User's Manual

SMARTDAC+

Model GA10/GA10CL/GA10UP

Data Logging Software User's Manual

vigilantplant.

YOKOGAWA
Yokogawa Electric Corporation

IM 04L65B01-01EN
2nd Edition

Introduction

This manual explains how to use Data Logging Software GA10 (hereafter referred to as GA10). To ensure correct use, please read this manual thoroughly before beginning operation.

Downloading Manuals

You can download the latest user's manuals from the following URL:

www.smartdacplus.com/manual/en/

- **Electronic Manuals (this manual, and related manuals)**

Manual Title	Manual No.
Model GA10/GA10CL/GA10UP Data Logging Software User's Manual (this manual)	IM 04L65B01-01EN
SMARTDAC+STANDARD Universal Viewer User's Manual	IM 04L61B01-01EN

- **Paper Manuals (manuals supplied with the product)**

Manual Title	Manual No.
GA10 Data Logging Software Downloading the Latest Software and Manuals	IM 04L65B01-02Z2

Updating the Software

Download the latest version of the software from the following URL:

www.smartdacplus.com/software/en/

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the software's performance and functions.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- Copying or reproducing all or any part of the contents of this manual without YOKOGAWA's permission is strictly prohibited.

Trademarks

- vigilantplant and SMARTDAC+ are registered trademarks of Yokogawa Electric Corporation.
- Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Modbus is a registered trademark of AEG Schneider.
- Adobe and Acrobat are registered trademarks or trademarks of Adobe Systems Incorporated.
- Pentium is a trademark of Intel Corporation in the United States and/or other countries.
- Kerberos is a trademark of Massachusetts Institute of Technology (MIT).
- Company and product names that appear in this manual are registered trademarks or trademarks of their respective holders.
- The company and product names used in this manual are not accompanied by the registered trademark or trademark symbols (® and ™).

2nd Edition: June, 2014 (YK)

How to Use This Manual

Structure of the Manual

This manual contains the following seven chapters.

Chap.	Title	Description
1	Before Using the Product	This chapter provides an overview of Data Logging Software GA10. It also explains the main specifications of the software and the PC system requirements.
2	Preparation	This chapter provides a flowchart and the procedure to prepare the software for data collection and recording.
3	Configuring and Starting Data Collection and Recording	This chapter explains two configuration modes for data collection and recording with GA10: Simple Settings and Detail Settings.
4	Monitoring Data Collection	This chapter explains how to use the Monitor Page to monitor data collection.
5	Managing Recording Data	This chapter explains how to edit recording data files from a list and how to display recording data files on a viewer.
6	Managing Users	This chapter explains how to register, delete, and edit information of users that will perform data collection and recording with GA10.
7	Troubleshooting	This chapter provides messages that GA10 may display and how to deal with them as well as answers to frequently asked questions.

Scope of This Manual

This manual does not explain the operations of your PC's operating system. For this information, read the Windows user's guide or related materials.

Conventions Used in This Manual

Notes	
IMPORTANT	Identifies important information required to understand operations or functions.
Note	Calls attention to information that is important for the proper operation of GA10.
Reference Item	
▶	Reference to related operation or explanation is indicated after this mark. Example: ▶ section 4.1
Conventions Used in the Procedural Explanations	
Bold characters	Indicates character strings that appear on the screen. Example: **Voltage**

Images

The images used in this manual may differ from those that actually appear in the software. Such differences do not affect the procedural explanation.

Version and Functions Described in This Manual

Edition	Product	Addition and Change
1	Version 1.01.xx	—
2	Version 1.02.xx	Modified to support for GX/GP firmware version R2.01.xx (release number 2). Added descriptions for the support for UTA advanced series, Modbus Device Definition Files, etc. Modified system requirements (support for Windows 8.1). Modified for user-interface improvements.

Revisions

1st Edition	February, 2014
2nd Edition	June, 2014

Software License Agreement

IMPORTANT - PLEASE READ CAREFULLY BEFORE INSTALLING OR USING:

THANK YOU VERY MUCH FOR SELECTING SOFTWARE OF YOKOGAWA ELECTRIC CORPORATION (“YOKOGAWA”). BY INSTALLING OR OTHERWISE USING THE SOFTWARE PRODUCT, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT. IF YOU DO NOT AGREE, DO NOT INSTALL NOR USE THE SOFTWARE PRODUCT AND PROMPTLY RETURN IT TO THE PLACE OF PURCHASE FOR A REFUND, IF APPLICABLE.

1. Scope

This Agreement applies to the following software products and associated documentation of Yokogawa (collectively, “Software Product”). Unless otherwise provided by Yokogawa, this Agreement applies to the updates and upgrades of the Software Product which may be provided by Yokogawa.
Software Product: SMARTDAC+ Data Logging Software (Model GA10)

2. Grant of License

2.1 Subject to the terms and conditions of this Agreement, Yokogawa hereby grants to you a non-exclusive and non-transferable right to use the Software Product on a single or, the following specified number of, computer(s) and solely for your internal operation use, in consideration of full payment by you to Yokogawa of the license fee separately agreed upon.
Granted number of License: the number of purchases

2.2 Unless otherwise agreed or provided by Yokogawa in writing, the following acts are prohibited:

a) to reproduce the Software Product, exce pt for one archival copy for backup purpose, which shall be maintained with due care subject to this Agreement;
b) to sell, lease, distribute, transfer, pledge, sublicense, make available via the network or otherwise convey the Software Product or the license granted herein to any other person or entity;
c) to use the Software Product on any unauthorized computer via the network;
d) to cause, permit or attempt to dump, disassemble, decompile, reverse-engineer, or otherwise translate or reproduce the Software Product into source code or other human readable format, or to revise or translate the Software Product into other language and change it to other formats than that in which Yokogawa provided;
e) to cause, permit or attempt to remove any copy protection used or provided in the Software Product; or
f) to remove any copyright notice, trademark notice, logo or other proprietary notices or identification shown in the Software Product.

2.3 Any and all technology, algorithms, know-how and process contained in the Software Product are the property or trade secret of Yokogawa or licensors to Yokogawa. Ownership of and all the rights in the Software Product shall be retained by Yokogawa or the licensors and none of the rights will be transferred to you hereunder.

2.4 You agree to maintain the aforementioned property and trade secret of Yokogawa or licensors and key codes in strict confidence, not to disclose it to any party other than your employees, officers, directors or similar staff who have a legitimate need to know to use the Software Product and agreed in writing to abide by the obligations hereunder.

2.5 Upon expiration or termination of this Agreement, the Software Product and its copies, including extracts, shall be returned to Yokogawa and any copies retained in your computer or media shall be deleted irretrievably. If you dispose of media in which the Software Product or its copy is stored, the contents shall be irretrievably deleted.

2.6 The Software Product may contain software which Yokogawa is granted a right to sublicense or distribute by third party suppliers, including affiliates of Yokogawa (“Third Party Software”). If suppliers of the Third Party Software (“Supplier”) provide special terms and conditions for the Third Party Software which differ from this Agreement, the special terms and conditions separately provided by Yokogawa shall prevail over this Agreement. Some software may be licensed to you directly by Supplier.

2.7 The Software Product may contain open source software (“OSS”), for which the special terms and conditions separately provided by Yokogawa shall take precedence over this Agreement.

3. Restrictions on Application

3.1 Unless otherwise agreed in writing between you and Yokogawa, the Software Product is not intended, designed, produced or licensed for use in relation to aircraft operation or control, ship navigation or marine equipment control, or ground facility or device for support of the aforesaid operation or control, or for use in relation to rail facility, nuclear related facility, radiation-related equipment, or medical equipment or facility, or under any other circumstances which may require high safety standards.

3.2 If the Software Product is used for the abovementioned purposes, neither Yokogawa nor Supplier assumes liability for any claim or damage arising from the said use and you shall indemnify and hold Yokogawa, Supplier, their affiliates, subcontractors, officers, directors, employees and agents harmless from any liability or damage whatsoever, including any court costs and attorney’s fees, arising out of or related to the said use.

4. Limited Warranty

4.1 The Software Product shall be provided to you on an “as is” basis at the time of delivery and except for physical damage to the recording medium containing the Software Product, Yokogawa and Supplier shall disclaim all of the warranties whatsoever, express or implied, and all liabilities therefrom. If any physical defect is found on the recording medium not later than twelve (12) months from delivery, Yokogawa shall replace such defective medium free of charge, provided that the defective medium shall be returned to the service office designated by Yokogawa at your expense within the said twelve (12) months. THIS LIMITED WARRANTY PROVIDED IN THIS CLAUSE IS IN LIEU OF ALL OTHER WARRANTIES OF ANY KIND WHATSOEVER AND YOKOGAWA HEREBY DISCLAIMS ALL OTHER WARRANTIES RELATING TO THE SOFTWARE PRODUCT, WHETHER EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, NON-INFRINGEMENT, QUALITY, FUNCTIONALITY, APPROPRIATENESS, ACCURACY, RELIABILITY AND RECENCY. IN NO EVENT SHALL YOKOGAWA WARRANT THAT THERE IS NO INCONSISTENCY OR INTERFERENCE BETWEEN THE SOFTWARE PRODUCT AND OTHER SOFTWARE NOR SHALL BE LIABLE THEREFOR. The warranty provisions of the applicable law are expressly excluded to the extent permitted.

4.2 At the sole discretion of Yokogawa, Yokogawa may upgrade the Software Product to the new version number (“Upgrade”) and make it available to you at your expense or free of charge as Yokogawa deems fit. In no event shall Yokogawa be obliged to upgrade the Software Product or make the Upgrade available to you.

4.3 Certain maintenance service may be available for some types of Software Product at Yokogawa’s current list price. Scope and terms and conditions of the maintenance service shall be subject to those separately provided by Yokogawa. Unless otherwise provided in Yokogawa catalogues or General Specifications, maintenance services will be available only for the latest version and the immediately preceding version. In no event will service for the immediately preceding version be available for more than 5 years after the latest version has been released. In addition, no service will be provided by Yokogawa for the Software Product which has been discontinued for more than 5 years. Notwithstanding the foregoing, maintenance service may not be available for non-standard Software Product. Further, in no event shall Yokogawa provide any service for the Software Product which has been modified or changed by any person other than Yokogawa.

5. Infringement

5.1 If you are warned or receive a claim by a third party that the Software Product in its original form infringes any third party’s patent (which is issued at the time of delivery of the Software Product), trade mark, copyright or other intellectual property rights (“Claim”), you shall promptly notify Yokogawa thereof in writing.

5.2 If the infringement is attributable to Yokogawa, Yokogawa will defend you from the Claim at Yokogawa’s expense and indemnify you from the damages finally granted by the court or otherwise agreed by Yokogawa out of court. The foregoing obligation and indemnity of Yokogawa shall be subject to that i) you promptly notify Yokogawa of the Claim in writing as provided above, ii) you grant to Yokogawa and its designees the full authority to control the defense and settlement of such Claim and iii) you give every and all necessary information and assistance to Yokogawa upon Yokogawa’s request.

5.3 If Yokogawa believes that a Claim may be made or threatened, Yokogawa may, at its option and its expense, either a) procure for you the right to continue using the Software Product, b) replace the Software Product with other software product to prevent infringement, c) modify the Software Product, in whole or in part, so that it become non-infringing, or d) if Yokogawa believes that a) through c) are not practicable, terminate this Agreement and refund you the paid-up amount of the book value of the Software Product as depreciated.

5.4 Notwithstanding the foregoing, Yokogawa shall have no obligation nor liability for, and you shall defend and indemnify Yokogawa and its suppliers from, the Claim, if the infringement is arising from a) modification of the Software Product made by a person other than Yokogawa, b) combination of the Software Product with hardware or software not furnished by Yokogawa, c) design or instruction provided by or on behalf of you, d) not complying with Yokogawa's suggestion, or e) any other causes not attributable to Yokogawa.

5.5 This section states the entire liability of Yokogawa and its suppliers and the sole remedy of you with respect to any claim of infringement of a third party's intellectual property rights. Notwithstanding anything to the contrary stated herein, with respect to the claims arising from or related to the Third Party Software or OSS, the special terms and conditions separately provided for such Third Party Software or OSS shall prevail.

6. Limitation of Liability

6.1 EXCEPT TO THE EXTENT THAT LIABILITY MAY NOT LAWFULLY BE EXCLUDED IN CONTRACT, YOKOGAWA AND SUPPLIERS SHALL NOT BE LIABLE TO ANY PERSON OR LEGAL ENTITY FOR LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES, OR OTHER SIMILAR DAMAGES OF ANY KIND, INCLUDING WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OR DESTRUCTION OF DATA, LOSS OF AVAILABILITY AND THE LIKE, ARISING OUT OF THE USE OR INABILITY TO USE OF THE SOFTWARE PRODUCT, OR ARISING OUT OF ITS GENERATED APPLICATIONS OR DATA, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, WHETHER BASED IN WARRANTY (EXPRESS OR IMPLIED), CONTRACT, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER LEGAL OR EQUITABLE GROUNDS. IN NO EVENT YOKOGAWA AND SUPPLIER'S AGGREGATE LIABILITY FOR ANY CAUSE OF ACTION WHATSOEVER (INCLUDING LIABILITY UNDER CLAUSE 5) SHALL EXCEED THE DEPRECIATED VALUE OF THE LICENSE FEE PAID TO YOKOGAWA FOR THE USE OF THE CONCERNED PART OF THE SOFTWARE PRODUCT. If the Software Product delivered by Yokogawa is altered, modified or combined with other software or is otherwise made different from Yokogawa catalogues, General Specifications, basic specifications, functional specifications or manuals without Yokogawa's prior written consent, Yokogawa shall be exempted from its obligations and liabilities under this Agreement or law.

6.2 Any claim against Yokogawa based on any cause of action under or in relation to this Agreement must be given in writing to Yokogawa within three (3) months after the cause of action accrues.

7. Export Control

You agree not to export or provide to any other countries, whether directly or indirectly, the Software Product, in whole or in part, without prior written consent of Yokogawa. If Yokogawa agrees such exportation or provision, you shall comply with the export control and related laws, regulations and orders of Japan, the United States of America, and any other applicable countries and obtain export/import permit and take all necessary procedures under your own responsibility and at your own expense.

8. Audit; Withholding

8.1 Yokogawa shall have the right to access and audit your facilities and any of your records, including data stored on computers, in relation to the use of the Software Product as may be reasonably necessary in Yokogawa's opinion to verify that the requirements of this Agreement are being met.

8.2 Even after license being granted under this Agreement, should there be any change in circumstances or environment of use which was not foreseen at the time of delivery and, in Yokogawa's reasonable opinion, is not appropriate for using the Software Product, or if Yokogawa otherwise reasonably believes it is too inappropriate for you to continue using the Software Product, Yokogawa may suspend or withhold the license provided hereunder.

9. Assignment

If you transfer or assign the Software Product to a third party, you shall expressly present this Agreement to the assignee to ensure that the assignee comply with this Agreement, transfer all copies and whole part of the Software Product to the assignee and shall delete any and all copy of the Software Product in your possession irretrievably. This Agreement shall inure to the benefit of and shall be binding on the assignees and successors of the parties.

10. Termination

Yokogawa shall have the right to terminate this Agreement with immediate effect upon notice to you, if you breach any of the terms and conditions hereof. Upon termination of this Agreement, you shall promptly cease using the Software Product and, in accordance with sub-clause 2.5, return or irretrievably delete all copies of the Software Product, certifying the same in writing. In this case the license fee paid by you for the Software Product shall not be refunded. Clauses 2.4 and 2.5, 3, 5, 6 and 11 shall survive any termination of this Agreement.

11. Governing Law; Disputes

This Agreement shall be governed by and construed in accordance with the laws of Japan.

Any dispute, controversies, or differences which may arise between the parties hereto, out of, in relation to or in connection with this Agreement ("Dispute") shall be resolved amicably through negotiation between the parties based on mutual trust. Should the parties fail to settle the Dispute within ninety (90) days after the notice is given from either party to the other, the Dispute shall be addressed in the following manner:

(i) If you are a Japanese individual or entity, the Dispute shall be brought exclusively in the Tokyo District Court (The Main Court) in Japan.

(ii) If you are not a Japanese individual or entity, the Dispute shall be finally settled by arbitration in Tokyo, Japan in accordance with the Commercial Arbitration Rules of the Japan Commercial Arbitration Association. All proceedings in arbitration shall be conducted in the English language, unless otherwise agreed. The award of arbitration shall be final and binding upon both parties, however, each party may make an application to any court having jurisdiction for judgment to be entered on the award and/or for enforcement of the award.

12. Miscellaneous

12.1 This Agreement supersedes all prior oral and written understandings, representations and discussions between the parties concerning the subject matter hereof to the extent such understandings, representations and discussions should be discrepant or inconsistent with this Agreement.

12.2 If any part of this Agreement is found void or unenforceable, it shall not affect the validity of the balance of the Agreement, which shall remain valid and enforceable according to its terms and conditions. The parties hereby agree to attempt to substitute for such invalid or unenforceable provision a valid or enforceable provision that achieves to the greatest extent possible the economic, legal and commercial objectives of the invalid or unenforceable provision.

12.3 Failure by either party to insist on performance of this Agreement or to exercise a right when entitled does not prevent such party from doing so at a later time, either in relation to that default or any subsequent one.

End of document

Using Open Source Software

Heimdal

The password-management function of the following product uses Heimdal source code for AES authentication key generation.
In accordance with the Heimdal license agreement, the copyright notice, redistribution conditions, and license are listed below.

SMARTDAC+ STANDARD Universal Viewer

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

3. Neither the name of the Institute nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE INSTITUTE AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE INSTITUTE OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Contents

Blank

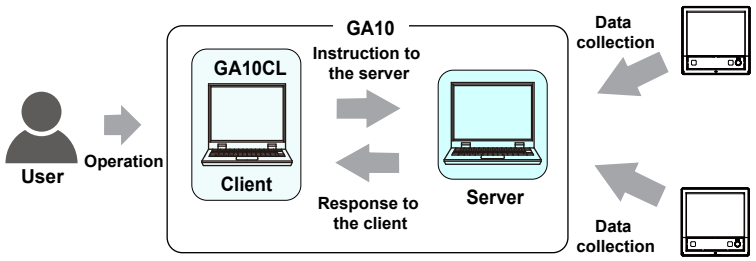
Chapter 1 Before Using the Product

1.1 Overview

Data Logging Software GA10 is used to collect data from measuring instruments and controllers via communication and monitor and record the collected data. Recorded data can be displayed and printed from the Viewer software.
To use GA10, you need a PC that can connect to target devices. The connection between the PC and target devices is established through Ethernet or serial communication.
You can use the Simple Settings mode to easily start data collection.

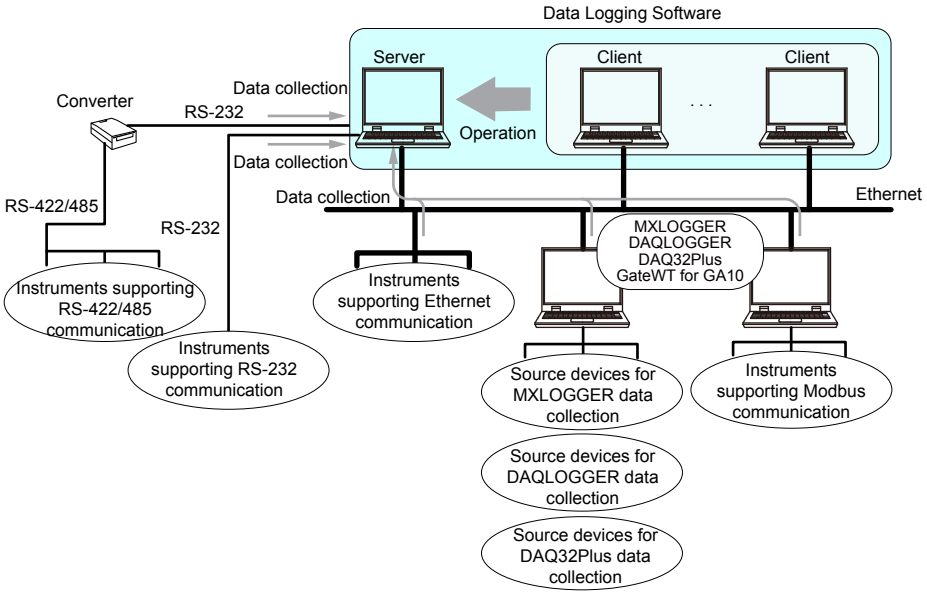
Server and Client

GA10 is a client-server software application. Users perform various server operations from a client. The server collects, records, and manages data received from connected devices on the basis of the instructions received from the client.
The client function and server function are installed together in a single PC. You can also install GA10CL, which is a version that contains only the client function, in other PCs.
Multiple clients can simultaneously access a single server.



