of collection of measured data can be signed.

Process Type	Signable Data	
	When signing from the DX	**When signing from DAQSTANDARD**
Batch	When the measured data from the start to stop of recording is contained in a single file.	When all the measured data files from the start to stop of a recording are present. You can specify one file or multiple files.
Continuous	Each measured data file.	Each measured data file.

The "continuous" process type is useful when you are dealing with a continuously operating process, such as the monitoring of the air conditioning temperature. You can sign each individual measured data file.
On the other hand, the "batch" process type is useful when you are dealing with a process such as one in which recording starts and stops in accordance with production. You cannot sign a unit of data unless all the files from the start to the stop of the recording are present.

Signature Privileges and Signatures

Users and Signature Privileges
• You can attach three signatures (Signature 1, Signature 2, and Signature 3), each with different privileges, to a single display or event data file. For example, you could reserve Signature 1 for the operator, Signature 2 for the quality control supervisor, and Signature 3 for the general supervisor.
• An administrator can attach any of the signatures to a file.*
• A user can only attach a signature that they have been given permission to attach.*
• A signature can only be attached once. You cannot overwrite a signature.
    *   Limited to users and administrators who were registered at the time that the file was created.

Deleting and Changing Approval Information
You cannot delete or change the approval information that has been attached to a file.

Signing from the DX

On the DX, you can only sign measured data files in the internal memory.

- You can set the type of signatures that users can make on the DX.
- You can show display or event data on the historical trend display and sign it.
- You can configure the settings so that the historical trend display appears when recording stops (memory stop).
- Viewing the Data
  When you sign a file, you can view the following information from the historical trend display.
  - Measured values
  - Memory information (information about the displayed measured data file)
  - Operation log (a history of the operations)
  - Alarm summary
  - Message summary

Signing Using the Attached DAQSTANDARD Application

You can sign measured data files using DAQSTANDARD. A measured data file can only be signed by a user with signature privileges who is registered in the login information of that measured data file.

For operating instructions, see the *DAQSTANDARD Viewer manual*.

1.7 Unique Specifications of DXs with Advanced Security

Functions That Differ from Those of DXs without Advanced Security

The main functions that have not been explained thus far in this manual that differ with the functions of DXs without advanced security are explained in the table below.

Function	Specification for DXs with Advanced Security	Reference
FAIL/status output relay (/F1 and /F2 options)	Relays the following: • Memory start/stop • Whether any users are logged in • Whether any users have been invalidated	For the setting procedure, see section 2.9 in the *User's Manual*.
Alarm delay	Can be set to up to 24 h.	For the setting procedure, see section 3.7 in the *User's Manual*.
Recording of display and event data	Display and event data cannot be recorded simultaneously.	For the setting procedure, see section 6.1 in the *User's Manual*.
Event data modes	You can only record event data at all times (free mode).	For the setting procedure, see section 6.1 in the *User's Manual*.
Key lock	Not available	-
Setting changes during recording	The settings that you can change during recording (memory sampling) are limited.	For an explanation, see section 6.4 in the *User's Manual*.
Automatic writing of messages when the settings are changed during recording	You can automatically write a message when the settings are changed during recording (memory sampling).	For the setting procedure, see section 5.3 in the *User's Manual*.
Switching from setting mode to operation mode	To return from setting mode to operation mode, select End from the menu.	For operating instructions, see the *Operation Guide*.
Alarm ACK operation	You can perform ACK operations on individual alarms.	Section 4.4 in the *User's Manual*.
Internal memory initialization	When you initialize the internal memory, you can choose whether or not to initialize the login settings.	Section 2.8 in the *User's Manual*.
Operations performed on external storage media	Formatting and file deletion cannot be performed.	-
Loading of setup files	When you load a setup file onto the DX from an external storage medium, you can select whether or not to load the login settings.	For operating instructions, see section 6.9 in the *User's Manual*.
Barcode protocol	You can use the serial-communication barcode protocol.	Section 2.8 in the *Communication Manual*

Functions That Differ from Those of the DX100P and DX200P

The main differences between the DX1000/DX1000N/DX2000 advanced security function and the DX100P/DX200P security function are explained in the table below.

Function	Specification for DXs with Advanced Security	Reference
Setting modes	Engineering mode is equivalent to setting mode. System mode is equivalent to basic setting mode.	For the setting procedure, see the *Operation Guide*.
Number of failed password entry attempts	You can select the number of consecutive failed password entry attempts that will result in a user being invalidated.	For the setting procedure, see section 2.1.
Signature privilege settings	You can give or deny a user signature privileges for each signature level (Signature 1, 2, and 3).	For the setting procedure, see section 2.1.
Multi login	You can log in simultaneously through key operations and communication.	For the setting procedure, see section 2.1.
Selecting a user name when logging in	When user IDs are being used, you can select the user name from a list when you log in (you do not have to enter the user name directly).	For operating instructions, see section 2.2.
KDC server password management	You can manage user accounts and passwords from a KDC server on the network.	For the setting procedure and operating instructions, see chapter 3.
Signature function	You can only sign files in the internal memory. You cannot sign files that have been loaded from the external memory.	For operating instructions, see section 2.3.
	You can sign files from the historical trend display.	For operating instructions, see section 2.3.
Saving files	If the same file already exists in the save destination, it is overwritten.	For an explanation, see section 1.1.
Settings that can be changed during recording	Alarm settings can be changed during recording.	For an explanation, see section 6.4 in the *User's Manual*.
Logging of setting changes during recording	Setting changes are recorded in the operation log.	For an explanation, see section 1.5.
Alarm ACK	You can perform the alarm ACK operation using the FUNC key.	For operating instructions, see section 3.8 in the *User's Manual*.
Alarm delay time	Can be set to up to 24 hours.	For the setting procedure, see section 3.7 in the *User's Manual*.
Batch text fields	You can enter a text field at the start of recording.	For operating instructions, see section 6.3 in the *User's Manual*.
Alarm ACK summary	There is no alarm ACK summary. Alarm ACK operations are recorded in the alarm summary and the operation log.	For operating instructions, see section 2.3.
The "batch" process type	You can freely select the display-data file-save interval or the event-data data length from the listed options. On the DXP, these settings are always set to their maximum values.	For the setting procedure, see section 6.1 in the *User's Manual*.

2.1 Registering Users and Setting the Signature Method

Procedure for Configuring the Login and Signature Features for the First Time

When the DX is shipped from the factory, it is configured so that you can operate it without signing in. First, register an administrator. After you register an administrator, you will have to log in before you can use the DX.

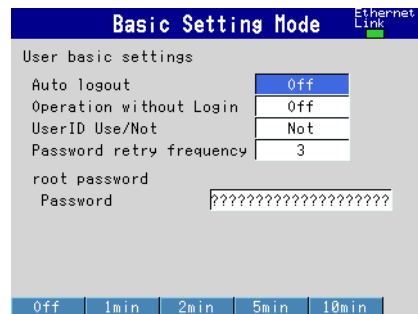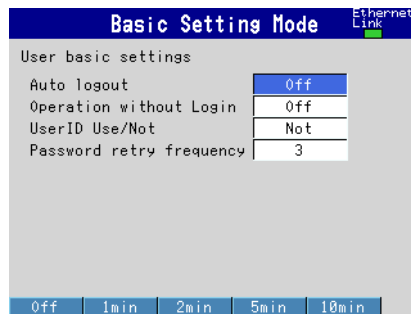For an explanation of these functions, see sections 1.3 and 1.6.

Setup Screen

• **Security**

Press **MENU** (to switch to setting mode), hold down **FUNC** for 3 s (to switch to basic setting mode), and select the **Environment** tab > **Security, Media save** (**Security, Media save, Batch** on the DX2000).
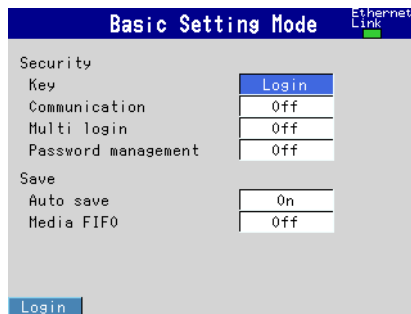
• **Login (User Registration)**

Press **MENU** (to switch to setting mode), hold down **FUNC** for 3 s (to switch to basic setting mode), and select the **Menu** tab > **Login** > **Admin settings** or **User settings**.

Basic Setting   Basic Setting (Using the password management function)

Administrator   User

Press **MENU** (to switch to setting mode), hold down **FUNC** for 3 s (to switch to basic setting mode), and select the **Menu** tab > **Login** > **Authority of user** > **Key action, Media**, **Actions,** or **Sign record** (**Key action**, **Media/USB**, and **Actions** or **Sign record** on the DX2000).

Key action, Media

Actions

Sign record

• **Signing Files**
Press **MENU** (to switch to setting mode), hold down **FUNC** for 3 s (to switch to basic setting mode), and select the **Menu** tab > **Signature**.

Setup Items

- **Security > Key**
  This setting is fixed at Login.

- **Security > Communication**

Setting	Description
Login	Only registered users can operate the DX through communication.
Off	The security function is not enabled. You can only use the monitoring-function communication commands [*].

  * For an explanation, see the *Communication Manual*.

- **Security > Multi login**

Setting	Description
On	The multi-login function is used. At the same time, one user can log in through key operations, one through an Ethernet connection (to the setting function), and one through serial communication.
Off	The multi-login function is not used. Users cannot log in simultaneously through key operations, Ethernet (connection to the setting function), or serial communication (LL command).

- **Security > Password management**
  To perform password management using a KDC server on the Ethernet, select **On**.
  For information about the password management function, see section 1.4.
  For the setting procedure and operating instructions, see chapter 3.
  For the setting procedure, see the *Communication Manual*.

  Note
  - If you exit basic setting mode when password management is enabled and the DX is unable to communicate properly with the KDC server, all users will be unable to log in. If this happens, you can log in with the user name: 'root'.
  - When password management is enabled, you cannot set passwords or their periods of validity from the DX.
  - When you change the password management setting, the passwords for administrators and general users whose mode is not Web mode (see the next page) are reset to their defaults.

- **User basic settings > Auto logout**

Setting	Description
Off	A user is not logged out until he or she performs the logout operation.
1 min, 2 min, 5 min, or 10 min	Users are logged out automatically if there are no key operations for the specified period of time.

- **User basic settings > Operation without Login**

Setting	Description
Off	When you are logged out, the only operation you can perform is to log in.
Display	When you are logged out, you can use the keys to switch between operation screens.

- **User basic settings > UserID Use/Not**

Setting	Description
Use	User IDs are used.
Not	User IDs are not used.

  When Password management is set to On, User ID is fixed at Not.

  Note
  When you change the user ID setting from **NOT** to **USE**, the passwords for administrators and users whose mode is not Web mode (see the next page) are reset to their defaults.

- **User basic settings > Password retry frequency**
  Set how many consecutive failed password-entry attempts result in user invalidation.

Setting	Description
3 or 5	Three or five consecutive failed password entry attempts result in user invalidation.
Off	Users are never invalidated, no matter how many times they enter the wrong password.

- **root password > Password (only when password management is enabled)**
  Set the password of the root user (the user whose name is "root"). (Between 6 and 20 characters, $\boxed{\text{A}}\boxed{\text{a}}\boxed{\text{#}}\boxed{\text{1}}$)
  The root user is an emergency user account that you can use when none of the users can log in because of communication failure or some other problem.

Display	Description
???????????????????	The password is set to the DX default. For information about the default, see section 3.2.
********************	After you specify a password, this indication appears.

  - You cannot register a character string that contains spaces or the word "quit."

- **About User Registration**
  The user registration information for when password management is enabled and for when it is disabled is listed below.

When Password Management Is Disabled

User Type	Mode	User Name	User ID	Password	Period of Password Validity	User Privileges
Administrator	Key	User-specified	User-specified	Default	Selectable	–
	Key+Comm			Default	Selectable	–
	Web		–	User-specified (6 or more characters)	Fixed at Off	–
User	Key	User-specified	User-specified	Default	Selectable	Setting
	Key+Comm			Default	Selectable	Setting
	Comm			Default	Selectable	Setting
	Web		–	User-specified (6 or more characters)	Fixed at Off	Fixed at Off

When Password Management Is Enabled

User Type	Mode	User Name	User ID	Password	Period of Password Validity	User Privileges
Administrator	Key	User name registered on the KDC server	–	–	–	–
	Key+Comm			–	–	–
	Web	User-specified		User-specified (6 or more characters)	Fixed at Off	–
User	Key	User name registered on the KDC server	–	–	–	Setting
	Key+Comm			–	–	Setting
	Comm			–	–	Setting
	Web	User-specified		User-specified (6 or more characters)	Fixed at Off	Fixed at Off

- **Admin number**
  Select an administrator number from **1** to **5**.

  Note
  - If there is not even one registered administrator, the login and signature functions cannot be used.
  - We recommend that you register two or more administrators so that if one administrator's account is invalidated because of incorrect password entry, they can be validated by the other administrator.

2

- **Admin settings > Mode**
  The available settings vary depending on the Security setting.

Setting	Description
Off	No administrator is registered.
Key	The administrator can log in to the DX using keys.
Key+Com*	The administrator can log in to the DX using keys and communication commands.
Web*	The administrator can access the operator and monitor pages through the Web server function.

  *   Can only be selected when Security > Communication is set to Login.

- **Admin settings > User name**
  Specify a user name. (Up to 20 characters, Aa#1)
  - You cannot register a user name that has already been registered.
  - You cannot register a character string that contains spaces or the word "quit."

- **Admin settings > User ID**
  Specify a user ID. (Up to 8 characters, Aa#1)
  This item cannot be set when:
  - User IDs are not used.
  - Password management is enabled.

- **Admin settings > Password**

Display	Description
???????????????????	The password is set to the DX default. For information about the default, see section 2.2.
********************	This indicates that the password has been set by the user. To use the default password, press the Default soft key.
--------------------	The account has been invalidated. To validate the account, press the Default soft key to set the password to its default.

  For users whose Mode is not Web, you can only change the password to its default.
  For users whose mode is Web, you can press the **Input** soft key to set the password.
  (Between 6 and 20 characters, Aa#1)

  Note
  - Users whose mode is not Web set the passwords that they will actually use when they first log in.
  - The password is reset to its default when you change the user name or user ID.

  When password management is enabled, you can only configure this setting for users whose mode is Web (because these users are not affected by the password management function).

- **Admin settings > Password expire**

Setting	Description
Off	The password will not expire.
1 month	The DX will prompt the user to change the password after the specified period of time passes.
3month	
6month	

  This item cannot be set when:
  - Password management is enabled.
  - The user mode is Web.

- **User number**
  Select a user number from **1** to **90**.

- **User settings > Mode**
  The available settings vary depending on the Security setting.

Setting	Description
Off	No user is registered.
Key	The user can log in to the DX using keys.
Comm*	The user can log in to the DX using communication commands.
Web*	The user can access the monitor pages through the Web server function.
Key+Comm*	The user can log in to the DX using keys and communication commands.

*   Can only be selected when Security > Communication is set to Login.

- **User settings > User name, User ID, Password**
  See the explanation for the user name, user ID, and password in the administrator settings.

- **User settings > Password expire**
  See the explanation for the Password expire setting in the administrator settings.

- **User settings > Authority of user**

Setting	Description
Off	The user operations are not limited. This setting is fixed at Off when the user mode is Web.
1 to 10	User privilege configuration numbers.

- **Authority of user > Key action, Media, and Actions**
  For each user privilege configuration number from **1** to **10**, you can specify whether to enable or disable various operations.

Setting	Description
Free	The operation is enabled.
Lock	The operation is disabled.

For information about the operations that you can enable and disable, see section 1.3, "Login Function."

- **Authority of user > Sign record > Signature1, Signature2, Signature3**
  For each user privilege configuration number from **1** to **10**, you can choose whether or not to give users signature privileges.

Setting	Description
Free	Users are given signature privileges.
Lock	Users are not given signature privileges.

- **Signature > Process type**
  Choose what type of collection of measured data can be signed.

Setting	Description
Continuous	You can sign each individual measured data file.
Batch	You can sign a collection of all the measured data files from the start to stop of a recording. However, you can only sign a file from the DX when the file covers the measured data of an entire recording, from start to stop.

- **Signature > Sign from recorder**
  Set the signature privilege range for DX key operations.

Setting	Description
Off	You cannot sign files from the DX.
Sign1	You can sign files from the DX using the Signature1 privileges.
Sign1+2	You can sign files from the DX using the Signature1 and Signature2 privileges.
Sign1+2+3	You can sign files from the DX using the Signature1, Signature2, and Signature3 privileges.

- **Signature > Signature at batch stop**
  You can configure this setting so that a screen for making a signature (historical trend display) appears when recording stops (memory stop).

Setting	Description
On	The historical trend display appears automatically at memory stop.
Off	The display does not change at memory stop.