Connectivity with Many Devices

GA10 is a software application that consolidates various devices connected over a network and performs data collection. GA10 can connect to YOKOGAWA recorders and data loggers. It can also collect data that has been acquired by YOKOGAWA's data acquisition software (MXLOGGER, DAQLOGGER, and DAQ32Plus). Moreover, it supports the Modbus protocol, enabling data collection from YOKOGAWA's control instruments (temperature controllers, signal conditioners, and power monitors). GA10 can also collect data from other manufacturers' devices that support Modbus communication.



MXLOGGER, DAQLOGGER, DAQ32Plus are YOKOGAWA's data collection applications.
GateWT for GA10 is YOKOGAWA's driver software.

Data Collection Project

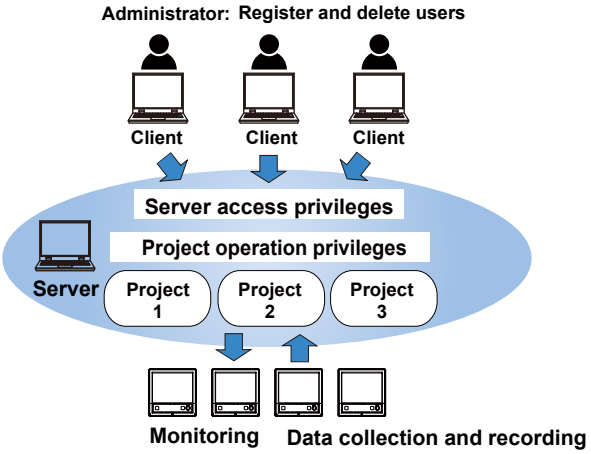
GA10 collects data in units of projects. Projects are created by users to suite their purposes. For example, a project named “Process A” can be created to collect measured data from a process called “A.” In this way, a project can be created for each set of collected data.
For each project, the data to be collected, data to be recorded, the monitor page layout, and the like are specified.
Multiple projects can be created in a single server.

Monitoring

Collected data can be monitored on the Monitor Page.
On the Monitor Page, you can arrange four types of displays (trend, digital, meter, and alarm) in an easy-to-view layout. In addition, related data can be displayed in groups to monitor measurements efficiently. In the trend display, you can refer to past data.

User Management

GA10 users can be registered and managed. There are two user levels: administrator and user. Administrators are responsible for registering and deleting all users. Users enter their IDs and passwords to access a server.
Of the users registered in a server, only those that have been granted privileges can access projects. The operation scope of each user can be managed by assigning one of four levels: owner, manager, operator, and monitor. If a user is accessing a project, other users cannot access that project.

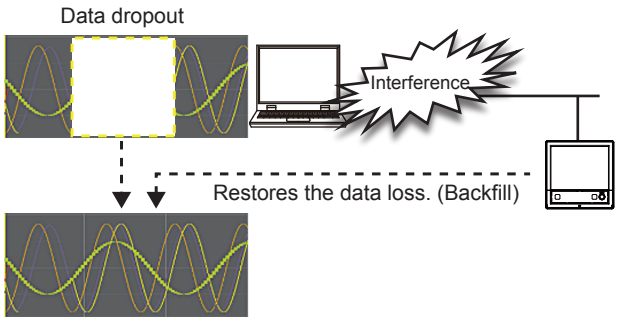


Features to improve reliability

GA10 features the following functions to ensure reliable data collection.

Data supplementing function (Backfill function)

If a data dropout occurs in the data file that is being recorded due to a communication interference, this function automatically acquires data from the internal memory of the device and restores the data loss in the file.



Several conditions must be met for the backfill function to operate properly.
For details, see Q4 on **page 7-5**.

Auto reconnection when communication is disconnected

If the communication is disconnected and data collection is interrupted, communication retry is performed every approximately 30 seconds. When communication recovers, the server resumes data collection and recording. This allows data loss to be kept to a minimum.

Protection of data files up to the moment of power failure

GA10 writes to the data file every approximately 10 seconds. This reduces the chances of the data file being lost in the event the PC shuts down unexpectedly.

Convenient Features

- You can use the Simple Settings feature to easily start data collection.
- You can set the data timestamp to PC time or Device time.
- The DDE (Dynamic Data Exchange) server feature allows collected data to be loaded into Excel and other applications.
- GA10 has a trial mode in which 100 channels can be used for 60 days without a license.

Connectable Devices and Software

The following table lists the devices and software applications that GA10 can connect to.

Registering devices for connection: ▶ page 3-2
Connectable devices and interfaces: ▶ page 3-10

Name	Name
µR10000	GX10
µR20000	GX20
DX1000	GP10
DX1000N	GP20
DX1000T	UT32A
DX2000	UT35A
DX2000T	UT52A
CX1000	UT55A
CX2000	UT75A
FX1000	UP35A
MV1000	UP55A
MV2000	UM33A
MX100	Devices supporting the Modbus protocol [1]
MW100	
DA100	GateWT for GA10
DR130	DAQLOGGER
DR230	DAQ32Plus
DR240	MXLOGGER

1 Includes Yokogawa control products.

Main GA10 Specifications

Maximum number of simultaneous device connections	100
Maximum number of simultaneous client connections	No limit (operation guaranteed up to 32 clients)
Maximum number of simultaneous operation projects	30
Maximum number of device registrations	1000
Maximum number of project registrations	10000
Maximum number of user registrations	100
Maximum number of clients that can run simultaneously on the same PC	1
Monitor interval (when set to PC time)	100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min
Monitor interval (when set to device time)	The acquisition interval of each device [1]
Record interval (when set to PC time)	100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s, 20 s, 30 s, 1 min, 2 min, 5 min, 10 min (limited to an integer multiple of the monitor interval.)
Record interval (when set to device time)	Same as the monitor interval of GA10
Maximum number of recording channels (tags)	2000
Number of display groups	50
Number of channels (tags) per display group	50
Language [2]	English, Japanese, Chinese, French, German, Russian, Korean

1 MX/MW, MXLOGGER: 10ms (shortest).

2 Make sure to use the same language setting for this software, Windows OS, and the recorders that data is to be collected from.

1.2 MODEL and SUFFIX Codes

- **Basic Software**

Model	Suffix Code	Name
GA10		Data Logging Software Basic license
Channels	-01	100ch
	-02	200ch
	-05	500ch
	-10	1000ch
	-20	2000ch

- **Additional Monitoring PCs (Clients)**

Model	Suffix Code	Name
GA10CL		Client license for GA10
Number of licenses	-01	1 license
	-05	5 licenses
	-10	10 licenses
	-50	50 licenses

- **Additional Channels**

Model	Suffix Code	Name
GA10UP		Channels upgrade license for GA10
Upgrade	-01	100ch→200ch, 200ch→500ch, 500ch→1000ch, 1000ch→2000ch
	-02	100ch→500ch, 200ch→1000ch, 500ch→2000ch
	-03	100ch→1000ch, 200ch→2000ch
	-04	100ch→2000ch

- **How the software is provided**

Name	Description
License sheet	Contains the license keys. Check that the correct number of licenses are present.
GA10 Data Logging Software Downloading the Latest Software and Manuals	1 sheet (A4 size)

1.3 PC System Requirements

- **Hardware**

Item	Description
CPU	Pentium 4, 3.2 GHz or faster
Internal memory	2 GB or more
Hard disk	100 MB or more of free space, NTFS recommended
Mouse	Mouse compatible with the OS
Display	1024 x 768 dots or higher, 65536 colors or more
Communication ports	RS-232 or Ethernet port compatible with the OS To perform RS-232 communication or RS-422/485 communication with a connected device, the server PC needs a RS-232 serial port.

- **Operating System**

OS	Edition	32 bit	64 bit	Service Pack
Windows Vista	Home Premium	Yes	No	SP2
Windows 7	Home Premium	Yes	Yes	SP1
	Professional	Yes	Yes	SP1
Windows 8.1	—	Yes	Yes	No SP
	Pro	Yes	Yes	No SP
Windows Server 2008	R2	No	Yes	SP1
Windows Server 2012	—	No	Yes	No SP

- **Other Operating Environment**

Item	Description
Microsoft Office Excel	2007, 2010, 2013
Adobe Reader	Adobe Reader X (latest version recommended)
RS-232 - RS-422/485 converter	To perform RS-422/485 communication with a connected device, use a converter. (YOKOGAWA ML2 recommended)

1.4 Menu and Icons

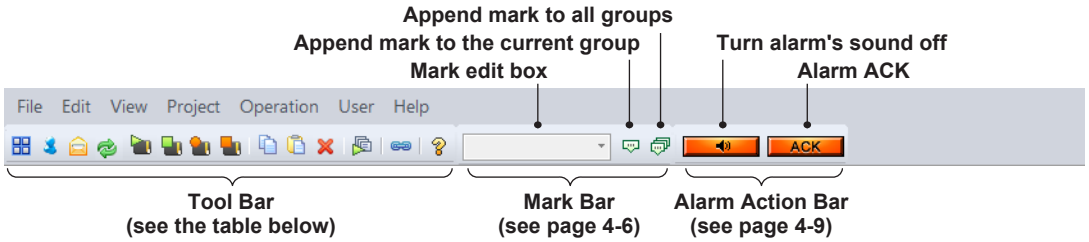
This section describes the GA10 menus and icons and page references on how to use them.

Menu before logging in

Tool Bar (see the table below)

Menu			Description	See pages...
File(F)				
	Login		Login server	2-2
	Exit		Exit application	-
View				
	Style	▶	Switch the display style	2-3, 4-2
	Tool Bar		Show or hide the tool bar	-
Help(H)				
	User's &Manual	F1	Display user operation manual	-
	Input License		Display license dialogue	2-7
	Input Server License...		Display server license dialogue	2-7
	About...		Display program information, version number and copyright	2-7
	Server information...		Display server version information dialogue	2-8
	To Update Website		Display website of Data Logging Software	-

Menu after logging in



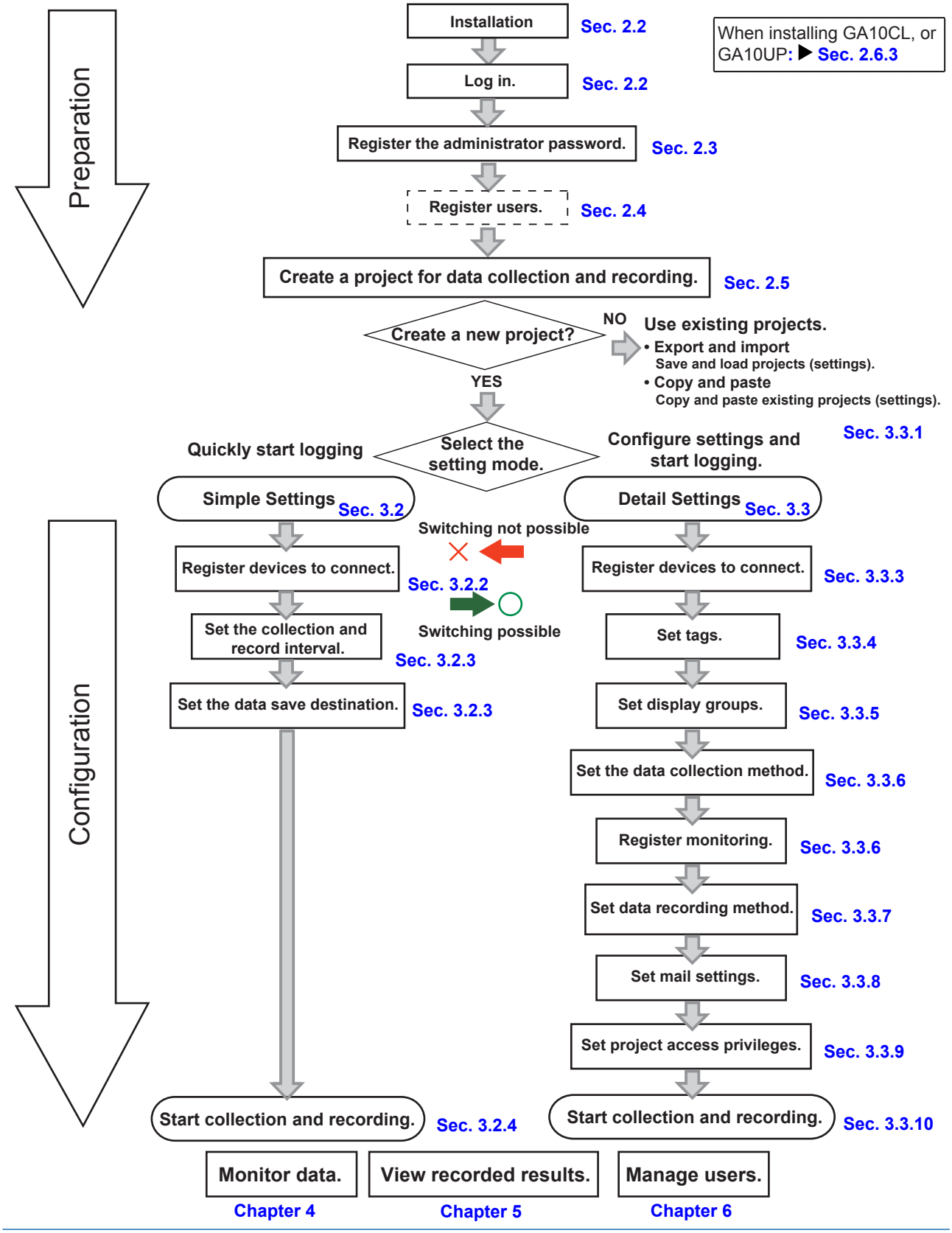
Menu			Description	See pages...
File				
	Logout...		Logout from server	2-3
	New Project...		Create a Project	2-4, 3-2, 3-4
	Import Project...		Import Project information to create Project from file.	3-4
	Export Project...		Export Project information to file	3-4
	Import tags...		Import tags from tag information tag message file	3-13
	Export tags...		Export tags from tag information tag message file	3-13
	Start DDE		Start DDE service	3-32
	Stop DDE		Stop DDE service	3-32
	Exit		Exit application	-
Edit				
	Copy	Ctrl+C	Copy the selection and put it on the Clipboard	3-5
	Paste	Ctrl+V	Paste the copied content	3-5
	Delete	Delete	Delete the selected content	3-3, 6-4
View				
	Project List Page		Switch to Project list page	2-4, 3-3, 3-4, 4-6, 4-4
	User Management Page		Switch to user management page	2-4, 6-2
	Log...		Display log dialogue	4-13
	Refresh		Update the current page	5-2
	Alarm		Show or hide alarm	4-5
	Alarm List...		Show alarm list dialogue	4-8
	Group Link		Linkage shows when switching between different groups	4-2
	Cursor value...		Open the Cursor Window	4-5
	Cursor Value Transparency	▶	Switch cursor value transparency	4-5
	Erase Cursor		Erase Cursor	4-5

Menu		Description	See pages...
	Tag Display From. ▸	Switch tag display format	4-2
	User Display Form. ▸	Switch user display format	4-2
	Style ▸	Switch the display style	2-3, 4-2
	Date Format ▸	Switch the date format	4-2
	Month Display Form. ▸	Switch the month display format	4-2
	Decimal Point ▸	Switch the decimal point	4-2
✓	Tool Bar	Show or hide the tool bar	-
✓	Mark Bar	Whether or not display the mark bar	-
✓	Alarm Action Bar	Whether or not display the alarm action bar	-
Project			
	Open with specified permission	Open the project according to the specified permission	6-4
	Modify Basic Information	Modify project's basic information	3-6
	Modify Owner	Modify project's owner	6-4
	Append Mark ▸	Append mark to the current group or all groups	4-6
	Start Computing	Start computing in the devices used in the Project	4-11
	Stop Computing	Stop computing in the devices used in the Project	4-11
	Clear Computing	Clear computing in the devices used in the Project	4-11
	Clear&Start Computing	Clear and start computing in the devices used in the Project	4-11
	Alarm ACK	Alarm ACK	4-9
	Update Tag Information	Updates the selected tag information manually	3-14
	Assign Tag Automatically...	Assign tags automatically	3-16
	Unlock Project Forcibly	Change the project's lock state forcibly	6-5
Operation			
	Start Monitoring Simultaneously	All opened Projects start monitoring simultaneously	3-33
	Stop Monitoring Simultaneously	All opened Projects stop monitoring simultaneously	3-33
	Start Recording Simultaneously	All opened Projects start recording simultaneously	3-33
	Stop Recording Simultaneously	All opened Projects stop recording simultaneously	3-33
	Alarm Sound	Alarm sounds when alarm happens	4-9
	Turn Alarm's Sound Off	Turn alarm's sound off	4-9
User			
	Change Information	Change user's information	2-3, 6-2, 6-3
	Register New User	Register new user in server	2-4, 6-3

Chapter 2 Preparation

2.1 Preparation from Installation up to Data Collection and Recording

The following flowchart shows an outline of the procedure from GA10 installation up to data collection and recording.



2.2 Installation

The GA10 installer package includes a server, client, and Universal Viewer programs. Executing the procedure below installs all programs in a single PC.
The server runs as a Windows service and starts running as soon as it is installed.

Note

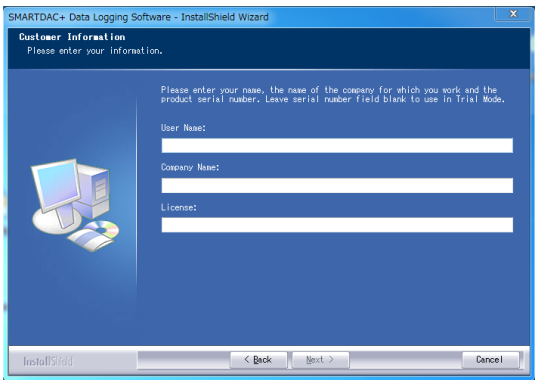
- Install the programs as a Windows administrator. For Windows XP, log on as an administrator. For Windows Vista or later, start as step 2 in the following procedure.
- Uninstall GA10 before reinstalling.

The procedure here is explained for Windows 7.

1. Double-click the downloaded file to extract the files.
2. In the extracted folder, right-click InstallE_x86.exe (InstallE_x64.exe for a 64 bit edition), and click **Run as administrator**.
3. The installation wizard starts.
   If you accept the license agreement, click **Next**.
4. When the Customer Information dialog box appears, enter the user name, company name, and license number. Click **Next**.

Note

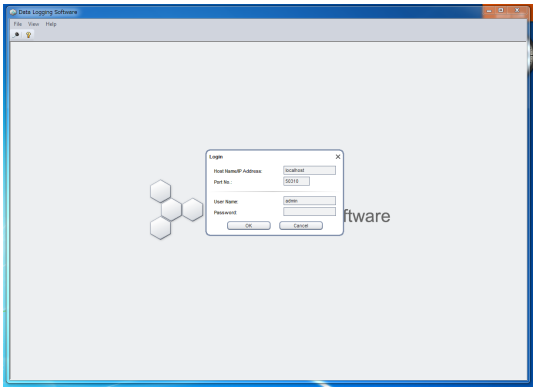
If you do not enter the license number, you can use GA10 as a trial version for 60 days.



5. Continue to follow the instructions on the screen to install the software.
6. When the installation is complete, click **Finish**.
   Check that SMARTDAC+ Data Logging Software has been added to the Start menu under All Programs.

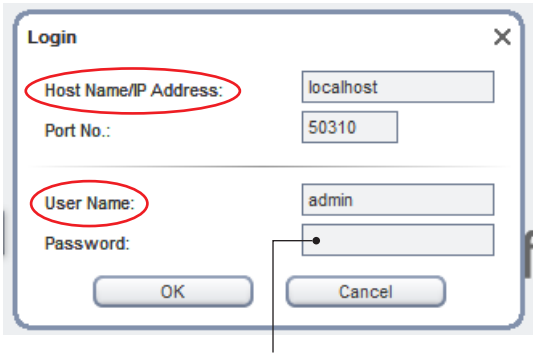
After the installation is complete, start the client, and log in to the server.