  Note
  You cannot set Signature at batch stop when:
  - Sign from recorder is set to Off.

  Even when Signature at batch stop is set to On, the historical trend display will not appear when:
  - The process type is Batch, and the measured data is divided into multiple files.
  - A user without signature privileges performs memory stop.
  - The multi batch function (/BT2 option) is being used, and batch overview mode is enabled.

- **Signature > FTP transfer at signing**
  You can transfer measured data files (display or event data files) to an FTP server after you sign them. You need to configure the FTP client settings so that display and event data is transferred.

Setting	Description
On	Measured display and event data files are only transferred to an FTP server after they are signed. Also, the Transfer wait time settings are invalid; transfer is executed immediately.
Off	Measured data files are not transferred to an FTP server after they are signed.

  For information about FTP client settings, see the *Communication Manual*.

Procedure

- **Changing Login Settings during Recording (Memory sampling)**
  You can change login settings during recording (memory sampling). For operating instructions, see the explanation later in this section.
  - The setting change operation can only be performed by an administrator.
  - The user privilege settings cannot be changed.
  - The settings of a user who is logged in cannot be changed.

  Note
  - If you switch to Basic Setting mode while recording (memory sampling) is in progress, actions of the Event Action function are ignored as long as you remain in Basic Setting mode. Events occurring while in Basic Setting mode are ignored. The only exception are snapshots which can still be taken with the USER key.
  - If you register or change the registration of a Web mode user while recording (memory sampling) is in progress, you must turn the power to the DX OFF then back ON again for the changes to take effect.

2.2 Logging In and Out

When you log in for the first time, you will be prompted to change the password.
For information about the function, see section 1.3.

Login Process
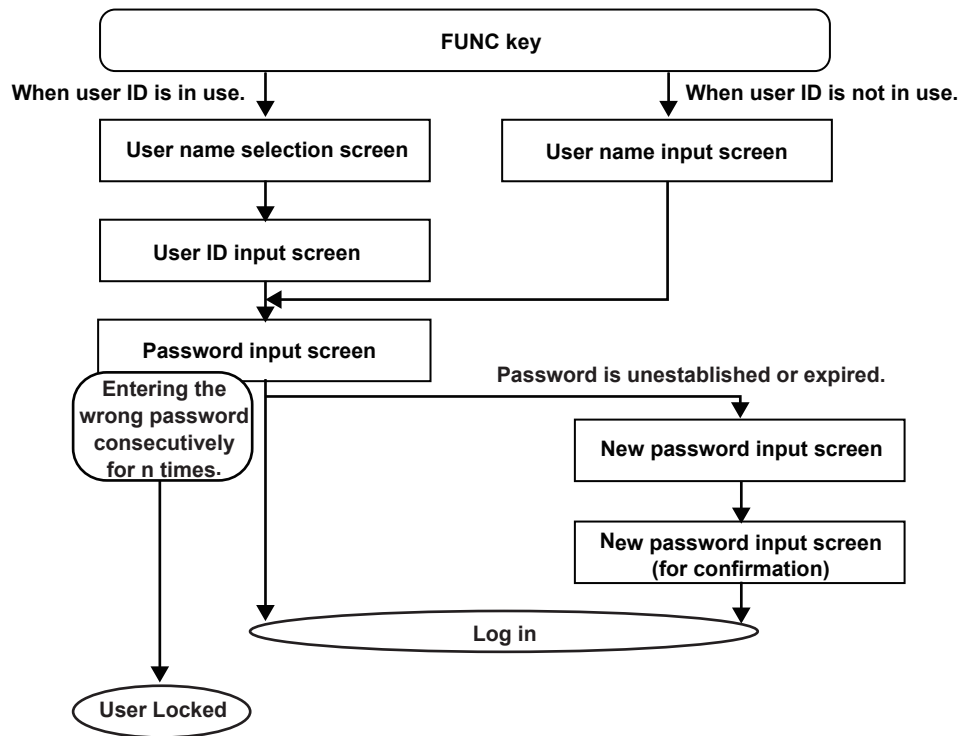
Procedure

- **Logging In**
**Logging In before the Password Has Been Set**
1. Press **FUNC**.
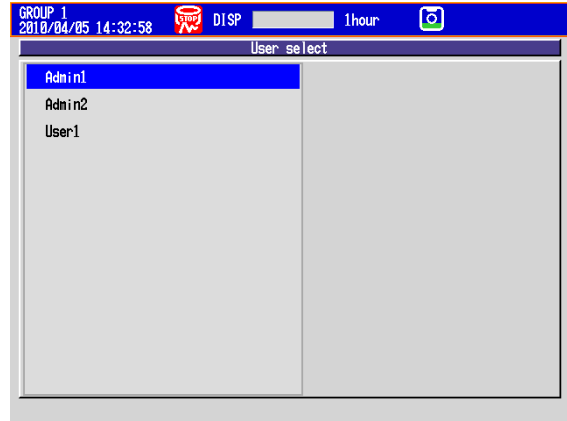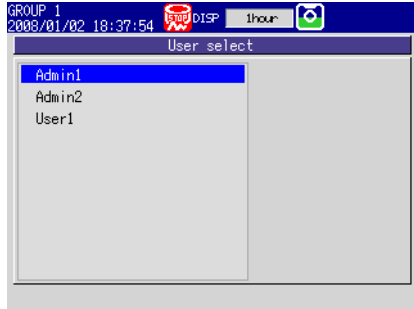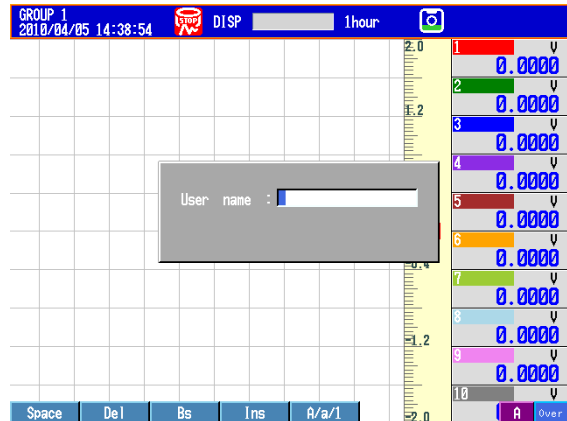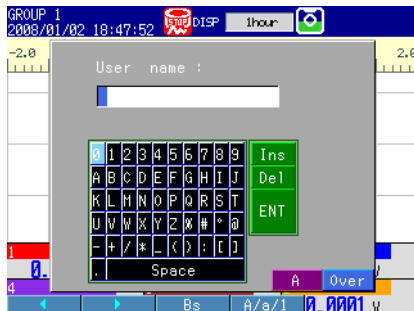   If the settings have been configured so that user IDs are used, a window for selecting the user name opens. If the settings have been configured so that user IDs are not used, a window for entering the user name opens.
2. Select or enter a user name, and press **DISP/ENTER**.

   On the left is the DX1000 screen. On the right is the DX2000 screen.
When User IDs Are Used
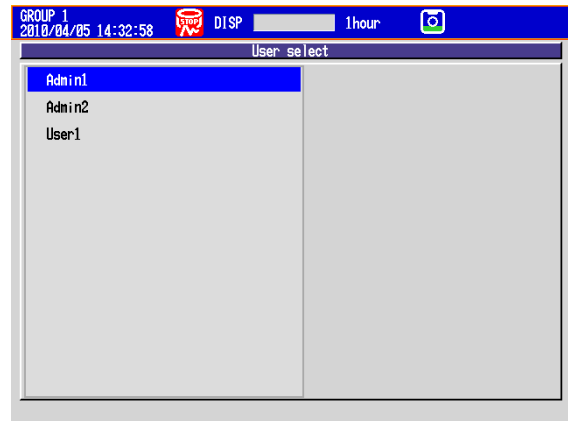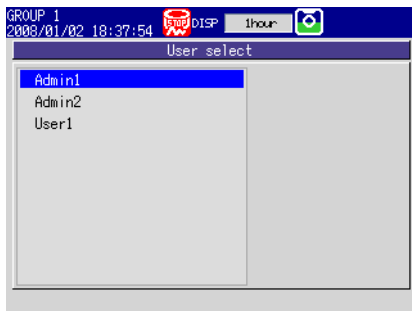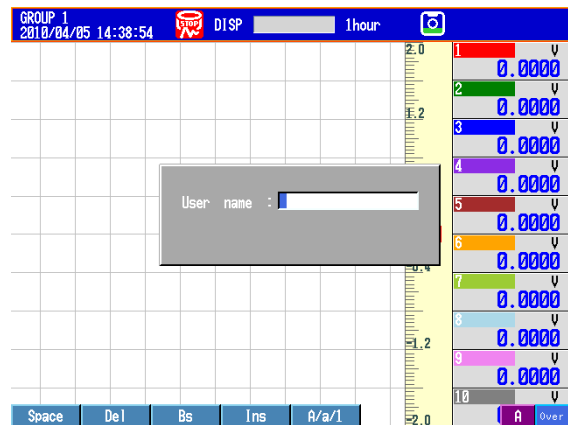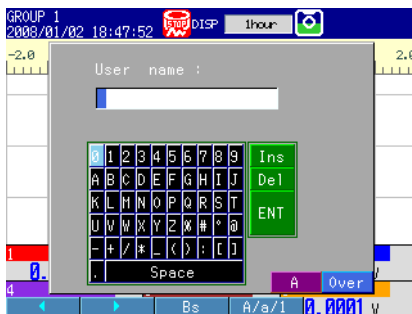

When User IDs Are Not Used

If the settings have been configured so that user IDs are used, a window for entering the user ID opens. Proceed to step 3.
If the settings have been configured so that user IDs are not used, a window for entering the password opens. Proceed to step 4.