7. On the **Start** menu, click **All Programs**, **SMARTDAC+ Data Logging Software**, and **Data Logging Software**.



The client starts, and the Login dialog box appears.

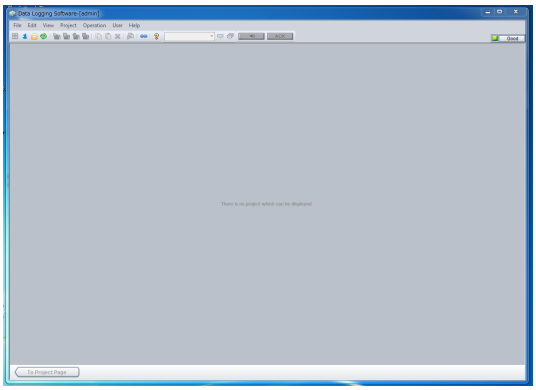
8. For the first login, enter the following information.
   User name: admin
   Password: (blank)



Do not enter the password for the first login.

To change the port number: ▶ page 2-6

9. Click **OK**.
   The dialog box closes, the initial Project List Page appears.

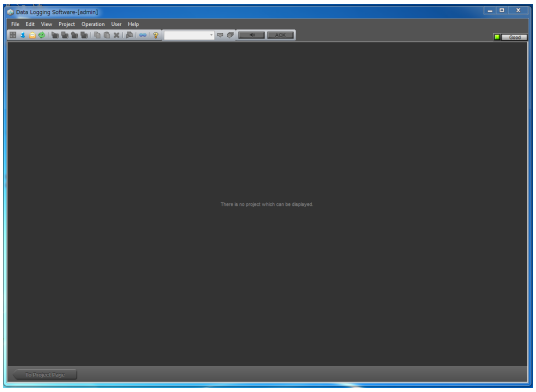


10 To continue with the procedure, proceed to next section.

To log out, on the **File** menu, click **Logout**.

Note

You can change the background color from the two available colors by using Style in the View menu.
The following figure shows the “dark” style window. (The windows shown in all other figures of this manual is “light” style.)

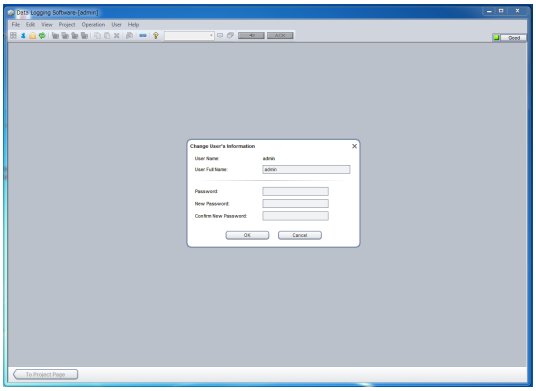


Setting general display options: ▶ page 4-2

2.3 Registering the Administrator Password

After installation, first set the administrator (admin) password. The administrator can register and delete users and initialize their passwords.

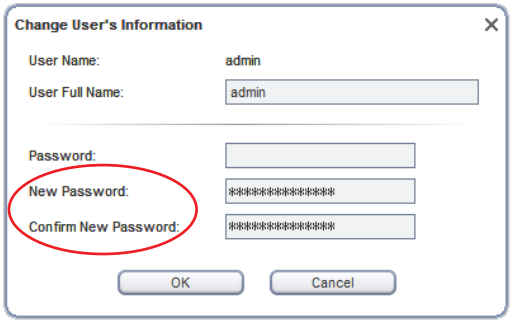
1 In the window shown in step 9 of section 2.2, click **Change Information** on the **User** menu.



The Change User’s Information dialog box appears.

2 Enter the new password for the administrator, and click **OK**.

Enter the password using 4 to 30 alphanumeric characters.



The Change User’s Information dialog box closes.
The new administrator password has been set.

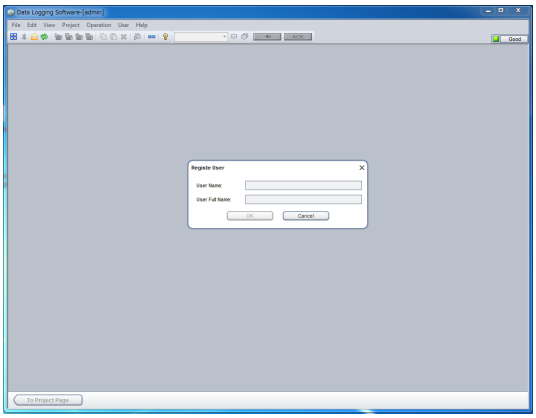
Note

- After registering their passwords, users will need to enter the passwords to log in to the server.
- If the administrator cannot log in, administrator privileges cannot be used. Make a note of the administrator password, and do not lose it.

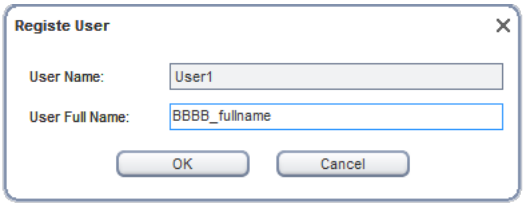
2.4 Registering Users

After registering the administrator, register users as necessary. The administrator registers users.

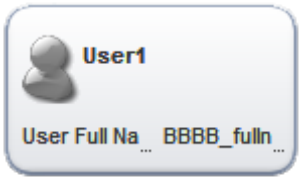
1. Start the client, and enter the administrator password that you set earlier to log in.
2. On the **View** menu, click **User Management Page**.
   Or, click the icon.
   The User Management Page appears.
3. On the **User** menu, click **Register New User**.



   The Change User's Information dialog box appears.
4. Type the user name and user full name.
   Enter up to 20 ASCII characters for the user name.



5. Click **OK**.
   The user is registered, and an icon is added in the window.



6. To add more users, repeat the procedure above.
   Registered users will be able to log in, set their passwords, and perform their assigned tasks.

Note

User names are case-sensitive.

Differences between the administrator and users and changing and deleting users: ▶ page 6-1

2.5 Creating a Project

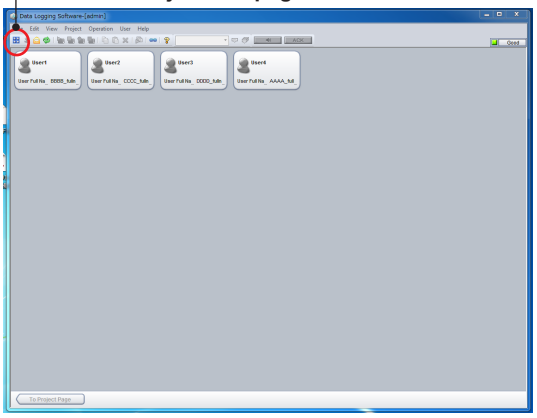
After logging in to the server, create a project to manage data collection and recording.
You can create a project in one of the following ways.

- Create a new project: You can create a new data collection project.
- Export and import: You can export and import a project.
- Copy and paste: You can duplicate an existing project.

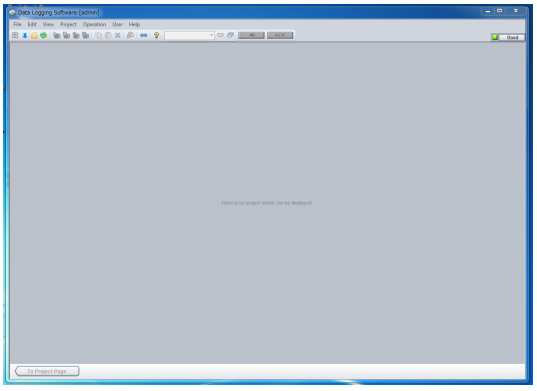
This section explains how to create a new project using Simple Settings.

1. Switch from the User Management Page to the Project List page.
   On the **View** menu, click **Project List Page**. Or, click the icon.

Switch to Project List page

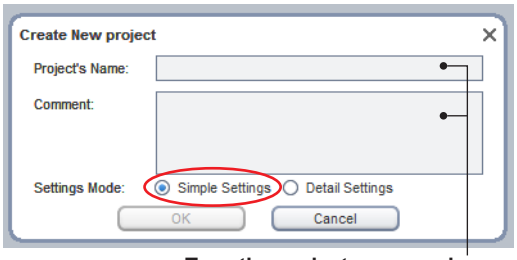


   The Project List Page appears.
   The first page that appears when you log in is the Project List Page.



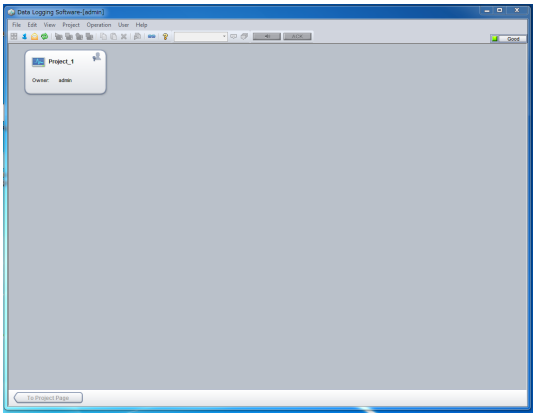
2 On the **File** menu, click **New Project**.
The Create New Project dialog box appears.

3. Type the project name and comment. Set Settings Mode to **Simple Settings**. Differences between Simple Settings and Detail Settings: ▶ page 3-1



Type the project name and comment.

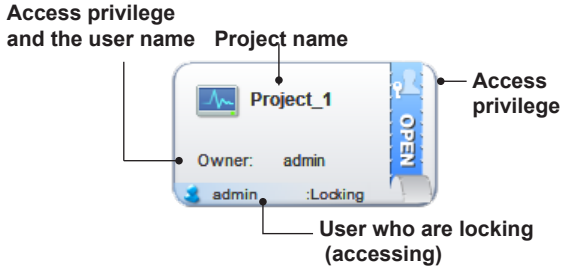
4 Click **OK**.
A new project is created in the Project List Page.



Note

- You can enter up to 20 characters for Project's Name and 60 characters for Comment. Following characters are unavailable for Project's name: \ /:,;*?"<>|
- In Simple Settings, you only have to specify the data collection source device, record interval, and data file save destination to start collecting data.
- If you select Simple Settings, you can change to Detail Settings while you are configuring a new project, but you cannot change from Detail Settings to Simple Settings.

A project that you create is shown in the Project List Page along with the information about the project.



The following types of access privileges are available.

Project access privileges: ▶ page 3-30

2.6 Other Operations If Necessary

2.6.1 Starting (Restarting) and Stopping the Server

To manually start or stop the GA10 server, follow the procedure below.

Note

Before stopping the server, stop data collection and recording, and log out.

- **Starting (Restarting) or Stopping the Server**

1 On the **Start** menu, click **Control Panel** and **Administrative Tools**, and double-click **Services**.

2 In the Services window, choose **DLGServer**.

3 To stop the server, on the **Action** menu, click **Stop**.
The status turns blank.

4 To start the server, on the **Action** menu, click **Start**.
Click **Restart** to stop the server once and restart.
The status shows Started.

- **Changing the Server Startup Type from Automatic to Manual.**

1 Carry out steps 1 to 3 in the previous section to stop the server.

2 In the Services window, double-click **DLGServer**.
The DLGServer Properties appear.

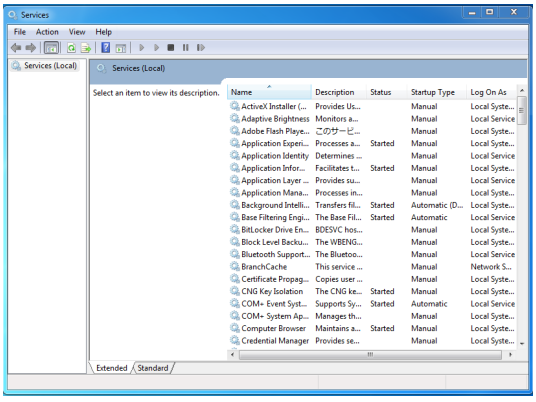
3 Click the **Startup type** arrow, and click **Manual**.

4 Click **OK** to close the dialog box.

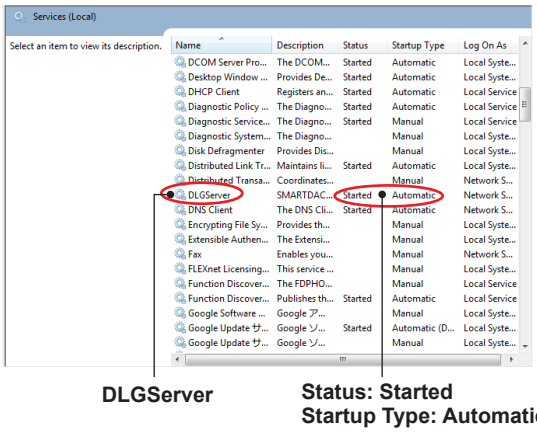
- **Checking Whether the GA10 Server Is Running**

After installation, to check whether the GA10 server is running, follow the procedure below.

1 On the **Start** menu, click **Control Panel** and **Administrative Tools**, and double-click **Services**.
The Services window appears.



2 Scroll down to find DLGServer in the Name column.
Check the Status column.
The DLGServer status should be indicating Started, and Startup Type should be set to Automatic.



If the DLGServer status indicates Started, the GA10 server is running.

3 After confirmation, close the window.

Note

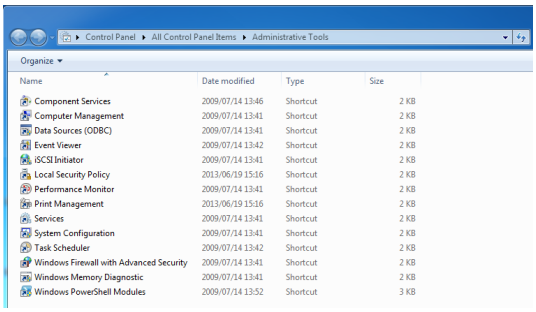
If Startup Type is set to Automatic, the server will start and stop when Windows start and stop.

2.6.2 Changing the Server Port Number

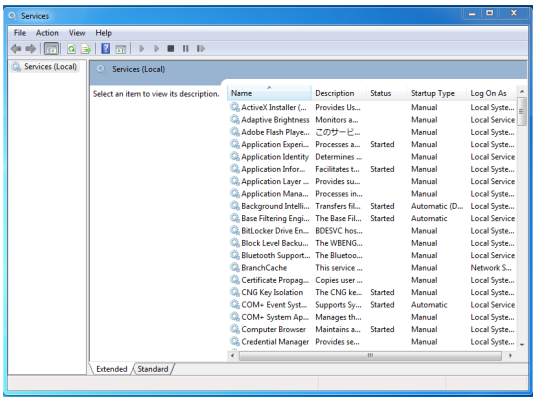
By default, the GA10 server port number is set to 50310. If necessary, change the port number by following the procedure below.

1 On the PC that the server is installed, open **Control Panel** from the **Start** menu.

2 Click **Administrative Tools** to display a list of available tools.



3 Double-click **Services**.
The Services window appears.



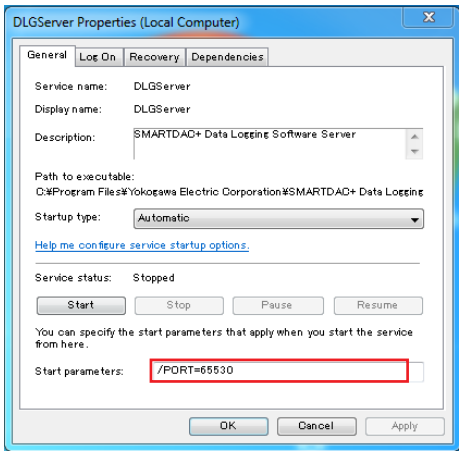
4 Choose **DLGServer**.

5 On the **Action** menu, click **Stop** to stop the server.

6 Double-click **DLGServer**.
The DLGServer Properties appear.

7 In **Startup parameters**, type the following character string.

/PORT=Number
Specify the new port number in “Number.”
Specify the port number in the range of 1025 to 65535 (excluding 50311).



8 Click **Start**.

9 Click **OK** to close the window.

2.6.3 Entering a License Number (GA10/ GA10CL/GA10UP)

When entering a license number, use Windows administrator privileges. If you are using Windows 7, follow steps 1 and 2 below to start the software, and then enter the license number.

- **Checking the Remaining Trial Period**

  In the software, click **About** on the **Help** menu, and check the remaining number of days in the dialog box that appears.

- **Entering a License Number during the Trial Period**

1. Right-click **Data Logging Software** in the Start menu.
2. On the shortcut menu, click **Run as administrator**. Data Logging Software starts.
3. Log in to the server.
4. On the **Help** menu, click **Input Server License**. A dialog box appears.

5. Type the license number, and click **Register**. The license number appears in the dialog box.

Note

After registering the license, you must restart the server. For the procedure to restart the server, see **Sec. 2.6.1**.

- **After the Trial Period Is Over**

  If the trial period expires, you will no longer be able to log in. When you start the software, you will be prompted to enter the license number. If you have purchased a license, type the number.

- **Upgrading to Increase the Number of Channels (GA10UP)**

  To add an option that increases the number of channels (tags), type the license number of the option in the Input Server License dialog box shown above.
  The following table shows the maximum number of tags in a project after adding options.

		Name	Maximum Number of Tags in a Project	
			Before	After
GA10UP	-01	1 level upgrade	100	200
			200	500
			500	1000
			1000	2000
	-02	2 level upgrade	100	500
			200	1000
			500	2000
	-03	3 level upgrade	100	1000
			200	2000
	-04	4 level upgrade	100	2000

- **Adding a Client (GA10CL)**

  To add a client, use the installer InstallClientE_x86.exe, which installs only clients. (InstallClientE_x64.exe for the 64 bit edition)
  You can download the installer from the following URL.
  www.smartdacplus.com/software/en/
  The installaion procedure is the same as with the basic license.
  Installation procedure: ▶ **page 2-2**

  To register the license for the added client, click **Input License** on the **Help** menu.

Note

Make sure that the version of the added client is the same as the server version.

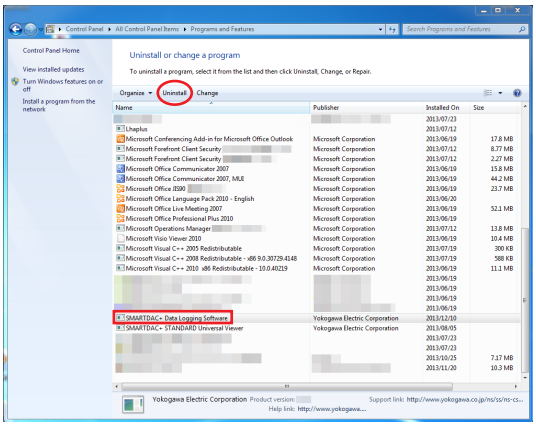
IMPORTANT

Do not change or delete files in the following folder: local disk > ProgramData > Yokogawa > SMARTDAC+Data Logging Software > Config.
These files contain user information, project setting information, project status information, and device information.

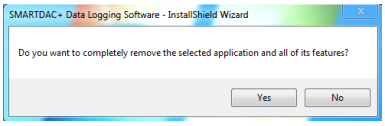
2.6.4 Uninstallation

To uninstall GA10, follow the procedure below.

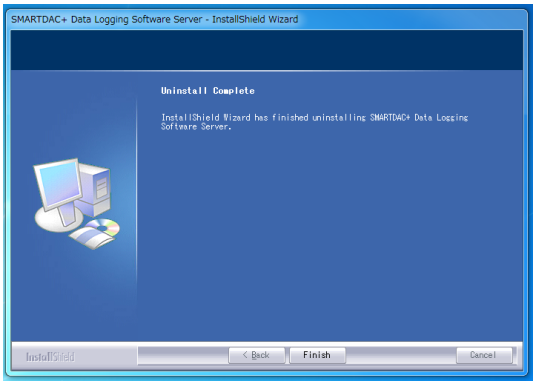
1. On the **Start** menu, click **Control Panel** and **Programs and Features**.
   A list of programs installed in your PC appears.
2. Select **SMARTDAC+ Data Logging Software**.
3. Click **Uninstall**.