3. Enter the user ID, and press **DISP/ENTER**.
A window for entering the password opens.
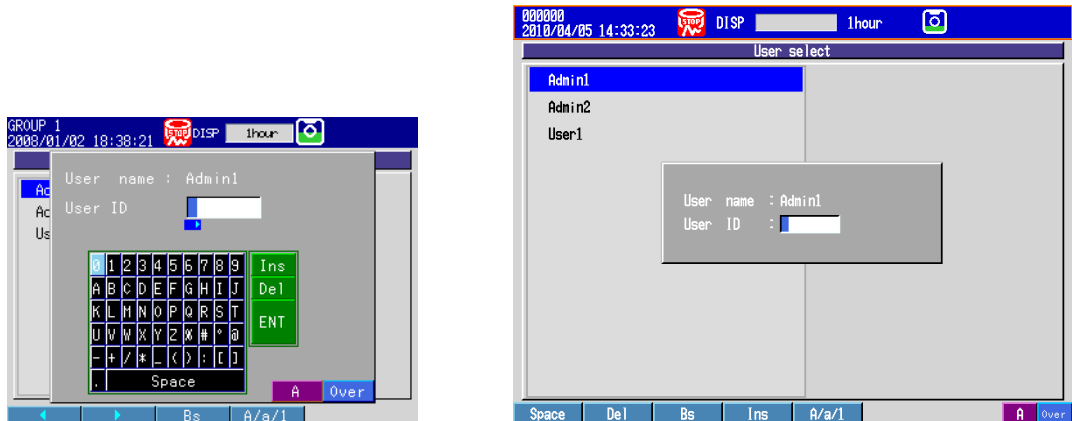
**4.** Enter the default password, and press **DISP/ENTER**.
A window for entering the new password opens.
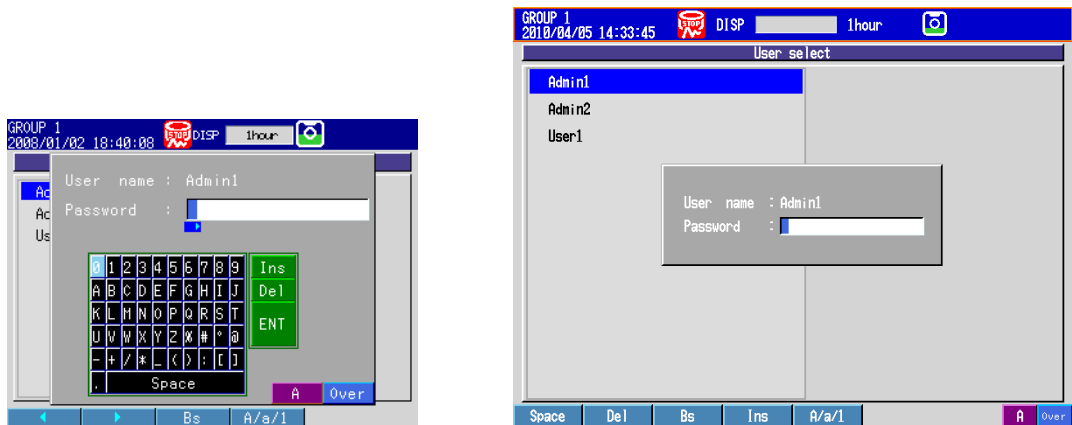
User	Default Password
Administrator 1	Admin1
Administrator 2	Admin2
:	:
Administrator 5	Admin5
User 1	User01
User 2	User02
:	:
User 90	User90

5. Enter a new password (between 6 and 20 characters, <u>A</u><u>a</u><u>#</u><u>1</u>), and press **DISP/ENTER**.

A window for re-entering the password opens.
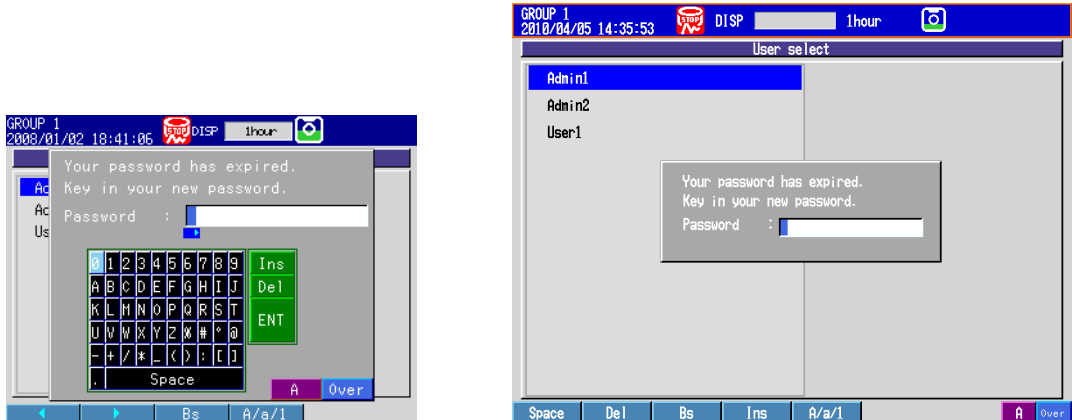
Note

- You cannot use the same combination of user ID and password as another user.
- Specify a password that is six or more characters long.
- You cannot register a character string that contains spaces or the word "quit."

6. Enter the password, and press **DISP/ENTER**.

The window closes, and you are logged in.
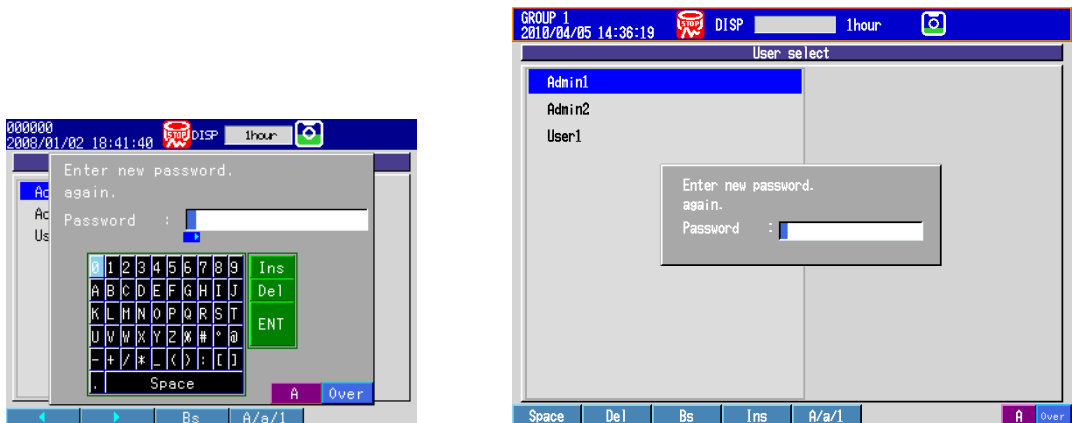
Logging In after the Password Has Been Set

1. Press **FUNC**.

If the settings have been configured so that user IDs are used, a window for selecting the user name opens. If the settings have been configured so that user IDs are not used, a window for entering the user name opens.

2. Select or enter a user name, and press **DISP/ENTER**.

When User IDs Are Used

When User IDs Are Not Used

If the settings have been configured so that user IDs are used, a window for entering the user ID opens. Proceed to step 3.