4. A confirmation message appears. To proceed, click **Yes**.



Uninstallation begins.



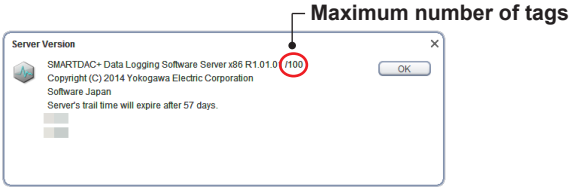
Uninstallation is complete when the progress bar disappears.

Note

- On Windows XP
  In step 2, choose **Change or Remove Programs** instead of **Programs and Features.**
- On Windows 8
  Click **Settings**, **Control Panel**, and **Programs and Features**.

2.6.5 Checking the Maximum Number of Channels (Tags) That Can Be Used

You can check the maximum number of channels (tags) that can be used in the server information dialog box.
On the **Help** menu, click **Server Information** to display the information of the server that you are logged in to.



To add channels: ▶ page 1-4

Chapter 3 Configuring and Starting Data Collection and Recording

3.1 Simple Settings and Detail Settings

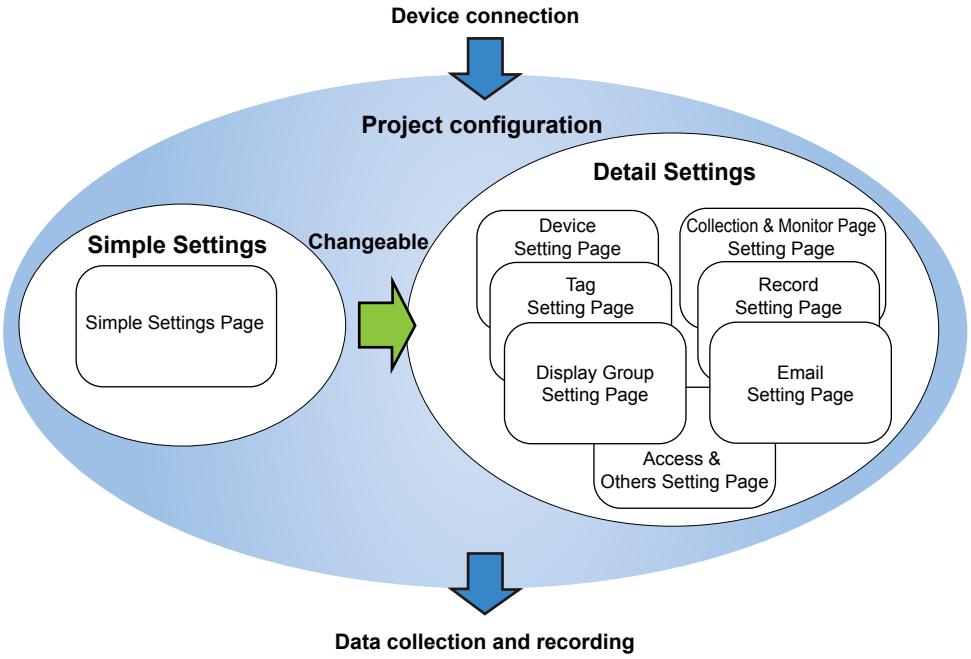
In GA10, you need to configure various project settings before beginning data collection and recording. There are two modes to configure these settings: Simple Settings and Detail Settings.

In Simple Settings mode, you only have to specify the device to connect to, data collection and recording interval, and data file save destination in a single window to begin data collection and recording.

In Detail Settings mode, you can configure settings in detail to customize data collection, monitoring, and recording.
Detail Settings mode consists of the following seven Setting Pages that you switch between to configure the settings.

- Device Setting Page
- Tag Setting Page
- Display Group Setting Page
- Collection & Monitor Page
- Record Setting Page
- Email Setting Page
- Access & Others Setting Page

You can select which setting mode to use when you create a project.
If you select Simple Settings, you can change to Detail Settings while you are configuring a new project, but you cannot change from Detail Settings to Simple Settings.



3.2 Easy Configuration (Simple Settings)

This section explains how to configure the settings in Simple Settings mode before starting data collection.

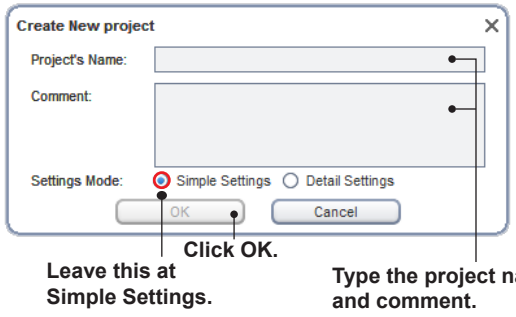
To customize the settings and start data collection:
▶ page 3-4

3.2.1 Creating a Project

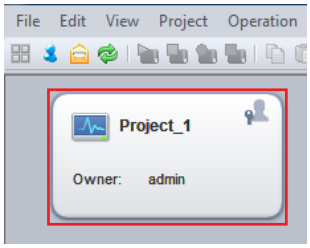
1 Start GA10, and log in by typing the user name and password.

2 On the **File** menu, click **New Project**.
The Create New Project dialog box appears.

3. Type the project name and comment. Leave Settings Mode at **Simple Settings**.



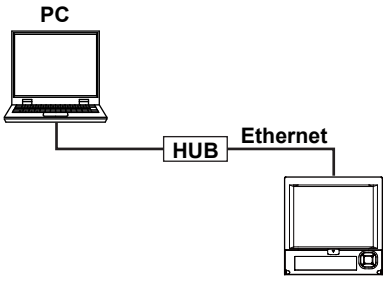
A new project is created.



3.2.2 Registering Devices to Connect

To register devices to the new project, you must connect the devices to the network.
Below is an example of connecting a DX to the PC through the Ethernet interface.

1 Connect the device and the PC through a network using LAN cables.



* The figure shows a one-to-one connection.

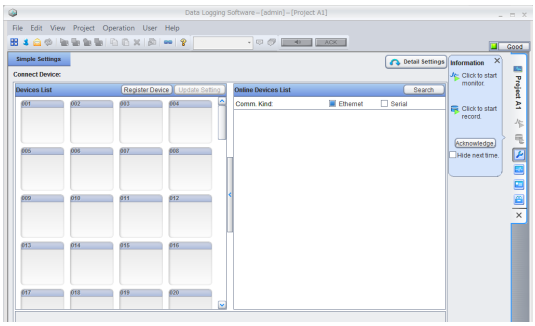
2 Configure the Ethernet settings on the device. Set the device's IP address and subnet mask.
On the DX
Press MENU, hold down FUNC for 3 s (to switch to basic setting mode), and select the Menu tab > Communication (Ethernet).

Note

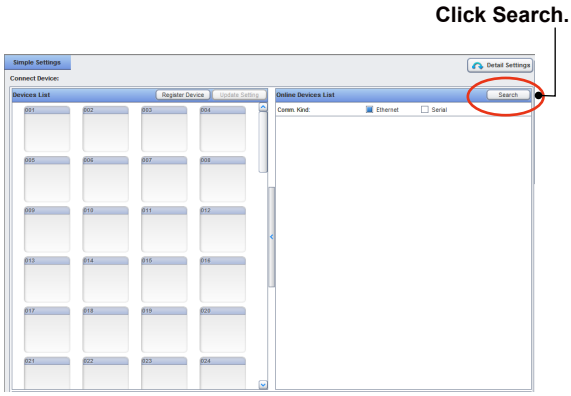
For details on where the Ethernet port is located and the hierarchy of setting menus, see the user's manual of the relevant device.

3 Check that the PC and the device have been connected.
You can check the connection using Windows Device Manager or from the command prompt.

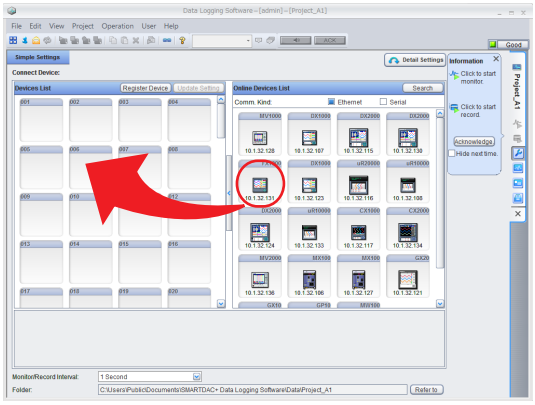
4 Register the DX on the network in GA10. Double-click the project that you created in section 3.2.1.
The Simple Settings page opens.



5 Click **Search** in the **Online Devices List** on the right side of the page.
Devices connected to the network are detected and displayed.

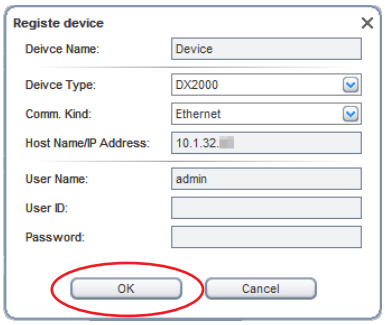


6 Drag & drop the icon of the device that you want to register to the **Device List** on the left side of the page.

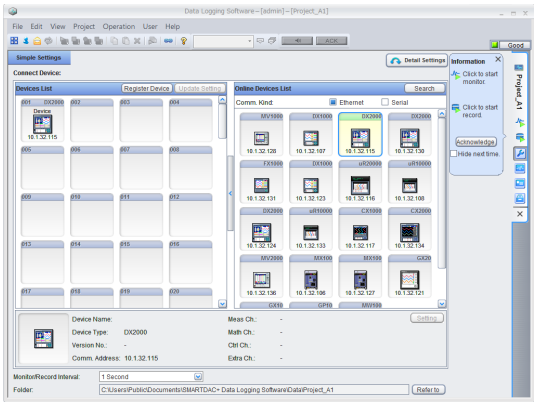


In the center of the page, a window appears showing the details of the device that you are about to register.

7 If the displayed information is correct, click **OK**.



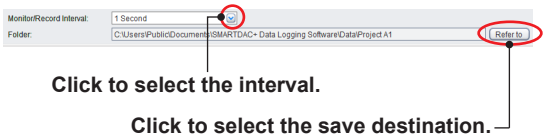
The DX is added to the Device List.



- To delete a registered device, click the device icon to select it, and click **Delete** on the **Edit** menu.
- You can also select the device icon and press the Delete key.

3.2.3 Setting the Monitor and Record Interval and Save Destination

After registering the device, set the Monitor and record interval and the measurement data save destination.



1 Choose the interval from the **Monitor/Record Interval** list at the bottom of the page.

Name	Default Value	Options
Monitor/Record Interval	1 Second	100 Millisecond, 200 Millisecond, 500 Millisecond, 1 Second, 2 Second, 5 Second, 10 Second, 20 Second, 30 Second, 1 Minute, 2 Minute, 5 Minute, 10 Minute

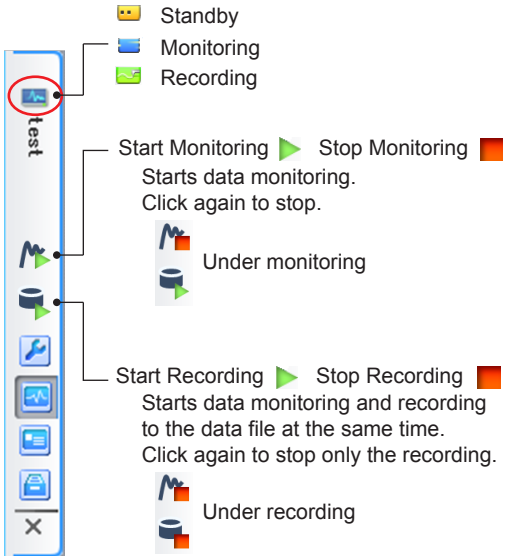
2 Click **Refer to**, and select the directory for saving recording files.

Note

- The Refer to button for specifying the save destination folder is available only when the server and client are installed in the same PC.
- We recommend you use the default setting for the data save destination folder. (See "Folder" on page 3-25.)

3.2.4 Starting Data Monitoring and Recording

Click the icons that are displayed on the tab on the right side of the screen to collect or start and stop recording.



1 Click the icon to start data collection.

2 Click again to stop.

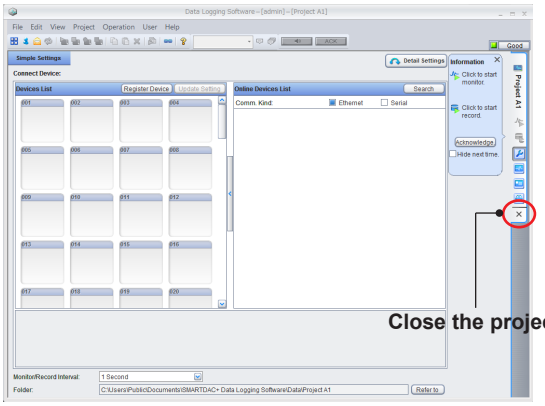
3 Likewise, click the icon on the right to start recording.

4 Click again to stop only the recording.
To also stop data monitoring, click .
To return to the Setting Page, click .

Recorded data files are listed when you click Data files Page. ▶ **Chapter 5**

3.2.5 Closing a Project

To close a project, click the × icon on the right edge of the page.



- Note that clicking the close button in the upper right of the window closes the software.
- An open project is locked (other users cannot edit it). Display the Project List Page to view projects that are locked.

Note

You cannot perform the following operations while data is being collected.

- Register devices from the Online Devices List to the Devices List
- Register a new device on the Devices List
- Change device registration positions on the Devices List
- Delete registered devices from the Devices List
- Change the settings of registered devices on the Devices List
- Specify the record interval

3.3 Detailed Configuration (Detail Settings)

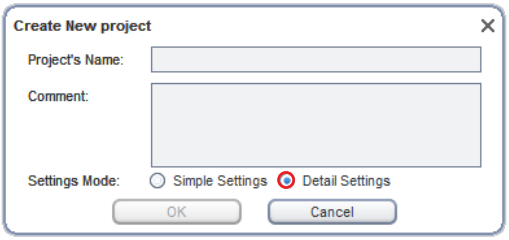
In Detail Settings mode, you can customize data collection, monitoring, and recording. This section explains how to configure the settings in Detail Settings mode before starting data collection.

3.3.1 Creating a Project

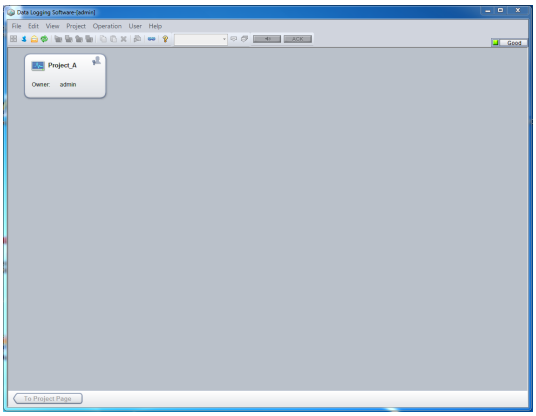
New

Create a new project in Detail Settings mode.

1. Start GA10, and log in.
   The Project List Page appears.
2. On the **File** menu, click **Create New Project**.
3. Type the project name and comment. Set Settings Mode to **Detail Settings**.



4. Click **OK**.
   A new project is created in the Project List Page.

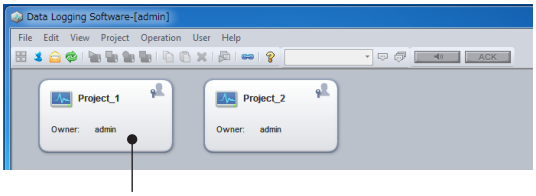


Exporting and Importing

You can export the information of a created project to a file (.pjf extension).
This file is referred to as the project information file. The procedure to export and import a project is explained below.

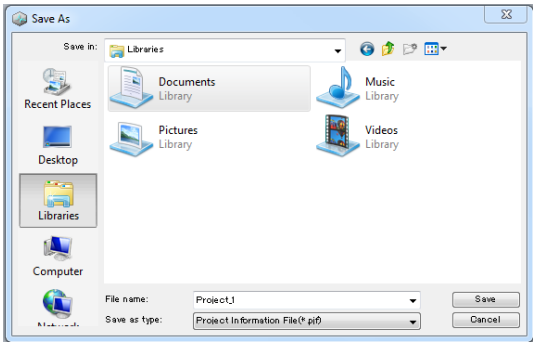
- Export procedure

1 From the list of projects, select the project that you want to export.



Click to select.

2 On the **File** menu, click **Export Project**.



3 Select the save destination, assign a name, and save it.
The project information file (.pjf extension) is saved to the specified location.

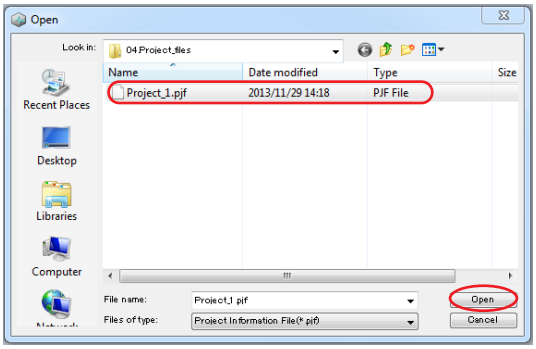
Note

- If you do not have access permission to the project, you cannot export it.
- If the project contains Modbus device connections, the register and channel information of the Modbus devices are not exported. You must save the definition files separately.
  Modbus device definition file: ▶ page 3-34

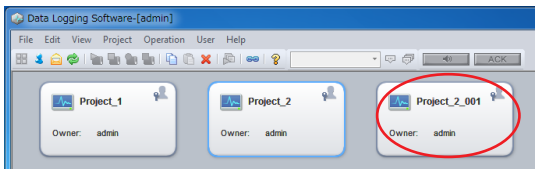
- Import procedure

1 On the **File** menu, click **Import Project**.
An Open dialog box appears.

2 Select the file that you want to import (.pjf extension), and click **Open**.



The imported project is added to the list of projects.



Note

When you import a project, you become the project owner.
Owner: ▶ page 3-30
To modify the owner: ▶ page 6-4
An error will occur in the following situations.

- If there are more tags in the imported project than the number of tags that the server can handle (If there are less tags, the insufficient tags are set to default values.)
- If the server already has the maximum number of project registrations
- If the server already has the maximum number of device registrations

Copying and Pasting

You can easily copy and paste projects.

1 From the list of projects, select the project that you want to copy.

2 On the **Edit** menu, click **Copy**, or press **Ctrl+c** on the keyboard.
The project is copied.

3 To paste the copied project, on the **Edit** menu, click **Paste**, or press **Ctrl+v** on the keyboard.
The project is pasted in the list.

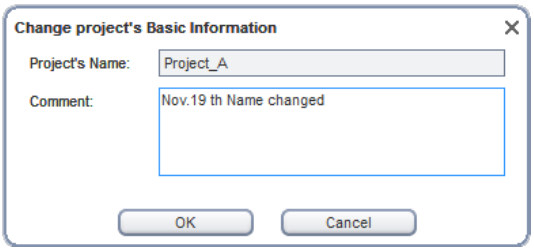
Note

- The copied project is retained until you log out.
- When you import or paste a project, if the original file is on the list, a serial number starting with 001 is added to the original project name.

Renaming a project

To rename a project, follow the procedure below.

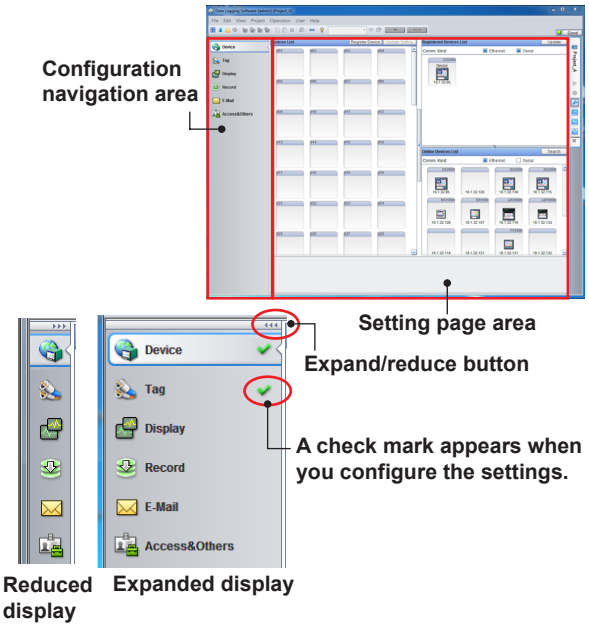
1. From the list of projects, select the project that you want to rename.
2. On the **Project** menu, click **Modify Basic Information**.
   A Change project's Basic Information dialog box appears.
3. Type the new project name or comment.