If the settings have been configured so that user IDs are not used, a window for entering the password opens. Proceed to step 4.

3. Enter the user ID, and press **DISP/ENTER**.

A window for entering the password opens.
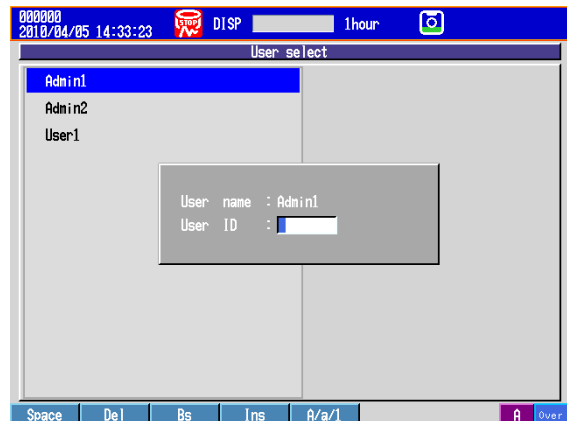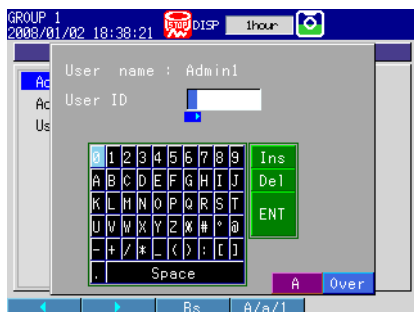
4. Enter the password, and press **DISP/ENTER**.
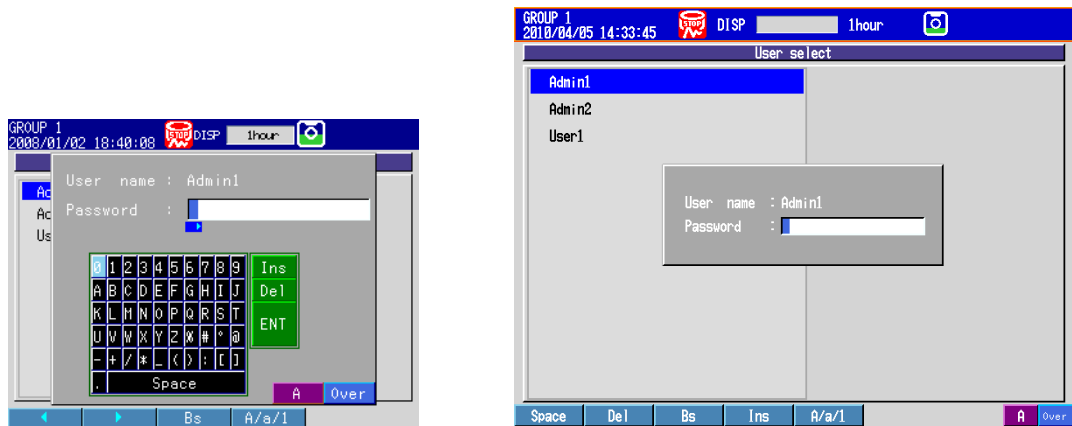
When the password has not yet expired:
The window closes, and you are logged in.

When the password has expired:
You are prompted to change the password. Follow the instructions that appear on the screen, and change the password (between 6 and 20 characters, $\boxed{Aa\#1}$) to log in.

• Dealing with the "Invalid User" Status

If a user enters the wrong password and presses **DISP/ENTER** consecutively for the specified number of times (the password retry frequency), that user is invalidated and can no longer log in. The user-locked icon appears in the status area.
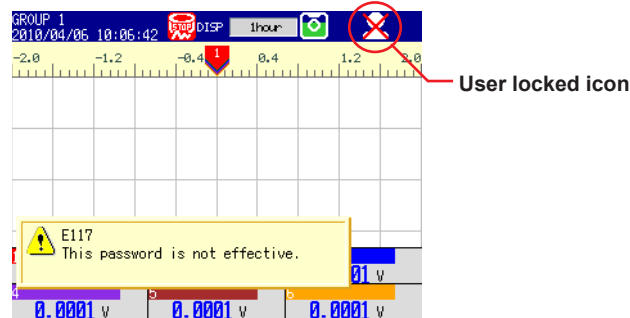
User locked icon

Clearing the User-Locked Icon (Only administrators can perform this operation)

1. Log in as an administrator.

2. Press **FUNC**.
The FUNC key menu appears.

3. Press the **Locked ACK** soft key.
The user-locked icon is cleared.

Note

The Locked ACK soft key appears when a user is invalidated.

Releasing the Invalid User Status and Logging in as an Invalidated User

1. An administrator has to set the invalidated user's password to its default. For the setup procedure, see section 2.1.

2. The invalidated user must then follow the procedure under "Logging In Before the Password Has Been Set" to log in.

Note

If all the registered administrators are invalidated, administrators will no longer be able to log in (registered users can still log in).

Be sure to manage the passwords to prevent this from happening. If you become unable to log in as an administrator, contact your nearest Yokogawa dealer.

- **Logging Out**
  Using the FUNC Key

  1. Press **FUNC**.
  The FUNC key menu appears.

  2. Press the **logout** soft key.
  You will be logged out.

  Auto Logout
  When auto logout is enabled, users are logged out automatically if there are no key operations for the specified period of time.

2.3 Signing Display and Event Data

You can sign display and event data from the historical trend display.
You can sign a unit of data when:
- You are logged in as a user with signature privileges.
- The files are in the internal memory (even if the data is in the internal memory, you cannot sign it unless it has been saved to files).
- The data has not already been signed in the same place.
- The DX settings allow signing.
- All the data that you want to sign can be displayed.
  For example, the DX can display up to 1000 alarms. You cannot sign a file that has more than 1000 alarms. To sign such a file, use DAQSTANDARD.
 For the setting procedure, see "Signature > Sign from recorder" on page 2-7.
- When Process type is set to Batch, the measured data from memory start to memory stop is contained in one file.

Signing Process

Display	**Display measured data with a historical trend screen.**
Data validation	**Confirm measured data, alarm information, etc.**
Sign record	**Add approval information.**

Sign record initiation screen	**Press the ESC key to cancel the operation on the way.**
User ID input screen	**Only when the user ID is in use.**
Password input screen	**When a password is unestablished or expired, the input of the new password is required.**
Pass or fail input screen	**If a user enters the wrong password consecutively for n times, the user is invalidated.**
Comment input screen	
Confirmation screen	
Execution	

Save	Save the measured data.

For information about the function, see section 1.6.

Procedure

• **Showing the Historical Trend Display**
The historical trend display appears automatically at memory stop.
When **Signature at batch stop** is enabled, the historical trend display will appear if
the following conditions are met.
  • A user with signature privileges stopped the recording (memory stop).
  • The data from memory start to memory stop is contained in a single file.
  • The multi batch function (/BT2 option) is being used, and batch overview mode is
    not enabled.

Opening the Displayed Data File in the Historical Trend Display

1. Press **DISP/ENTER** to show the display selection menu.

2. Use the **arrow keys** to select **TREND HISTORY**, and press **DISP/ENTER**.
The historical trend display appears.
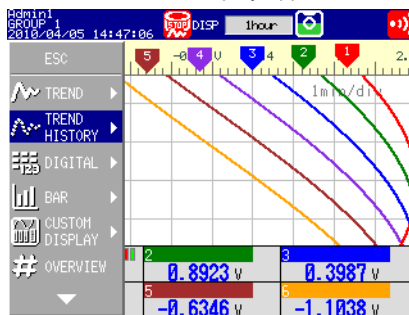
Opening a Data File in the Internal Memory

1. Press **DISP/ENTER** to show the display selection menu.

2. Use the **arrow keys** to select **INFORMATION** > **MEMORY SUMMARY**, and press
DISP/ENTER.
The memory summary display appears.

3. Use the **arrow keys** to select a file.

To display a file's signature information in the signature information display, press the **Add.info**. soft key. Press **ESC** to close display.

4. Press **DISP/ENTER** to show the display selection menu.

5. Press the **right arrow key** to display the sub menu.

6. Use the **arrow keys** to select **TO HISTORY**, and press **DISP/ENTER**.
The historical trend display of the selected file appears.
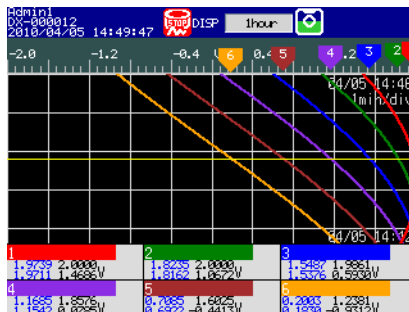
• **Changing the Displayed Contents**

1. Press **DISP/ENTER** to show the display selection menu.

2. Press the **right arrow key** to display the sub menu.

3. Press the **up and down arrow keys** to select the sub menu item.

4. Press **DISP/ENTER** to change the display setting.

For operating instructions, see section 4.3 in the *User's Manual*.

- **Displaying Information**

  When in the historical trend display:

  1. Press **DISP/ENTER** to show the display selection menu.

  2. Use the **arrow keys** to select **INFORMATION**.

  3. Press the **right arrow key** to display the sub menu.

  4. Press the **up and down arrow keys** to select the sub menu item.

  5. Press **DISP/ENTER** to display the information.

  Operation Log
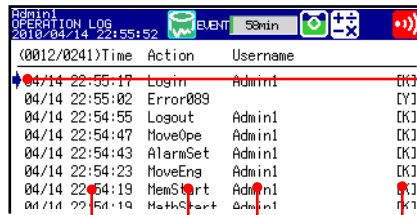
  Cursor (blue arrow)
  Move the cursor with the arrow keys.

  Operation type*
  User name
  Operation*
  Date and time

  ↓↑ To switch displays, in the display selection menu, select LOG > CHANGE DISP ITEM, and press DISP/ENTER.

  Detailed display
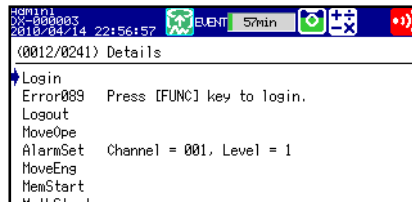
  Additional information display
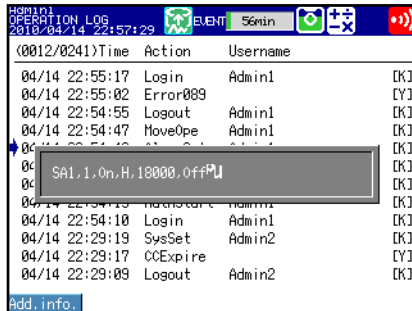
  When you move the cursor to an item that has additional information, the **Add.info.** soft key appears at the bottom of the screen. Press the soft key to display the additional information. The additional information is displayed using the command syntax.
  See the *Communication Manual*.

  Press **ESC** to close the additional information display.

  For display information, see "Operation Log" in appendix 1.

  You can scroll through the information using the following operations.

Key	Operation
Up arrow key	Moves the cursor up one line. If the cursor is at the top line, pressing this key moves the page down by one line.
Down arrow key	Moves the cursor down one line. If the cursor is at the bottom line, pressing this key moves the page up by one line.
Left arrow key	The cursor's position does not change, and the page scrolls down by half a page.
Right arrow key	The cursor's position does not change, and the page scrolls up by half a page.

Alarm Summary

For display information, see section 1.3 in the *User's Manual*.

Message Summary

For display information, see section 1.3 in the *User's Manual*.

Memory Information (Information about the displayed measured data file)

The following information is displayed.

Page switch mark
Use the left and right arrow keys to switch the page.

For display information, see section 4.3 in the *User's Manual*.

- **Signing Data (Attaching approval information)**
  When in the historical trend display:

  1. Press **DISP/ENTER** to show the display selection menu.

  2. Use the **arrow keys** to select SIGNATURE.

  3. Press the **right arrow key** to display the sub menu.

  4. Use the **up and down arrow keys** to select **SIGNATURE1**, **SIGNATURE2**, or **SIGNATURE3**, and then press **DISP/ENTER**.
     The signature initiation display appears.
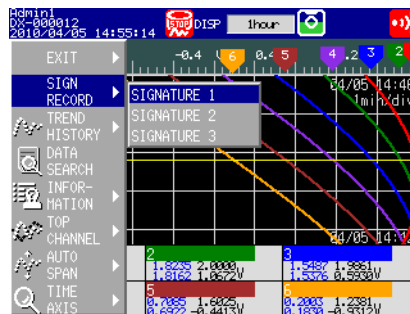
  5. After checking the range of data that will be signed, select **Yes**, and press **DISP/ENTER**.

     When Process type is set to Continuous, the signature is attached to the data file at the cursor display position. Use the arrow keys to move the cursor and change the file to be signed.
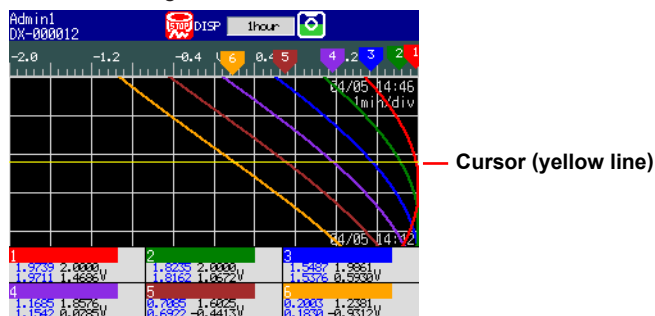
— **Cursor (yellow line)**

     If the settings have been configured so that user IDs are used, a window for entering the user ID opens. Proceed to step 6.
     If the settings have been configured so that user IDs are not used, a window for entering the password opens. Proceed to step 7.

6. Enter the user ID, and press **DISP/ENTER**.

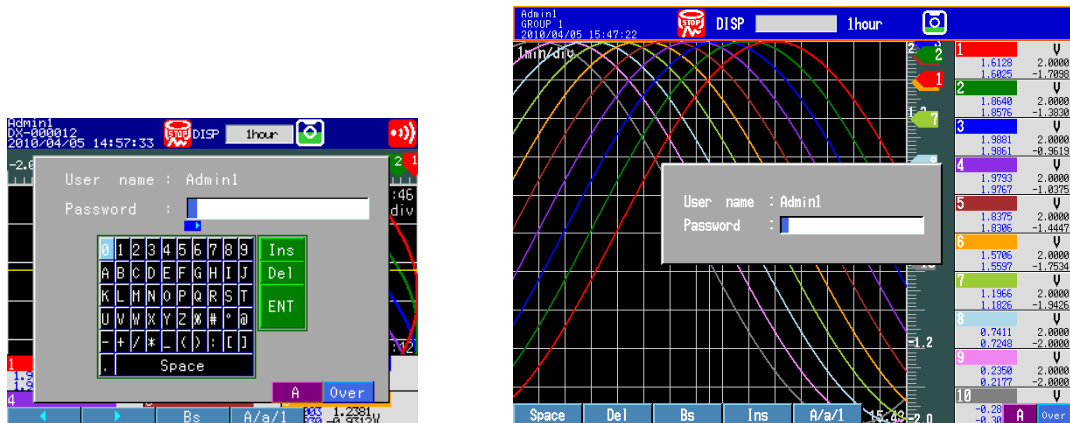On the left is the DX1000 screen. On the right is the DX2000 screen.
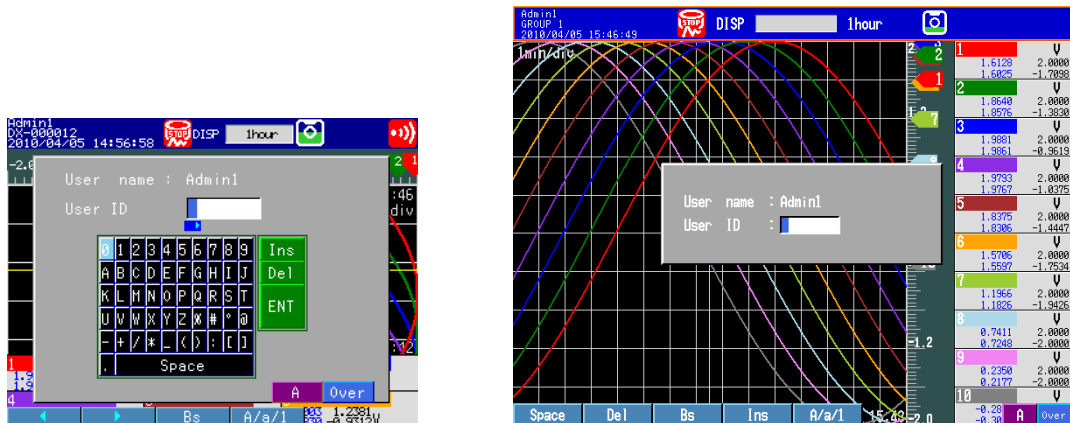
A window for entering the password opens.

7. Enter the password, and press **DISP/ENTER**.

If the current password has expired, follow the instructions that appear on the screen to change it.