4. When you are finished, click **OK**.
   The project name will change.

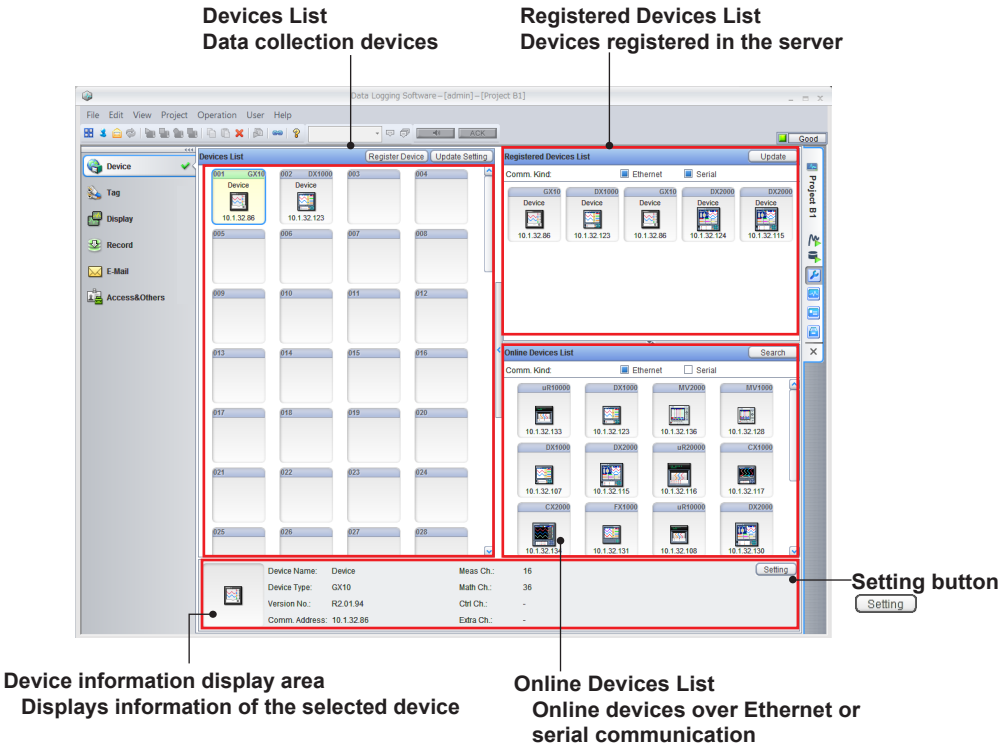
3.3.2 Starting Detail Settings

After you create a project, configure it. Double-click the project that you want to configure to open the initial setting page. You can switch between different setting pages by clicking the items in the left navigator.

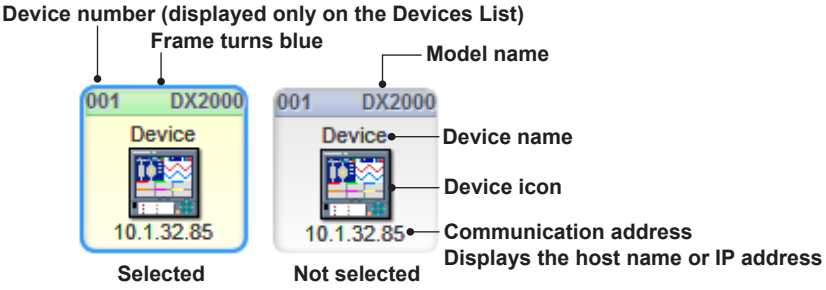


3.3.3 Registering Devices to Connect

After you create a project, register the devices to collect and record data from.
The Device Setting Page that you use to register devices is composed of the following four areas.



Device icons (shown in the following figure) display the devices' information. These icons are used to register and delete devices between the Devices List, Registered Devices List, and Online Devices List.



Basic Operation

1 Search for devices connected to the network.
Click **Search** in the **Online Devices List**.
The connected devices will appear.

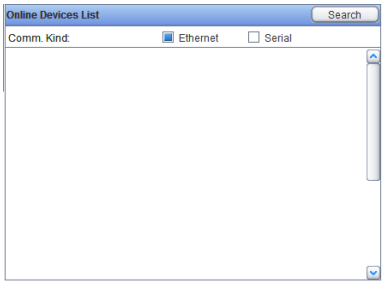
2 Register devices.
Select the icon of the device that you want to register to the project, and drag it to the Devices List or click in the center of the page.
If the device is already shown in the Registered Devices List, you can register it in the same manner.

3 For a device that is not automatically detected in step 1, type in the information to register them.[1]
On the **Devices List**, click **Register Device**, and enter the necessary information in the displayed dialog box.

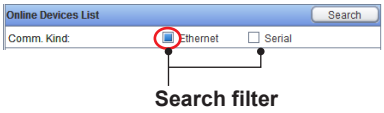
1 For devices that cannot be detected, see **Note on the next page**.

Searching for Network Devices

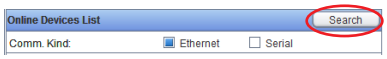
Search for devices connected to the network to display them in the Online Devices List. Simply click the button to search and display the devices as icons in the list.



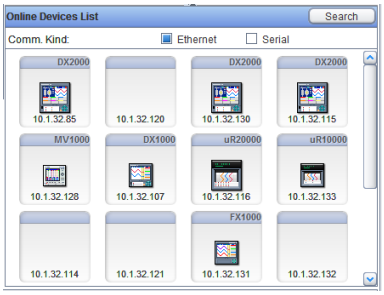
1 Set the search filter to **Ethernet** or **Serial**.



2 Click **Search**.



The connected devices are detected and displayed in the Online Devices List.



Note

The icons of the following devices will not appear by searching. To add them to the project, use the Register Device button as explained in the next section.

Devices that cannot be detected on the Ethernet network
GX10, GX20, GP10, GP20 (up to R1.03.02)
DA100, DR130, DR230, DR240
DAQLOGGER, DAQ32Plus, MXLOGGER
Devices defined using Modbus device definition files [1]

Devices that cannot be detected through the serial interface
MX100, MW100
DAQLOGGER, DAQ32Plus, MXLOGGER
Devices whose baud rate is not 9600 bps, parity is not even, or stop bit is not 1.
Devices whose interface is RS-422 or RS-485

1 Modbus device definition file: ▶ page 3-34

Registering Files to the Devices List

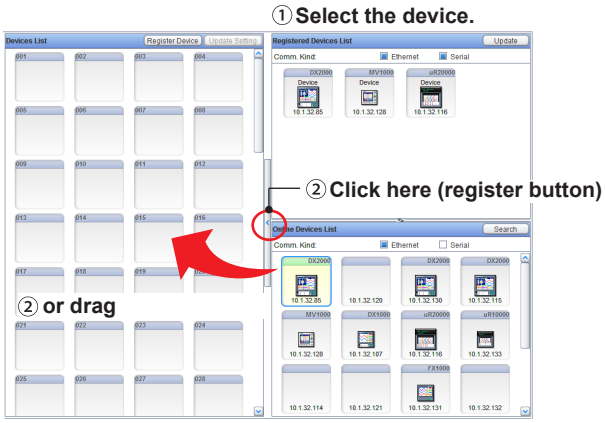
For the new project, register the devices from which you want to collect and record data to the Devices List.

You can register devices in the following ways.

- Register a new device
- Register from the Online Devices List
- Register from the Registered Devices List

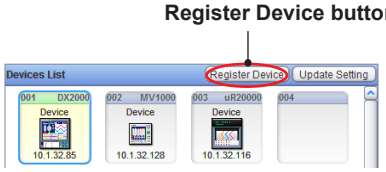
In addition, you can use the following operations to register devices.

- Drag & drop
- Register button
- Type in the Register Device dialog box



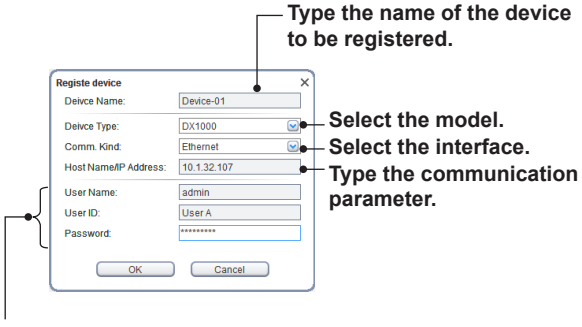
To add a device using the Register Device, follow the procedure below.

1 Click **Register Device** at the top of the Devices List.



A Register device dialog box appears.

2 Enter the necessary information in the dialog box, and click **OK**.
Because the available interface varies depending on the device that you are connecting, the communication parameters in the dialog box will change according to the device.



The dialog box closes, and the device is registered to the Registered Devices List.

Connectable Devices and Interfaces

Name	Interface [1]			
	RS-232	RS-422 RS-485	Ethernet (connection port number)	
μR10000	Yes	Yes	Yes	34260
μR20000	Yes	Yes	Yes	34260
DX1000	Yes	Yes	Yes	34260
DX1000N	Yes	Yes	Yes	34260
DX1000T	Yes	Yes	Yes	34260
DX2000	Yes	Yes	Yes	34260
DX2000T	Yes	Yes	Yes	34260
CX1000	Yes	Yes	Yes	34260
CX2000	Yes	Yes	Yes	34260
FX1000	Yes	Yes	Yes	34260
MV1000	Yes	Yes	Yes	34260
MV2000	Yes	Yes	Yes	34260
MX100	No	No	Yes	34316
MW100	No	No	Yes	34316
DA100	Yes	Yes	Yes	34150
DR130	Yes	Yes	Yes	34150
DR230	Yes	Yes	Yes	34150
DR240	Yes	Yes	Yes	34150
GX10 [2]	Yes	Yes	Yes	34434 [3]
GX20 [2]	Yes	Yes	Yes	34434 [3]
GP10 [2]	Yes	Yes	Yes	34434 [3]
GP20 [2]	Yes	Yes	Yes	34434 [3]
UT32A	Yes	Yes	Yes	502
UT35A	Yes	Yes	Yes	502
UT52A	Yes	Yes	Yes	502
UT55A	Yes	Yes	Yes	502
UT75A	Yes	Yes	Yes	502
UP35A	Yes	Yes	Yes	502
UP55A	Yes	Yes	Yes	502
UM33A	Yes	Yes	Yes	502
Devices supporting the Modbus protocol	Yes	Yes	Yes	502
GateWT for GA10	No	No	Yes	50295 [4]
DAQLOGGER	No	No	Yes	50280 [4]
DAQ32Plus	No	No	Yes	50278 [4]
MXLOGGER	No	No	Yes	50284 [4]

1 Yes: Supported No: Not supported

2 The GX/GP version R1.03.03 and later supports auto searching on an Ethernet network.

3 The communication port can be specified on the GX/GP, but GA10 only supports the default value, 34434.

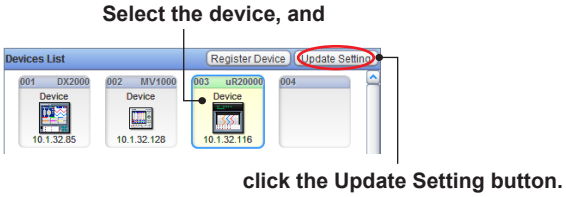
4 A port number must be specified as a parameter when the interface is specified. (The port numbers in the table are default values.)

Note

- To connect to DAQLOGGER, DAQ32Plus, or MXLOGGER, enter the IP address of the PC in which the software is installed.
- To connect to DAQLOGGER or DAQ32Plus, leave the System No. at zero (default value).
  To connect to MXLOGGER, select the System No. that is being used in MXLOGGER.
- To register any of the following instruments by specifying “Comm. Kind: Serial” and “User,” set the A/D scan interval and FIFO writing interval of the device to the same value.
  DX1000, DX1000N, DX1000T, DX2000, DX2000T, MV1000, MV2000, CX1000, CX2000, FX1000
- When connecting to a DXAdvanced (DX1000, DX1000N, DX1000T, DX2000, or DX2000T) with the /AS1 advanced security option through the Ethernet interface, log in as an administrator to access the DX. In this situation, only one administrator will be able to log in.

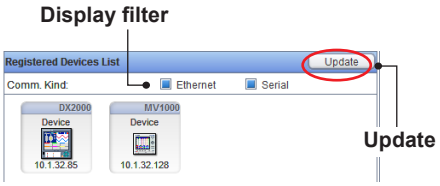
To register a Modbus device: ▶ page 3-10

If you change the device settings after registering it to the Devices List, click **Update Setting**. The most recent information will be retrieved from the device and applied.



Registering Devices to the Registered Devices List

The Registered Devices List shows a list of devices registered to the server. Therefore, in the initial page, nothing will appear. When you add a new device to the Devices List, it is also automatically added to the Registered Devices List.
You can also drag a device from the Online Devices List to register it.



Click **Update** to retrieve the most recent list of devices from the server.
You can set the Comm. Kind filter to display only the devices using the specified interface. If you select **Serial**, the devices connected to the serial port of the server PC will be displayed.

Starting the Web Application (GX/GP Only)

Click **Setting** Setting in the device information display area to start the Web application for configuring devices.

1. In the Project List Page, double-click the appropriate project.
2. Change the project setting window to the Device Setting Page.
3. Select the device that you want to change the settings of.
   The information of the selected device appears in the bottom device information area.
4. Click **Setting** in the device information area.
   The corresponding setting Web page will appear in Windows Internet Explorer.

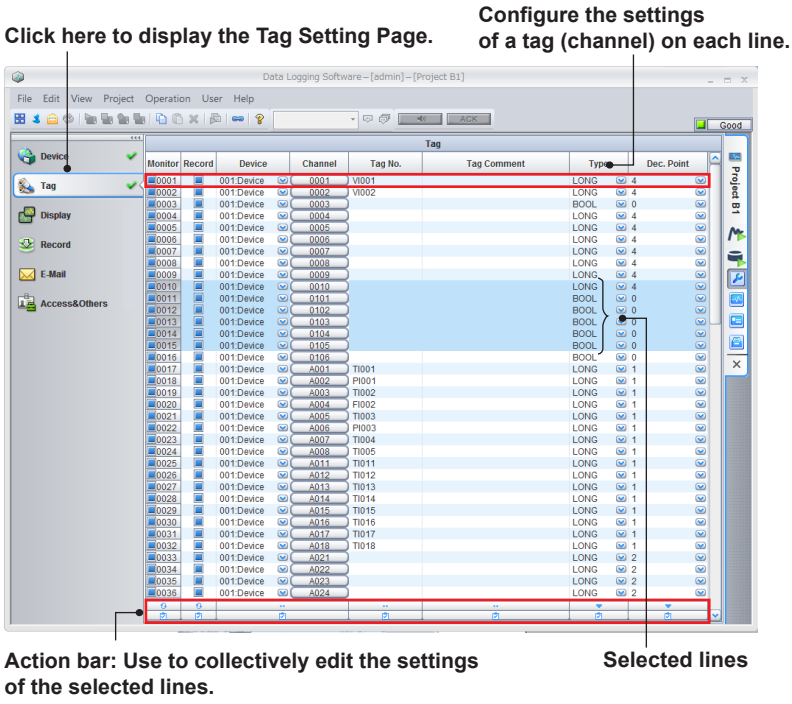
For details on how to use the Web application, see the GX/GP User's Manual (IM 04L51B01-01EN).
You can download the latest manual from the following URL.
URL: **www.smartdacplus.com/manual/en/**

Limitations on the Device Setting Page

- The following operations cannot be executed on the Device Setting Page while data collection is in progress.
  - Register devices from the Registered Devices List to the Devices List
  - Register devices from the Online Devices List to the Devices List
  - Register a new device on the Devices List
  - Change device registration positions on the Devices List
  - Delete registered devices from the Devices List
  - Change the settings of devices on the Devices List
- The Web application can be started only when the connected device is GX/GP and the interface is Ethernet.
- If multiple devices use the same COM port, observe the following rules.
  - Do not mix Modbus devices with other devices.
  - Use the same communication type.
  - Use the same settings for baud rate, parity, and stop bit.

3.3.4 Setting Tags

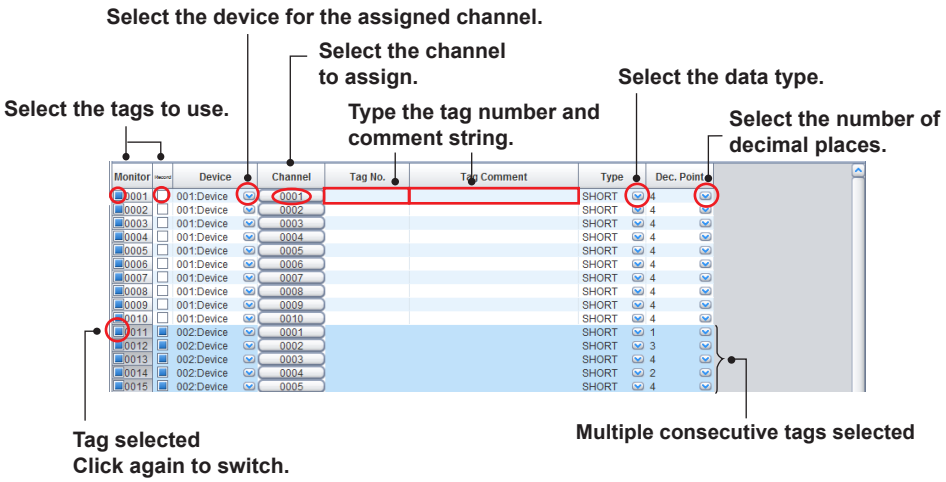
GA10 collects and records data from multiple connected devices. Tags are assigned to channels of connected devices for identification.
After registering devices in a project, when you open the Tag Setting Page for the first time, tags are assigned automatically to the channels of registered devices as default assignments.
You can edit the assignments to customize the data collection.



Basic Operation

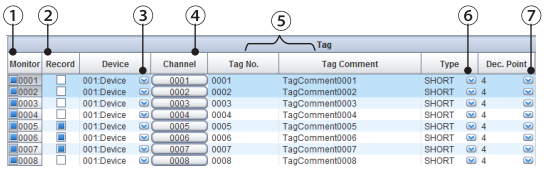
1 Select a tag to use in data collection or recording. Click a box in the **Monitor** column.
To select consecutive boxes, click the first cell, and then click the last cell while holding down the SHIFT key.

2 Set the tags.
Clicking a cell in a column other than Monitor or Record displays a list box or a window containing options. Select the desired setting. For the **Tag No.** and **Tag Comment** cells, type text strings.



Tag Settings

Tag settings are used to set display groups and other settings in a project. Therefore, even if you change the device channel assigned to a tag, there is no need to change display group settings or other settings that use tags.



The tag settings are explained below.

(1)Monitor (tag index)

These are unique tag numbers assigned sequentially starting with 0001. You cannot change the numbers. Click the boxes to specify whether to enable data monitoring.

(2)Record

Click the boxes to specify whether to enable data recording.

(3)Device

Specify the names of the devices to assign to the tags.

(4)Channel

Specify the channels to assign to the tags. Clicking a button displays a separate window. Select a channel number to apply it to the sheet.

(5)Tag No. and Tag Comment

Enter aliases for the tags as tag numbers and tag comments. Specify up to 16 characters for tag numbers and 32 characters for tag comments. You can select which name to display (Tag Index, Tag No., or Tag Comment) to suit your purpose. To select which name to display, on the **View** menu, click **Tag Display Form**.

(6)Type

Specify the tag data types. Click the arrows, and select from the following data types.