A window for selecting Pass or Fail appears.

Note

If a user enters the wrong password and presses **DISP/ENTER** consecutively for the specified number of times (the password retry frequency), that user is invalidated and logged out and can no longer log in. The invalidated user must have an administrator reset their password to the default, and then the user must follow the procedure under "Logging In before the Password Has Been Set" in section 2.2 to set a new password.

8. Use the **arrow keys** to select **Pass** or **Fail**, and press **DISP/ENTER**.

After you have checked the data, if it is OK, select Pass, if it is not OK, select Fail. You can use whatever criteria you please to determine whether data passes or fails.

A window for entering a comment opens.
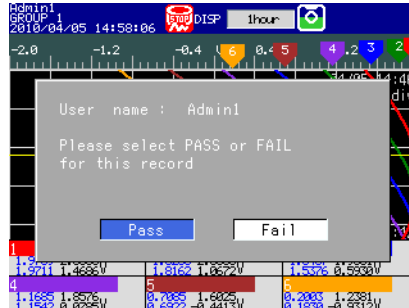
9. Enter a comment (of less than 32 characters), and press **DISP/ENTER**.

The signature confirmation display appears.

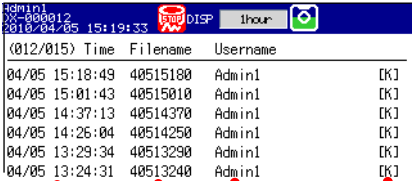10. Use the **arrow keys** to select **Yes**, and press **DISP/ENTER**.

The approval information is added to the data file, and the previous display appears.

2

Logging In, Logging Out, and Signing

2.4 Checking the Change Settings Log

1. Press **DISP/ENTER** to show the display selection menu.

2. Use the **arrow keys** to select **LOG**.
   * LOG is not displayed with the default settings.
     To display LOG, see section 5.17 (DX1000/DX1000N) or 5.18 (DX2000) in the *User's Manual*.

3. Press the **right arrow key** to display the sub menu.

4. Use the **up and down arrow keys** to select **Change Settings**.
   To close the menu without changing the display contents, press **ESC**.

5. Press **DISP/ENTER**.
   The change settings display appears.

Operation type (a list shown below)
User name
The setting File Name which was stored
A time-of-day

Operation type	Description
K	Key operations
C	Communication operations

3.1 Configuring the Password Management Function

The following settings are necessary:

For a description of the function, see section 1.4

● **Security > Password management**
Enables the password management function.
See section 2.1.

● **Login**
Specify operation modes, user names, and restrictions for each normal user.
See section 2.1

● **Root password > Password**
Set the password of the root user.
See section 2.1

● **Communication (Ethernet) > Password management > KDC connection, Certification key**
Set the server information, the encryption method, etc.You can select the encryption method from AES128, AES256, and ARC4.
These menu items only appear when the password management function is enabled.
For the setting procedure, see section 1.14 in the *Communication Manual*.

> *Note*
> ARC4 (ARCFOUR) is an encryption algorithm that is compatible with RC4.

● **Communication(Ethernet) > SNTP client**
For the password management function to work, the times on the KDC server and the DX must be synchronized. Configure the DX to always synchronize itself with an SNTP server on the network.
For the setting procedure, see section 1.8 in the *Communication Manual*.

> *Note*
> The password management function will not work if there is a difference of ±5 minutes or more between the DX and the KDC server.

3

Password Management

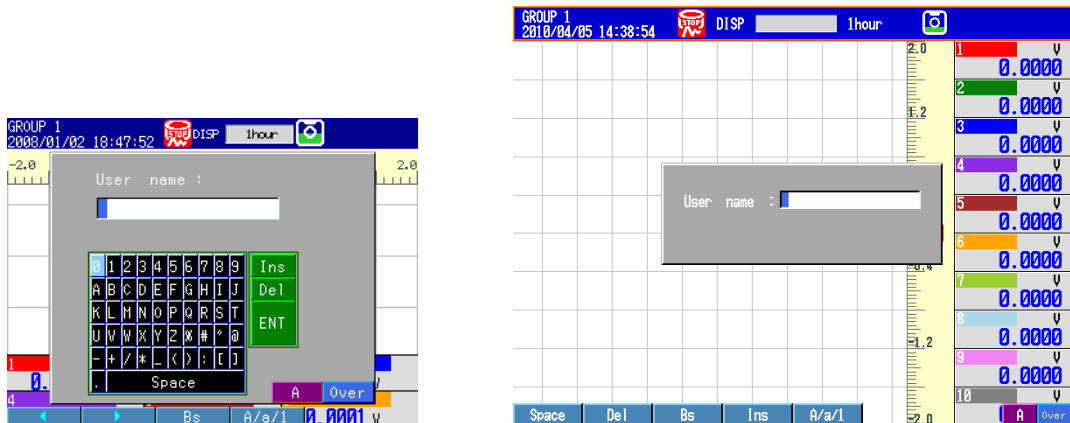## 3.2 Using the Password Management Function
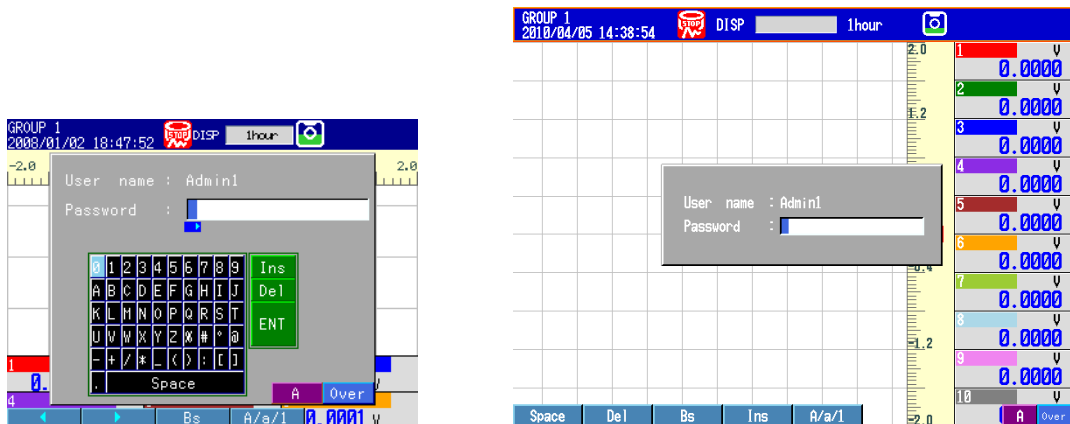
Logging In and Out

Logging In

Log in by entering the user name and password.

1. Press **FUNC**.

A window for entering the user name appears.

2. Select or enter a user name, and press **DISP/ENTER**.

On the left is the DX1000 screen. On the right is the DX2000 screen.

3. Enter the password, and press **DISP/ENTER.**

The window closes, and you are logged in.

Note

Even if you enter a password, you may not be able to log in because of a network error or a problem with the settings. An error message will appear if this is the case. Perform the operation described below to log in as the root user.

1. Enter "root" for the user name, and press **DISP/ENTER** without entering a password.

An error message will appear, followed by a window for entering the password again.

2. Enter the root password, and press **DISP/ENTER**.

You can log in as the root user. The initial root user password is root123.

Logging Out

For operating instructions, see section 2.2.

Signing In

When you sign in, you will be prompted for a user name and password.
For operating instructions, see section 2.3

Dealing with the "Invalid User" Status

If a user enters the wrong password and presses DISP/ENTER consecutively for the specified number of times (the password retry count), that user is invalidated. The user-locked icon appears in the status area. The user can log in again after a system administrator performs the locked-ACK operation (and the user-locked icon disappears). For clearing the user locked icon, see section 2.2.

Note

The "Invalid user" status is only applicable on the DX being operated. The user account on the server is not invalidated.

Password Expiration Date

Manage passwords and their expiration dates on the KDC server.

Note

When preauthentication is not being used, users may be able to log in to the DX even after the password has expired.