Data Type	Description
ANY	Any data type
BOOL	Boolean
SHORT	2-byte signed integer
USHORT	2-byte unsigned integer
LONG	4-byte signed integer
ULONG	4-byte unsigned integer
FLOAT	4-byte single-precision floating-point number
FLOAT(LOG)	Data type for LOG input channels [1]
LOG (Old)	Data type for LOG input channels (DXAdvanced series)
LOG	Data type for LOG input channels (FX1000 series)

Refer to the following table for the data types of the channels on data source devices.

Model	Channel Type	Data Type
DAQLOGGER DAQ32Plus MXLOGGER	All channels	LONG
GX/GP	Measurement channels (excluding DI channels)	LONG
	DI channels	BOOL
	Measurement channel whose input type is LOG [*1]	FLOAT(LOG)
	Excluding the above	Same as "Other"
Devices defined using Modbus device definition files	All channels	The type specified in the definition file (FLOAT)
Other	Measurement channels	SHORT
	Math channel	LONG
	Control channel	SHORT
	Extra channel	SHORT
	Math channel whose input is LOG	LOG

1 For GX/GP firmware version R2.01 or later with the Log scale option (/LG).

(7)Dec. Point

Specify the number of decimal places for tags. Click the arrows to select the number of digits (0 to 5). Select the same setting as the decimal place setting specified on the device. Specify ANY to retrieve the decimal place information from the device at the start of data collection.(See below.)

Type, Dec. Point, and ANY

GA10 can continue data collection even if you change the connected device in the middle of data collection as long as the Type and Dec. Point settings are the same. For example, if you set the tag Type to SHORT and change the device to another type in the middle of data collection (for maintenance or other purpose), as long as the measurement channels use the same Type and Dec. Points settings, you can continue data collection.

Note that the tag Type (6) and Dec. Point (7) options include a value called ANY.

You can select ANY if you want to retrieve the channel information from the device at the start of data collection and use those settings to perform data collection. However, if the data collection time is set to PC time and the device is not connected within 3 seconds after the start of data collection, the channel information will not be retrieved at the start of data collection even if ANY is specified.

In this situation, the channel information that was retrieved from the device at the time of device registration is used. This is not a problem as long as the channel information at the start of data collection is the same as the channel information that was retrieved from the device at the time of device registration.

Using ANY makes the data type and decimal place settings easier. However, you cannot verify the actual data type.

Related topic: ▶ **Q11** in Section 7.2, “Frequently Asked Questions (FAQ)”

Note

- If the data collection channel is LOG input, set the data type to LOG. If set to LOG, the decimal place setting is void.
- If the data type is set to BOOL, the decimal place setting is void.

Collectively Editing Tags

To collectively edit setup data, you must select the target setup data and then click a button on the action bar, which is at the bottom of the window. The result varies depending on the type of icon you click on the action bar (see the following table).

Type	Name	Result
	Enable or disable	Switches the check box state between selected and unselected. If all the data values in the selected range are the same, clicking this icon will switch all of them in the same way. If the data values in the selected range are not all the same, clicking this icon will switch all of them to match the first data value in the selected range.
	Increment	Assigns increasing channel numbers starting with the first tag in the selected range.
	Copy	Copies the settings of the first tag in the selected range to the other tags in the selected range.
	Copy flag	Switches between selected and unselected states for items to be pasted when copying setup data. The items are normally selected (pasted). Clicking this button causes the corresponding item to become unselected. The item will not be pasted.

You can also copy and paste selected content using the Edit menu.

To select the range of setup data, follow one of the methods below.

- Select by dragging

  Click the first line you want to select. Drag to the last line you want to select and release the mouse button.

- Select using the Shift key

  After selecting the first line you want to select, hold down the Shift key, and click the last line you want to select.

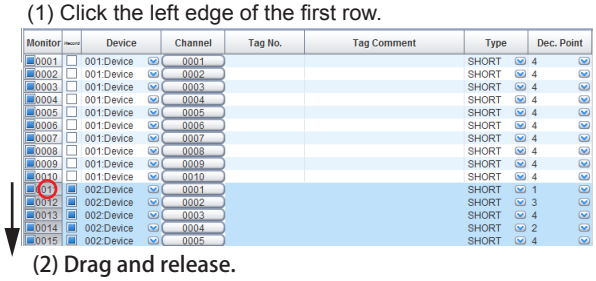
- Select all lines

  Click the title area of the **Monitor** column to select all setup data.

Collective Editing

1 Select the rows that you want to edit collectively.

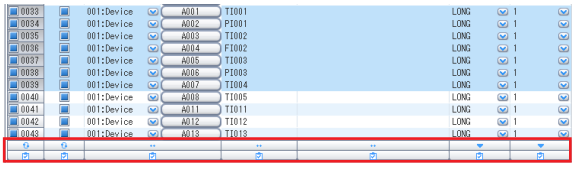
(1) Click the left edge of the first row.



(2) Drag and release.

2 Click an icon at the bottom for the column that you want to edit.

The values in the selected range will be changed.



Exporting and Importing Tags

Tag information can be converted (exported) to a TSV file You can edit the TSV file using an appropriate software application and load (import) it back into GA10.

Note

Only tag numbers and tag comments are exported and imported.

- **Export Procedure**

1 Display the Tag Setting Page of the project whose tag information you want to save.

2 On the **File** menu, click **Export tags**.

3 Select the save destination, assign a name, and save it.

The tag information file (.tsv extension) is saved to the specified location.

Tag numbers and tag comments are exported in pairs in separate lines as shown below.

```
Tag0001 TagComment0001
Tag0002 TagComment0002
Tag0003 TagComment0003
Tag0004 TagComment0004
```

- **Import Procedure**

1 Display the Tag Setting Page of the project whose tag information you want to update.

2 On the **File** menu, click **Import tags**.

An Open dialog box appears.

3 Select the file that you want to import, and click **Open**.

The content of the imported tag information TSV file is applied to the Tag Setting Page.

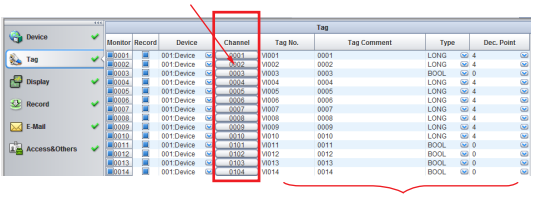
Update Tag Information (Refresh)

The tag information on the Tag Setting Page is updated in the following situations.

- When a channel (device) is changed on the Tag Setting Page

  If you change the channel (or device) on the Tag Setting Page, Tag No., Tag Comment, Type, and Dec. Point are retrieved from the specified channel.

  Channel change



  Updated with the information of the new channel

- When monitoring is started

  At the start of monitoring (when the device is connected), the most recent channel information is retrieved from the device, and the alarm value, range, and unit are updated. These are entered in the recording data file at the start of recording. However, if PC time is specified and connection cannot be established with the device even after 3 seconds passes after the start of monitoring, tag information is not updated, and the channel information of the device already registered is used.

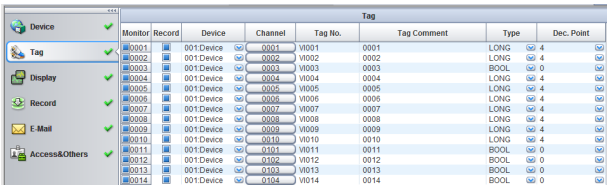
- When tag information is changed manually

  If the alarm value, range, unit, and so on are changed on the connected device, the tag information can be updated. The updated information is applied to Type and Dec. Point for the specified tag.

1 Open the project that you want to change the tag information of.

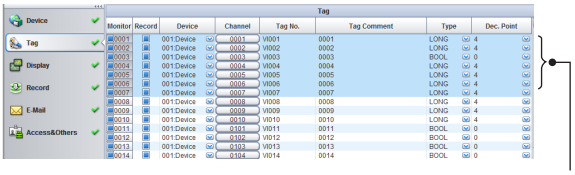
- Open the project with manager or higher access privileges (privileges that allow setting operation).
- Only projects in which data monitoring is stopped can be used.

2 Select Tag in the navigation area on the left of the window.



A Tag Setting Page opens.

3 Select the tags you want to update.



Selected range

4 On the **Project** menu, click **Update Tag Information**.
A confirmation message appears.

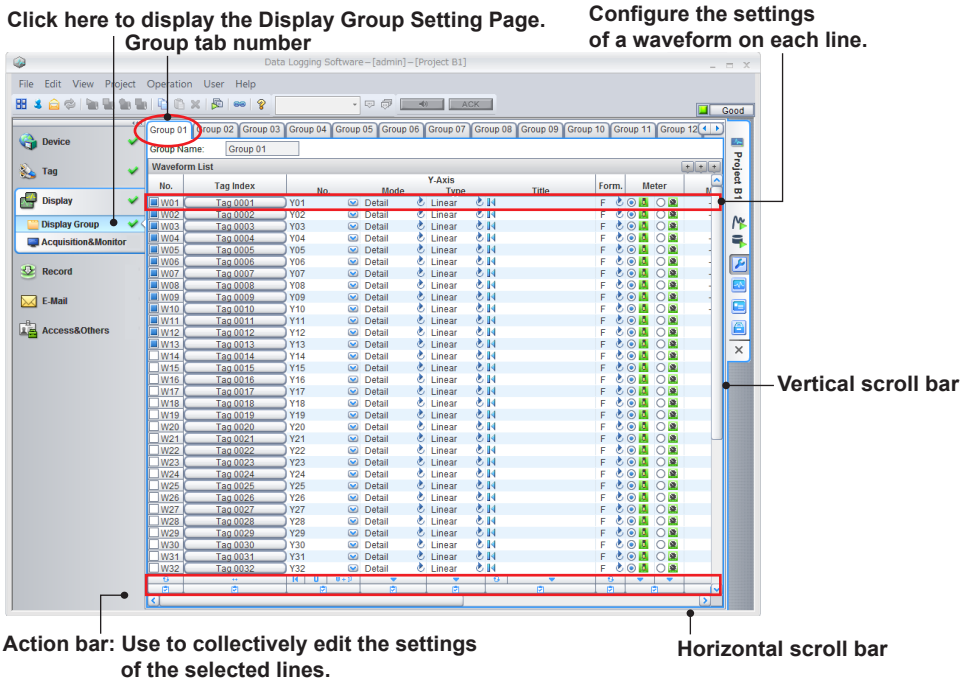
5 Click **OK**.
Type and Dec. Point information of the selected tags is updated.

Note

- Even if you execute Update Tag Information, the tag settings specified on the GA10 are not changed.
- In following situations, an error message will be displayed.
- Some of the connected devices cannot communicate with the server.
- The number of registered devices on the server is at the maximum.
- If the A/D scan interval and the FIFO writing interval of the device are not the same, the following devices cannot be updated by a “user.” To update, log in as an administrator.
  DX1000, DX1000N, DX1000T, DX2000, DX2000T, MV1000, MV2000, CX1000, CX2000, FX1000

3.3.5 Setting Display Groups

The GA10 Monitor Page can display multiple channels in groups.
The Display Group Setting Page is used to group channels and set the tag data display method. The Display Group Setting Page consists of multiple tabbed pages. Each tabbed page shows the settings of each waveform in rows and the setup items in columns.



Basic Operation

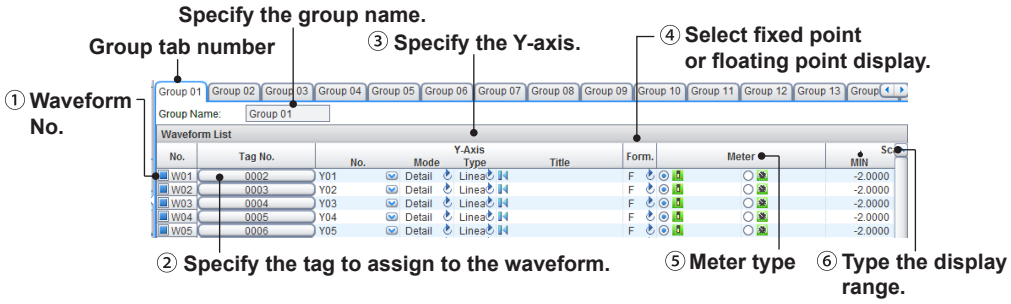
1 Click the tab of the group you want to configure.

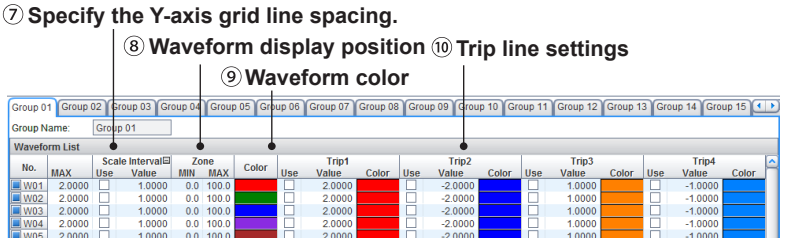
2 Edit the setup data as necessary. Click the No. cells (left-most column) to show or hide the waveforms.

Details of settings: ▶ The details are provided on **page 3-16** and subsequent pages. Use the numbers in the figure to reference the corresponding descriptions.

Note

On the initial Display Group Setting Page, tags are assigned automatically for each device (when there are tags specified as data collection channels on the Tag Setting Page).
If you want to perform **Assign Tag Automatically** again, do this first before setting the displays.





Waveform Settings

Waveform settings are explained below.

(1)No.

These are waveform numbers assigned sequentially starting with W01. You cannot change the numbers. Click the boxes to specify whether to display the waveform.

(2)Tag

Specify the tag to assign to the waveform. Clicking a button displays a separate window. Select a tag number to apply it to the sheet.

(3)Y-Axis

No.: Specify the Y-axis to use in the waveform display.
Mode: Select Detail or Compact mode.
Type: Specify the type of scale to add to the Y-scale of the waveform. Select Linear or Logarithmic.
Title: Type the Y-axis title of the waveform. Enter up to 30 characters.

(4)Form.

Set the display format on the Monitor Page to fixed point or floating point.
F: Fixed point display
E: Floating point display

(5)Meter

Specify the type of meter to display on the Meter Monitor. Select bar meter  or analog meter  .

(6)Scale MIN and MAX

Type the minimum and maximum values of the scale on the Monitor Page to define the display range.

(7)Scale Interval

Set whether to specify the Y-axis scale interval of the waveform. Leave unselected to use the default scale interval. To specify the scale interval, select the check box and enter a value.

(8)Zone

MAX: Specify the maximum Y-axis position for displaying the waveform.
MIN: Specify the minimum Y-axis position for displaying the waveform.
This determines the waveform display position.

(9)Color

Specify the waveform display color. To change the color, click the appropriate cell to display a separate window. Select a color to apply it to the sheet.

(10) Trip

Use: Click to use the waveform trip line.
Value: Type the value.
Color: Specify the trip line color. To change the color, click the appropriate cell to display a separate window. Select a color to apply it to the sheet.

Collectively Edit Setup Data

To collectively edit setup data, you must select the target setup data and then click a button on the action bar, which is at the bottom of the window. The result varies depending on the type of icon you press on the action bar (see the following table).

To select the range: The procedure is the same as explained on ▶ page 3-13.

Type	Name	Result
	Show or hide Enable or disable F-Type/E-Type	Switches the check box state between selected and unselected. Switches the item selection state. If the data values in the selected range are not all the same, clicking this icon will switch all of them to match the first data value in the selected range.
	Increment	Assigns increasing tag index numbers starting with the first tag in the selected range.
	Default	Resets the value to default.
	Y-axis grouping (unit)	Groups Y-axes whose unit is the same together.
	Y-axis grouping (unit & scale)	Groups Y-axes whose unit and scale value are the same together.
	Copy	Copies the settings of the first tag in the selected range to the other tags in the selected range.
	Copy flag	Switches between selected and unselected states for items to be pasted when copying setup data. The items are normally selected (pasted). Clicking this button causes the corresponding column to become unselected and will not be pasted to.

You can also copy and paste selected content using the **Edit** menu.

Assigning Tags Automatically

Tags assigned on the Tag Setting Page can be assigned automatically to display groups.
There are two methods for automatic assignment.

- **Assign According to Tag Number**

  When you specify the number of tags to assign to each display group, the specified number of tags are assigned in order from the first number of display group 1 on the Tag Setting Page.
  For example, if the total number of tags is 50 and you set the number of tags to 10, 10 tags will be assigned to each group from Group 1 to 5.

- **Assign According to Device**

  The tags of a single device are assigned to each display group. For each device (device number) that a tag has been assigned to, assign the tag to a display group. Tags are assigned in ascending order by device number starting with display group 1. Within a display group, tags are assigned in ascending order by tag number.
  If the number of tags of a device is greater than the number of waveforms in a display group, multiple display groups will be used for the device.

Note

- When you assign tags automatically, the settings of all display groups are reset to their default conditions. After automatic assignment, you must configure the settings again.
- Tags that are automatically assigned are those whose **Monitor** item is selected on the Tag Setting Page and whose channel is specified.

- **Automatic Assignment Procedure**

1 On the **Project** menu, click **Assign Tag Automatically**.
An Assign Automatically dialog box appears.

2 Select the assignment method.

To assign according to device, do not change.

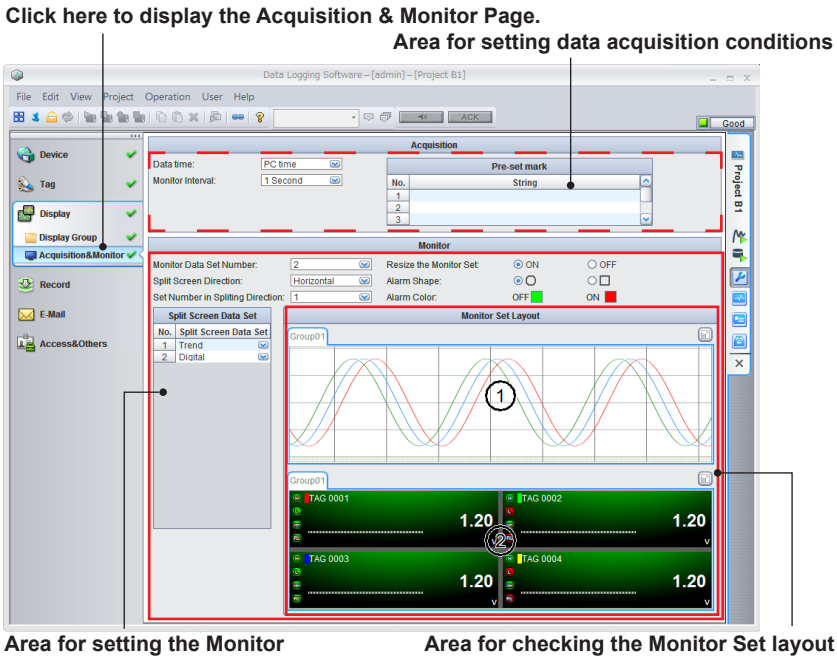
3 To assign according to tag numbers, select **Assign According to Tag Number** and type the number of tags to share in each group.

Specify the number of tags.

4 Click **OK**.
All display group settings are initialized, and tags are assigned to display groups on the Display Group Setting Page.

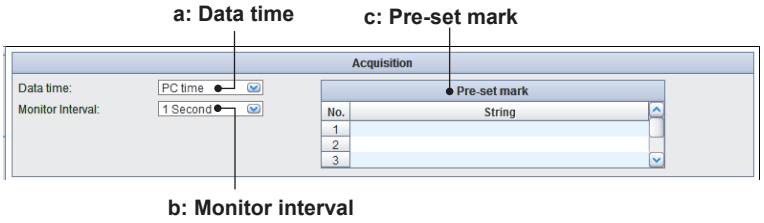
3.3.6 Registering Data Collection Method and Monitor Page

After setting the display groups, register the data collection method and monitor page. Data collection is performed for tags that are set to collect data on the Tag Setting Page. On the Acquisition & Monitor Page, set the data collection conditions, namely the type of timestamps to attach to data and data collection interval. In addition, specify the number of windows to divide the Monitor Page into and their layout.