3.3 Error Messages and Corrective Actions

Errors That Occur during Authentication

Code	Message	Explanation/Corrective Action
E006	Incorrect input character string.	Check that the host principal, authentication key password, and realm name settings on the DX are correct.
E085	The login password is incorrect.	Enter the correct password.
E110	This user name is not registered.	The specified user is not registered on the DX. The user account is not registered on the server.
E114	This user name is invalid.	The account has been invalidated on the server. The account has been invalidated on the DX.
E117	This password is not effective.	On the DX, because the wrong password has been entered consecutively for more than the permissible number of times, this user is invalid.
E764	Not supported by this machine.	Not supported by the DX.
E765	Preauthentication failed.	Enter the correct password. Also, make sure that the times on the DX and the server match.
E766	The encryption type is not supported by this machine.	The DX does not support the encryption type, or the encryption type settings on the DX and the server are different. Use the same encryption method on the DX and the server.
E767	Failed to receive authentication from KDC server.	Check the DX and server settings. Also, make sure that the times on the DX and the server match.
E768	Change the password.	The password has expired. Change the password of the user account that is registered on the server.
E769	The time difference with the KDC server exceeds the limit.	There is a time difference of 5 minutes or more between the DX and the server. Set the DX time to match the time on the server.
E771	The host principal is not registered.	The host account is not registered on the server.
E772	The host principal is invalid	Check the host account that is registered on the server.
E773	The host password is incorrect.	Make sure that the DX authentication-key password and the server's host-account password match.
E774	Preauthentication failed.	An internal error occurred during preauthentication. Disable the server's preauthentication function.
E775	The realm is incorrect.	Make sure that the realm name setting on the DX is correct.

Errors That Occur during Communication

Code	Message	Explanation/Corrective Action
E260	IP address is not set or ethernet function is not available.	The server address has not been specified. The Ethernet is not functioning.
E266	Ethernet cable is not connected.	Make sure that an Ethernet cable is connected.
E760	Cannot find KDC server.	The KDC server cannot be found in the same domain.
E761	KDC server connection error.	An error occurred while the DX was connecting to the KDC server. Make sure that the network connection is not broken.

Appendix 1 Operation Log Contents

Operation Log

Operation	Display	Detailed Information	Additional Information*
Error log			
Error (###: error code)	Error###	Error message	-
Warning (###: error code)	Warning###	Error message	-
A/D calibration			
Shift to A/D calibration mode	A/DCalDisp	-	-
Execution of A/D calibration	A/DCalExec	-	-
Login operations			
Power on (after recovery from a power failure)	PowerOn	-	-
Power off (power failure)	PowerOff	-	-
Login	Login	-	-
Logout	Logout	-	-
User invalidation	UserLocked	-	-
Control Operations			
Password change	ChgPasswd	-	-
Locked ACK	UsrLockACK	-	-
Memory start (##: batch group number)	MemStart##		-
Memory stop (##: batch group number)	MemStop##	-	-
Alarm acknowledgment	AlarmACK	Channel/level	-
Alarm display reset	AlmDspRst	-	-
Message writing (##: batch group number)	Message##	-	-
Manual sampling	Manual	-	-
Math start	MathStart	-	-
Math stop	MathStop	-	-
Math reset (##: batch group number)	MathRst##	-	-
Computation data dropout acknowledgment	MathACK	-	-
Snapshot	Snapshot	-	-
E-mail transmission function start	MailStart	-	-
E-mail transmission function stop	MailStop	-	-
Saving of display data (##: batch group number)	DspSave##	-	-
Saving of display data (##: batch group number)	EvtSave##	-	-
Saving of data from the internal memory	MemorySave	-	-
New time after time change or adjustment	NewTime	-	-
Time change	TimeChg	-	-
Starting of time adjustment	TRevStart	Difference from the time to change to	-
Time adjustment stop	TRevEnd	-	-
Time adjustment by SNTP	SNTPtimset	-	-
Switch between normal and daylight saving time	TimeDST	-	-
Batch number setting (##: batch group number)	BatNoSet##	-	-
Lot number setting (##: lot group number)	LotNoSet##	-	-
Writing to a batch text field (##: batch group number)	TxtField##	-	-
Secondary trend interval	Chg2ndIntv	-	-
Standard trend interval	ChgStdIntv	-	-
Manual Modbus client recovery	RefModC	-	-
Manual Modbus master recovery	RefModM	-	-
Timer reset	TimerRst	Timer number	-
Match time timer reset	MTimerRst	Timer number	-
Switching on of the event level switch	ELvlSwOn	Switch number	-
Switching off of the event level switch	ELvlSwOff	Switch number	-

Operation	Display	Detailed Information	Additional Information*
Event edge switch	EEdgSw	Switch number	-
Shift to setting mode	MoveEng	-	-
Shift to basic setting mode	MoveSys	-	-
Shift to operation mode	MoveOpe	-	-
Writing of a value from the custom display to a communication input channel	WrCommuCH	Communication input channel/set value	-
Writing of a value from the custom display through the use of a Modbus client	ExchgModC	Command number/ set value	-
Writing of a value from the custom display through the use of a Modbus master	ExchgModM	Command number/ set value	-
Saving of settings in setting mode	EngSave	-	-
Loading of settings in setting mode	EngLoad	-	-
Loading of setting in basic setting mode	SysLoad	-	-
Clear 1	Clear1	-	-
Clear 2	Clear2	-	-
Clear 3	Clear3	-	-
Clear 4	Clear4	-	-
Finishing of calibration correction	CCSetEnd	-	-
Passing of the calibration due date without calibration having been completed	CCExpire	-	-
Collective setting changes			
Changing of setting mode settings	EngSet	Setup file sequence number	-
Changing of basic setting mode settings	SysSet	Setup file sequence number	-
Changing of settings related to user registration	LoginSet	Setup file sequence number	-
Changing of setting mode settings and basic setting mode settings	Eng&SysSet	Setup file sequence number	-
Changing of setting mode settings and settings related to user registration	Log&EngSet	Setup file sequence number	-
Changing of basic setting mode settings and settings related to user registration	Log&SysSet	Setup file sequence number	-
Changing of setting mode settings, basic setting mode settings, and user registration settings	AllSet	Setup file sequence number	-
Individual setting changes			
Alarm setting	AlarmSet	Channel/level	SA command
Changing of a calibration point	CCPointSet	Channel number	EH command
Changing of a calibration value	CCValueSet	Channel number/ calibration point	EH command
Alarm delay time change	AlmDlaySet	Channel number	BD command
Message setting	MessageSet	Message number	SG command
Data save destination folder setting	FolderSet	-	TH command

* The contents of the setting change are displayed in communication command format.

Detailed Information

No.	Description	Format
1	Channel/level	For collective alarm acknowledgment, Channel = ALL and Level = ALL.
		For individual alarm acknowledgmentChannel = ccc and Level = l where ccc is the channel number and l is the alarm level.
		Example Channel = 101, Level = 4
2	Difference from the time to change to	Adjust time = amm:ss.xxx.yyy a: sign (– means behind, + means ahead), mm: minutes, ss: seconds, xxx: milliseconds, yyy: microseconds
		Example Adjust time = +01:23.000.000
3	Timer number	Timer = tt tt: timer number
		Example Timer = 12
4	Switch number	Switch = ss ss: switch number
		Example Switch = 12
5	Communication input channel/set value	Channel = Ccc, Value = xxxxxxxxxxx cc: communication input channel number, xxxxxxxxxxx: set value (the actual value is displayed)
		Example Channel = C01, Value = -9.9999E+29
6	Command number/set value	Command = cc, Value = xxxxxxxxxxx cc: command number, xxxxxxxxxxx: set value (the real value is displayed)
		Example Command = 01, Value = -9.9999E+29
7	Setting file sequence number	File No. = xxxxxxxxxx xxxxxxxxxx: sequence number (an integer is displayed)
		Example File No. = 0123456789
8	Channel number	Channel = ccc ccc: channel number
		Example Channel = 012
9	Channel number/calibration point	Channel = ccc, Point = pp ccc: channel number, pp: calibration point
		Example Channel = 012, Point = 16
10	Message number	Message = mmm mmm: message number
		Example Message = 010

Operation Types

Type	Display	Description
KEY	[K]	Key operation
COM	[C]	Operation performed using Ethernet or serial communication. Modbus communication operations are included.
REM	[R]	Remote control operations (/R1 and /PM1 options)
ACT	[A]	Operations that the DX performs automatically through the event action function (except for the remote, USER key, and event switch operations).
SYS	[Y]	Automatic operations performed by the DX.
		Example Error messages

User Name

Type	User Name
KEY	A user who has logged in through key operations.
COM	A user who has logged in to the setting function through serial communication commands. A user who controlled the DX through serial communication using the LL command. Explanation No user name appears when the DX is controlled through Modbus communication.
REM	A user who is logged in Explanation When the multi-login function is in use, the name of the user who has logged in through key operations is logged, if no such user exists, the name of the user who has logged in through communication is logged. If no users are logged in, no user name appears.
ACT	No user name appears.
SYS	No user name appears.

App

Appendix

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