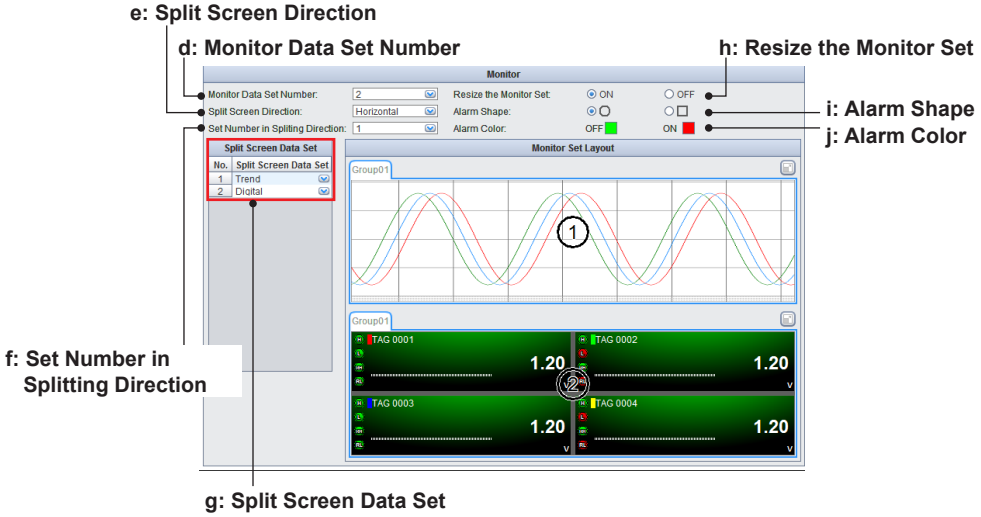


The Acquisition & Monitor Page is divided into two areas: an area for setting data collection conditions and another for configuring the monitor.
The details of each are provided in the following pages. Use the letters (a to j) in the figure to reference the corresponding descriptions.

Acquisition area



Monitor area



Setting Data Collection Conditions

a Data time

Timestamps are attached to data that GA10 collects from devices. You can set the type of timestamp to use to **Device time** or **PC time**. Device time is the time information that the data collection device uses. PC time is the time information that the PC in which the server is installed uses.

- If Device time is selected

  By selecting Device time, you can synchronize the data in GA10 with the data in the corresponding device.
  In addition, the backfill function becomes available. However, if data is collected from multiple devices, time offset can occur between the devices and the collection interval may be different. In other words, data cannot be collected simultaneously with synchronized timestamps.
  What is the backfill function: ▶ page 7-5

Note

Data collection using device time has the following limitations.

- You cannot specify the data collection and record interval on GA10. The acquisition interval of each device is used.
- If different acquisition intervals are used during recording in different devices or even within the same device, the collected data will be saved to separate files according to the intervals.
- The trend monitor on the Monitor Page displays data based on a single time axis. Therefore, if there are multiple devices whose time or interval is different in a display group, the Monitor Set will be divided and waveforms in the display group will be displayed in windows divided at the interval level. Only up to four divided windows can be displayed. Anything in excess will not be displayed.
- A similar behavior will also occur in alarm lists. The page will be divided, and the lists will be displayed separately at the device level. If there are multiple acquisition intervals in the same device, the page will not be divided at the interval level but at the device level.

- If PC time is selected

  If PC time is selected, data will be created using synchronized timestamps. You can specify the data collection interval and record interval, and save data to a single data file during recording. There are no display limitations on the Monitor Page.

Note

- Data collected using PC time will not necessarily be the same as those of the corresponding devices: ▶ Q9
- The timestamps attached to data in PC time mode are determined so that data collection would always occur at 0:00 am (00:00:00).

b Monitor Interval

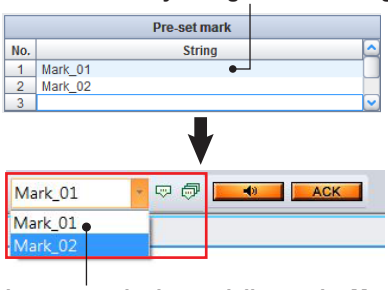
Click the arrow, and select from the following intervals.
If Data time is set to Device time, you cannot specify the Scan Interval.

Interval: 100 Millisecond, 200 Millisecond, 500 Millisecond, 1 Second, 2 Second, 5 Second, 10 Second, 20 Second, 30 Second, 1 Minute, 2 Minute, 5 Minute, 10 Minute

c Pre-set mark

Specify text strings to assign to marks if you want to add marks on the Trend Monitor Page.
You can assign up to 32 characters to each mark. You can register up to five marks.
When you register text strings here, they appear in a list on the Monitor Page as shown below, allowing you to easily add marks.

When you register text strings here,



they appear in the mark list on the Monitor Page.

If you click , the mark appears on the monitoring page.
And if you click , the marks appear on all monitoring pages.

Configuring the Monitor Page

The GA10 Monitor Page can display four types of displays (referred to as Monitor Data Sets): trend, digital, meter, and alarm. A total of up to 16 monitors can be arranged on the Monitor Page.
To display multiple Monitor Data Sets simultaneously, specify how to divide the page and where to arrange each Monitor Data Set.
When you specify items d to g below, a display layout appears in the Monitor Set Layout area. By dragging the splitters that appear between rows and columns when you move the pointer over the boundaries, you can adjust the size of Monitor Data Sets.

d Monitor Data Set Number

Select a number between 1 and 16.

e Split Screen Direction

Set the direction to arrange the Monitor Sets to Horizontal or Vertical.

f Set Number in Splitting Direction

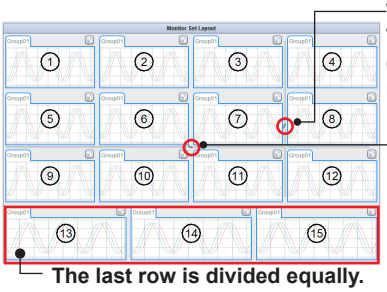
Select a number between 1 and 16. Options that exceeds the Monitor Data Set Number are not displayed.

g Split Screen Data Set

Assign Trend, Digital, Meter, or Alarm to each Monitor Data Set.

The Monitor Data Sets can be arranged vertically or horizontally on the page.
The following figure shows the layout when the Monitor Data Sets are arranged horizontally. The number of vertical divisions is determined by the number of Monitor Data Sets in the horizontal direction and the total number of Monitor Data Sets on the entire Monitor Page. (When arranged vertically, the horizontal and vertical arrangement of the Monitor Data Sets is swapped.)

15 monitor sets total with 4 sets arranged horizontally
Example (all trend displays)



Vertical splitter: The boundary of the divided areas can be moved left and right.

Horizontal splitter: The boundary of the divided areas can be moved up and down.

The last row is divided equally.

h Resize the Monitor Set

When set to **On**, you can make fine adjustments to the arrangement also on the Monitor Page.

i Alarm Shape

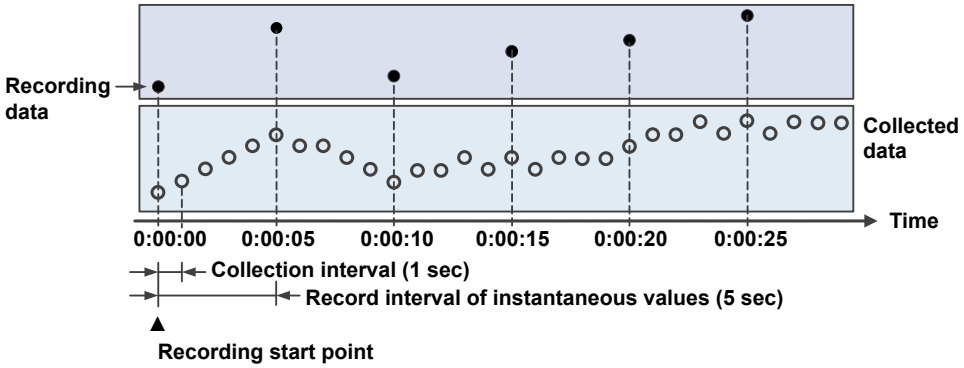
You can set the shape of the alarm display area to circle (○) or rectangular (□).

j Alarm Color

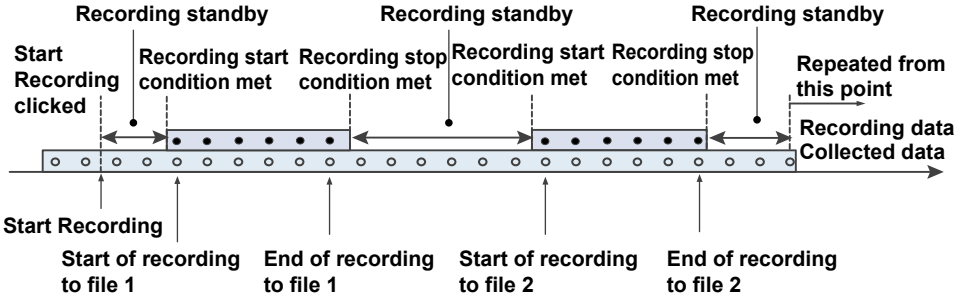
You can change the color that appears when alarms are active (On) and when alarms are inactive (Off). Clicking a color displays a Color Setting dialog box where you can select the color.

3.3.7 Setting the Data Recording Method

GA10 saves the data collected at the collection interval to data files at a specific record interval. The instantaneous values of data are recorded. The collected data at each record interval is saved to files without any data processing.
The figure shows an example of how data is recorded when the collection interval is 1 second, the record interval for instantaneous values is 5 seconds, and recording is started at 0:00:00. In instantaneous-value recording, the collected data at 0:00:00, 0:00:05, and 0:00:10 are saved as record data. The first collected data is called “recording start point.”

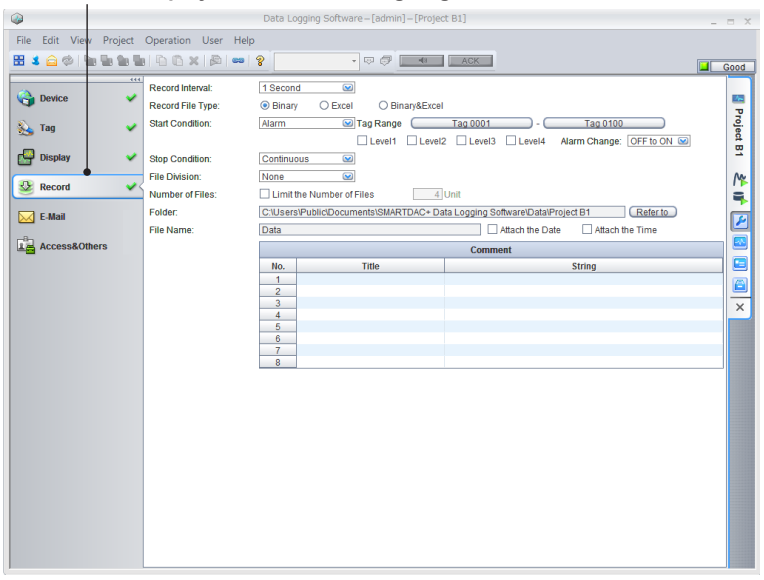


Click the **Start Recording** button to start data recording.
Note that the actual recording of data to data files starts when the recording start conditions are met. Therefore, GA10 may enter the recording standby state when the Start Recording button is clicked.
The following figure shows an example of how GA10 operates when an interval (everyday, every week, every month) and start time are specified as recording start conditions.



Various data recording settings are specified on the Record Setting Page.

Click here to display the Record Setting Page.



The following settings are available on the Record Setting Page.
The details of each are provided in the following pages.

- Record Interval
- Record File Type
- Start/Stop Condition
- File Division
- Number of Files
- Folder
- File Name
- Comment

Note

- The data recording settings vary depending on whether the data collection condition was set to PC time or Device time. Also, the handling of alarm information and the number of record data files vary. ▶ **page 3-24**
- If the server stops for some reason during recording, recording will resume when the server recovers. However, if the server is stopped manually, or if the PC in which the server is installed stops, the data file is cut at this point and saved. Recording will not resume even if the server is restarted. When the server stops: ▶ **page 7-5**

Record Interval

Select the interval from the drop-down list.
Options: 100 Millisecond, 200 Millisecond, 500 Millisecond, 1 Second, 2 Second, 5 Second, 10 Second, 20 Second, 30 Second, 1 Minute, 2 Minute, 5 Minute, 10 Minute
The intervals that are displayed in the list are integer multiples of the collection period specified on the Monitor Page. If Data time is set to Device time, you cannot specify the record interval.

Record File Type

Specify the data output format.
You can save the recorded file in binary format (.dld extension) or Excel format (.xlsx extension).

Start Condition

You can specify the following for the start condition.

Start Condition	Description
Immediate	Starts recording when the Start Recording button is clicked.
Specified Time	Starts recording when the specified time arrives.
Specified Period	Records at the specified period.
Alarm	Starts recording using the alarm status as a trigger.
Level	Starts recording using a collected data value as a trigger.

Stop Condition

You can specify the following for the stop condition.

Stop Condition	Description
Continuous	Stops recording when the Stop Recording button is clicked.
Specified Time	Stops recording at the specified time. If the start condition is set to Alarm or Level, GA10 enters a recording standby state.
Specified Duration	Stops recording when the specified time elapses after recording starts. If the start condition is set to Alarm or Level, GA10 enters a recording standby state.
Data Number	Stops recording at the specified number of data points. If the start condition is set to Alarm or Level, GA10 enters a recording standby state.
Specified Period	Stops recording at the specified period and enters recording standby state.
Alarm	Stops recording using the alarm status as a trigger and enters recording standby state.
Level	Stops recording using a collected data value as a trigger and enters recording standby state.

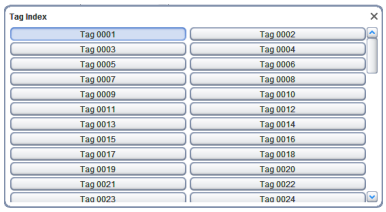
Note

- If you set the start condition to Specified Period, the stop condition is fixed to Specified Period.
- If the start condition is set to Specified Period and the recording start time is set to the same time as the record stop time, the recorded data file is not divided at every interval.
- If the start condition is set to Specified Period and the period is set to the 31st of every month, for months that do not have 31 days, the date is automatically set to the last day of the month.
- If you set the start condition to Specified Time, you cannot specify a nonexistent time due to DST (daylight saving time) transition.
- If the specified time overlaps due to the DST transition, the first time is used to start recording.

- If the **Start Condition** is set to **Alarm**

1 Set Start Condition to **Alarm**.
The tag range, **Level** (1 to 4), and **Alarm Change** are displayed.

2 Click the first or last tag selection button.
The Tag Index dialog box appears.



3 Select the applicable tag range.
The dialog box closes, and the tag selection button display changes to the selected tag.

4 Select **Level** (alarm level).

5 Set the **Alarm Change** to **OFF to ON** (alarm activated state) or **ON to OFF** (alarm released state).

Click the Start Recording button to enter the recording standby state. When the monitored alarm reaches the specified alarm value, recording starts.

- If the **Stop Condition** is set to **Alarm**

The setting procedure is the same as described above.

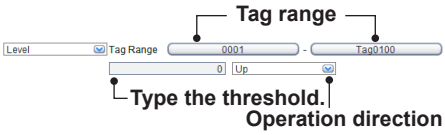
GA10 operates in the following manner.

If the stop condition is set to Alarm or Level, when the specified alarm value is reached during recording, GA10 stops recording and enters the recording standby state.

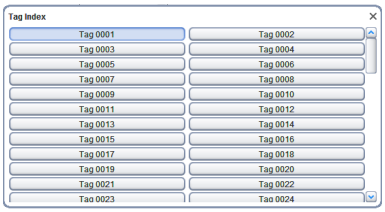
If the stop condition is NOT set to Alarm or Level, when the specified alarm value is reached during recording, GA10 stops recording and enters a monitoring state.

- If the **Start Condition** is set to **Level**

1 Set Start Condition to **Level**.
Tag range, threshold value, and operation direction appear.



2 Click the first or last tag selection button.
The Tag Index dialog box appears.



3 Select the applicable tag range.
The dialog box closes, and the tag selection button display changes to the selected tag.

4 Enter the threshold value.

5 Set the operation direction to Up (data value is greater than or equal to the threshold) or Down (data value is less than or equal to the threshold).
Click the Start Recording button to enter the recording standby state. When the monitored tag value reaches the threshold in the specified direction, recording starts.

- If the **Stop Condition** is set to **Level**

The setting procedure is the same as described above.

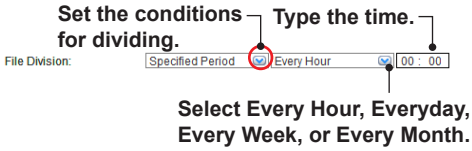
GA10 operates in the following manner.

If the start condition is set to Alarm or Level, when the monitored tag value reaches the threshold in the specified direction, GA10 stops recording and enters the recording standby state.

If the start condition is not set to Alarm or Level, when the monitored tag value reaches the threshold in the specified direction, GA10 stops recording.

File Division

Set the conditions for dividing data files. The settings vary depending on the selected condition. The figure below shows an example when Specified Period is selected.



Off

File is not divided.

Specified Duration

Based on the time of the first recorded data, the file is divided at every specified hour and minute.
Example: If the division time is 1 hour, the time of the first recorded data is 3:00:00, and the record interval is 1 second, the first file will contain the data from 3:00:00 to 3:59:59, and the second file will contain the data from 4:00:00 to 4:59:59.

Specified Period

Select Every Hour, Everyday, Every Week, or Every Month and the absolute time to divide the data file.

Data Number

The file is divided when the number of data values in the data file reaches the specified number.

Note

The file is divided in the following situations.
- When the data file size exceeds 1 GB
- When the data file output format is Excel and the number of recorded tags is 180 or less, the files will be divided every 65535 rows.
  When the number of recorded tags is 181 or more, the files will be divided in groups of the maximum number of rows that meets the following condition: number of tags × number of rows < 11796428.
- When the data file output format is binary and the number of recorded data points exceeds 10 million
  This number is the number of timestamps that is recorded and is not related to the number of tags.

Number of Files

You can limit the number of data files that are saved from the start of recording to the end of recording. When the number of data files reaches the limit, the oldest file is deleted to save the most recent file.
The handling of the number of files is different when the data time of collected data is set to PC time or Device time.

PC time

Because the data of every device is saved in a single file, the number of data files of one iteration from recording start to recording stop is applicable.

Device time

Because a file is saved for each device or each interval, the number of data files of one iteration from recording start to recording stop for each device or interval is applicable.

Folder

Specify the data file save destination.

Server PC Operation System	Default destination
Windows XP	C:\Documents and Settings\All Users\ Documents\SMARTDAC+Data Logging Software\Data
Windows Vista, 7, 8	C:\Users\Public\Documents\SMARTDAC+ Data Logging Software\Data

Note

We recommend you use the default setting for the data save destination folder.
If you want to change the save destination, select a folder that the server (Network service account) can write to. Note that files cannot be saved to the desktop or Document folders. If you select an area where writing is not possible, an error message (E3055) will appear.

File Name

Specify the name of the data file. When recording data using Specified Period, it is convenient to add the date or time to the file name. The date or time of the first data point is added to the file name.

Comment

You can attach comments to data files. You can view these comments when you display the data in Universal Viewer.
You can change the comments until you click Start Recording but not afterwards.

Note

Differences in Data Recording When PC Time Is Used and When Device Time Is Used

The table below summarizes the differences in the recording files created when Data time is set to Device time and when set to PC time.

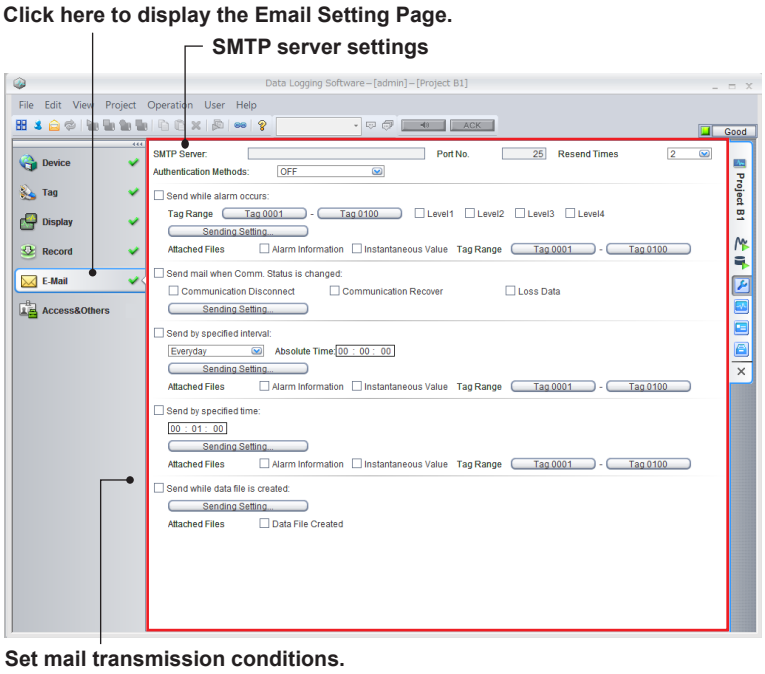
Data Time Influence	Specified Data Time	
	PC Time	Device Time
Number of recording files	One data file is created.	A data file is created for each device. Or if there are multiple acquisition intervals in the same device, a data file is created for each interval.
Alarm information	Alarm information is recorded by taking the logical OR of the alarm information from the collected data immediately after the previous recording data point to the current recording data point.	The data files and alarm information are aligned.
DST (daylight saving time) when a recording file is displayed on the viewer	When a recording file is displayed on the viewer, the time information is displayed correctly according to the DST.	When the DST settings on the PC and device are the same, the time information is displayed correctly. If they are not the same, the DST information of the device is not reflected correctly.
When device settings are changed during recording	The changes are not reflected.	Recording stops.

Changes to devices during data collection and recording: ▶ Q11

What is PC time, or Device time?: ▶Q12

3.3.8 Configuring Mail Settings

GA10 can send email when alarms occur or when the communication status changes. Configure email settings on the Mail Setting Page.



Basic Operation

1. Type the server name in the **SMTP Server** box.
2. Type the port number that the SMTP server will use in the **Port No.** box.
3. Click **Resend Times**, and select the number of retransmissions when transmission fails.
4. Click **Authentication Methods**, and select **OFF** (no authentication), **SMTP Authentication**, or **POP Before SMTP**.
5. Set the conditions for sending email. You can specify multiple conditions.
6. Click **Sending Setting** Sending Setting... .
   A dialog box appears.
7. In the dialog box, set the necessary items such as the destination, title, and body of the message, and click **OK**.
8. For **Attached Files**, select the information to attach to the file.

SMTP server settings are listed below.

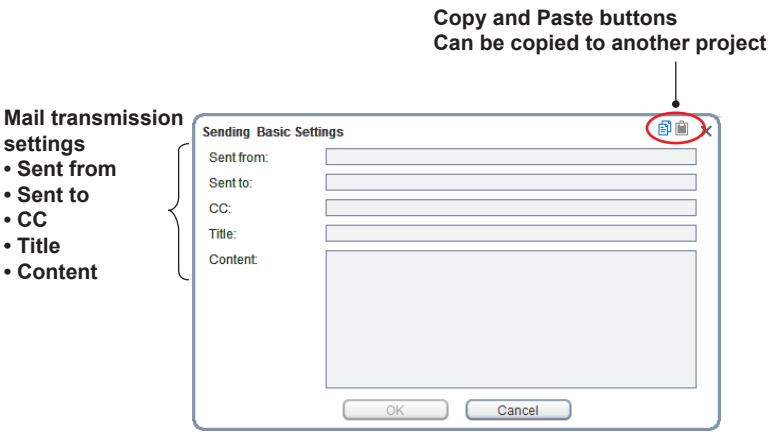
- SMTP server name
- Port number that the SMTP server will use
- Authentication method that the SMTP server will use
- Settings related to the selected authentication method
- Number of retries when email transmission fails

The available authentication methods are no authentication, SMTP authentication, and POP before SMTP.

The available email transmission conditions are listed below.

- Send an email when an alarm occurs.
- Send an email when the communication status between the server and a data collection device changes or when a data dropout occurs on the server.
- Send an email at specified intervals (such as everyday, every week, and every month) or at a specific time within the interval.
- Send an email at specified intervals after data collection starts.
- Send an email when the creation of a data file is completed.

When you enter the conditions for sending emails, set the content of the email in the following dialog box.
The content can be copied to another project.



SMTP Server Settings

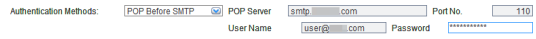
Enter the following items.

- SMTP server name (up to 255 characters)
- Port number (0 to 65535)
- Resend Times: Select 0, 1, 2, 3, 4, or 5. If email transmission fails, GA10 retries the specified number of times. GA10 will retry to transmit 5 minutes after the previous transmission failure.
- Authentication Methods: Select OFF, SMTP Authentication, or POP Before SMTP.

If you use authentication, you must set the user name and password.

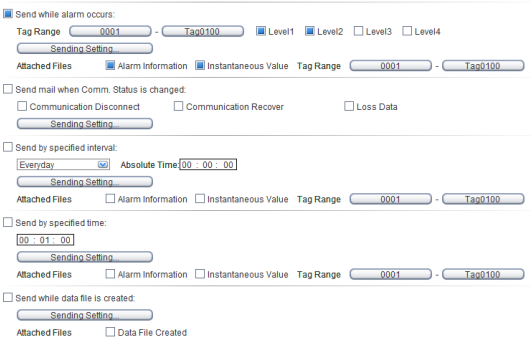
SMTP authentication

POP Before SMTP authentication



Setting Conditions for Sending Email

The table below summarizes the available conditions for sending email.



Send Conditions	Description	File Attachment Availability
Send while alarm occurs	Multiple alarm levels of multiple tags are monitored. When an alarm occurs in the collected data, an email is sent.	The alarm information and instantaneous value for the specified tag at the time of alarm occurrence can be attached as a file.
Send mail when Comm. Status is changed	When the communication between the server and a data collection device is disconnected or restored or when the server fails to collect data for some reason, an email is sent.	No file is attached.
Send by specified interval	An email is sent at specified intervals such as everyday, every week, or every month. An email is sent at a specific time within the interval.	The alarm information and instantaneous value for the specified tag can be attached as a file.
Send by specified time	An email is sent at user-specified intervals after data collection starts.	The alarm information and instantaneous value for the specified tag can be attached as a file.
Send while data file is created	An email is sent when the creation of a data file is completed after data collection starts.	The created file is attached.

Behavior When Sending Email When Alarms Occur and File Attachments

If **Send while alarm occurs** is specified, note the following points.

- The timing for sending email is different when Data time is set to PC time and when Data time is set to Device time.

  PC time

  The specified tag range is assumed to be a single group. If any of the alarms of the tags in the group occurs, an email is sent.

  Device time

  The specified tag range is grouped by device or interval. If any of the alarms of the tags in the group occurs, an email is sent.

  In each 1 second interval of each group, the data timestamp of the earliest occurring alarm is used as the alarm timestamp, and a single email message is sent for this alarm.
  The alarm information and instantaneous value in the file attachment will only be for this earliest occurring alarm.
  Email is not sent for all other alarms that occur.

- The condition for sending email is based on the alarm information of data collected at the data collection interval. The condition for starting and stopping recording is based on the alarm information of data recorded at the record interval.

Behavior When Sending Email at Specified Intervals and File Attachments

If **Send by specified interval** is specified, note the following points.

- Do not change the time during data collection and recording. Doing so will affect the timestamps of data attached to e-mails.
- The timing for sending email is different when Data time is set to PC time and when Data time is set to Device time.

  PC time

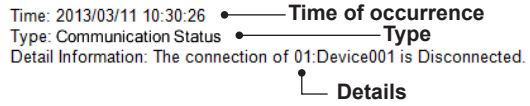
  The time on the PC in which the server is installed is used. The data in the file attachment is all the tag data within the specified range.

  Device time

  If Device time is specified, tags are grouped by device or interval. Because the timestamps attached to the data is used in each group, multiple emails may be sent at the device level or interval level.
  If there are no tags that belong to a group in the specified range, file attachment is not created.

Body of the Sent Email

The body of email messages consists of the message specified by the user and the message automatically added according to the send conditions.
The following figure shows the message that is automatically added. It displays the event information (send conditions) divided into the time of occurrence, type, and details.



The time of occurrence, type, and details are described below.
The type and details are displayed in English.

- Time of occurrence

Send Conditions	Time Description
When an alarm occurs	Time when any of the monitored alarms occurred
When the communication status changes	Time when communication was disconnected or restored or when data dropout occurred
Specified period	Time of the specified period
Specified duration	Time of the specified duration
When a data file is created	Time when the creation of any data file was completed

- Type

Send Conditions	Text String Expressing the Event Type
When an alarm occurs	Alarm
When the communication status changes	Communication Status
Specified period	Periodically Notification
Specified duration	Regularly Notification
When a data file is created	Data file

- Details

Send Conditions	Text String Expressing the Details
When an alarm occurs	When an alarm occurs in one level *Tagindex* "*AlarmLevel1*" in *ProjectName* is occured. When alarms occur in several levels Tagindex "*AlarmLevel1,AlarmLeve2*" in *ProjectName* are occured.
When the communication status changes	When communication is disconnected The connection of *no*: *deviceName* in *ProjectName* is disconnected. When communication is restored The connection of *no*: *deviceName* in *ProjectName* is recovered. When a data dropout occurs (when Data time is set to Device time): Data lack in *no*: *deviceName* in *ProjectName* is detected. The duration of Data Lack is from *YYYY/MM/DD hh:mm:ss:ms* to *YYYY/MM/DD hh:mm:ss:ms*. When a data dropout occurs (when Data time is set to PC time): Data Lack in *ProjectName* is detected.
Specified period	When the specified period is everyday The condition of sending mail in *ProjectName* is at *hh:mm:ss* of every day. When the specified period is every week The condition of sending mail in *ProjectName* is at *hh:mm:ss* of each *weekday*. When the specified period is every month The condition of sending mail in *ProjectName* is at *hh:mm:ss* of each month *day*.
Specified duration	The condition of sending mail in *ProjectName* is every *hh* hour(s) *mm* minute(s) *ss* second(s).
When a data file is created	A data file (filename) in *ProjectName* is created.

Tagindex: Tag index of the tag where the alarm occurred
AlarmLevel1: Alarm level where the alarm occurred
AlarmLevel1, AlarmLeve2: Alarm levels where alarms occurred
ProjectName: Name of the project where the event occurred
no: Number of the device where the event occurred
deviceName: Name of the device where the event occurred
weekday: Day of the week when the event occurred
day: Date when the event occurred
filename: Name of the data file (including the extension) in which the event occurred
YYYY: The year in four digits
MM: The month
DD: The date from 1 to 31
hh: The hour from 00 to 23
mm: The minute from 00 to 59
ss: The second from 00 to 59
ms: The millisecond from 000 to 999

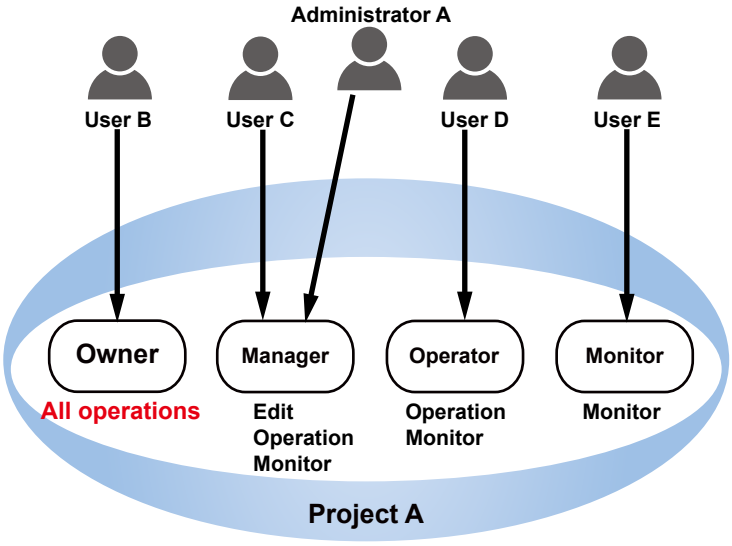
Note

- The maximum number of emails that the server can hold is 20 messages per project.
  This includes emails that fail transmission (including the number of retransmission.)
- Emails held in the server are deleted when the specified retransmission count is reached or when the server stops.

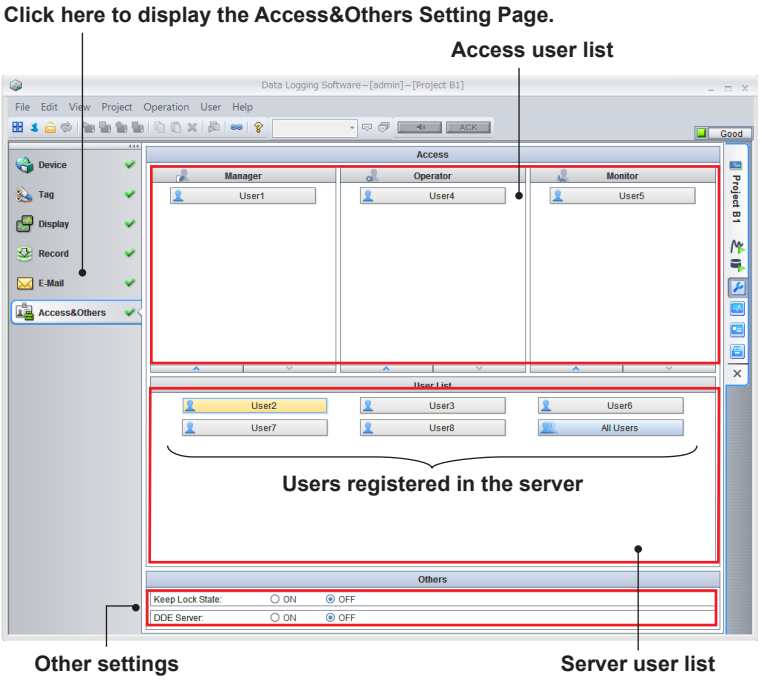
3.3.9 Setting Project Access Privileges

In GA10, you can set access privileges at the project level separately from the server access privileges (administrator and user privileges).
These privileges define the operation scope of the project; they apply in the same way to the administrator and users.

There are four types of project access privileges: Owner, Manager, Operator, and Monitor. Only the owner can assign access privileges. The person creating the project is the initial owner of the project. (To change owners: ▶ page 6-4)



Privileges are assigned on the Access & Others Setting Page of the project.
From the users registered in the server, you can specify the users that can access the current project and their operation scope.



The server user list in the bottom half of the page displays the users that are registered in the server.
The access user list in the top half of the page displays the users that have been granted access to the project. You can assign users by moving them on the page.

Access Privilege Types and Operation Scope

The table below shows the available project access privilege types and their operation scope.

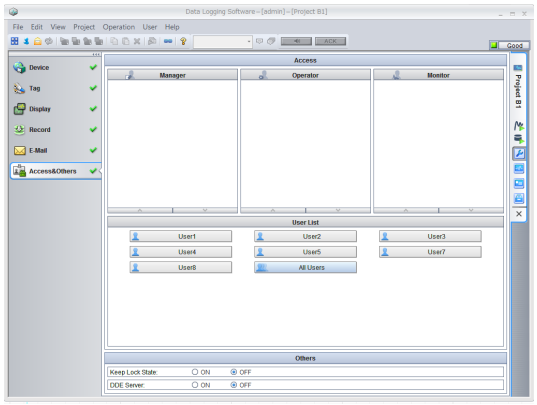
Level	Privilege Type	Allowed Operations	Operation Details
1	Owner	All operations	All operations (including deleting the project) Set project access privileges.
2	Manager	Setup Operation Monitor	Edit setup data. Start/stop data monitoring or recording. View recorded data files. Open data files. Delete data files. Monitor collected data.
3	Operator	Operation Monitor	View setup data. Start/stop data monitoring or recording. View recorded data files. Open data files. Delete data files. Monitor collected data.
4	Monitor	Monitor	View recorded data files. Open data files. Monitor collected data.

To assign access privileges, follow the procedure below. Skip steps 1 and 2 if you are already setting the details of a project.

1 The user who has owner privileges to the project logs in.

2 In the Project List Page, double-click the appropriate project to open the project.
The selected project appears on the Project Page.

3 Change the project setting window to the Access & Others Setting Page.
A list of users registered in the server appears.

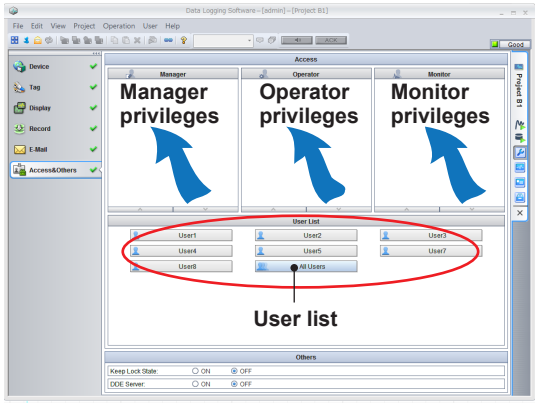


Note

You can change how the users are displayed between User Name and User Full Name by clicking **User Display Form** on the **View** menu.

User name display **User full name display**

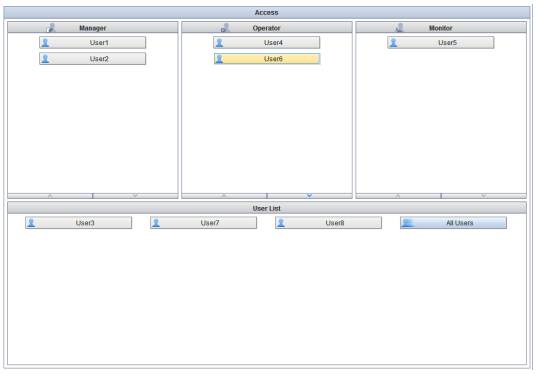
4 Drag the appropriate user to the appropriate privilege area.



5 Or, select the user, and click the Move button pointing to the appropriate privilege area.

Move button

The user moves to the specified privilege area.



The user can now perform the granted operations in the project.

You can select multiple users by using the Shift and Ctrl keys on the keyboard. Hold down Shift and left-click to specify a range. Hold down Ctrl and left-click to select users one at a time.

All Users

The user list displays a user named “All Users.” You can use this to assign access privileges to all users in the server user list.
You can assign access privileges to both “All Users” and individual users. If you do, the higher privilege takes effect for such users.

Note

- "All Users" apply to all users registered in the server. Therefore, note that if you assign access privileges to "All Users" on the Setting Page and then add or delete users, the users that can access the project will also be automatically updated.
- Before deleting project access privileges of a user, check the user status.
  For example, if a user has a project opened with monitor privileges and you delete the access privileges of this user, the user will be shut out from monitoring when the change takes effect in the server.

If you delete an owner user: ▶ page 6-4
To open a project with lower access privileges: ▶ page 6-4

Keep Lock State Feature

On the Access & Others Setting Page, you can also set the Keep Lock State feature.
When this feature is enabled, only the user that starts data collection will be able to operate the relevant project.
The Keep Lock state is retained until the user that started data collection logs in again and stops the data collection.
This feature is set to OFF by default. To use it, select ON.

Select ON to set the Keep Lock State feature.

Note

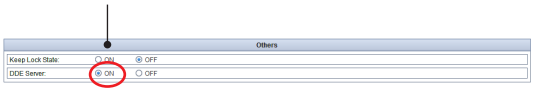
The administrator can clear the Keep Lock state if there is some reason in which data collection must be stopped.
To clear the Keep Lock state: ▶ page 6-5

Using the DDE Server Feature

GA10 supports the DDE (Dynamic Data Exchange) Server feature, which is used to send data to other applications.
The basic procedure to use the DDE server is described below.
Skip steps 1 to 3 if you are already setting the details of a project.
First, configure the project as follows.

1. In the Project List Page, double-click the appropriate project to open the project.
   The selected project appears on the Project Page.
2. On the Project setting window, configure data collection and display settings.
3. Change the project setting window to the Access & Others Setting Page.
4. Set **DDE Server** to ON.

DDE server: Select ON.



Start the DDE server and data collection.

1. On the **File** menu, click **Start DDE**.
   The DDE server starts on the PC running the GA10 client.
2. In the Project List Page, double-click the project that you want to use the DDE server with to open the project.
   The selected project appears on the Project Page.
3. Start data collection.
   While the DDE server is running on the client PC, you can retrieve data from a DDE client.
4. To stop the DDE server, on the **File** menu, click **Stop DDE**.
   The DDE server stops on the PC running the GA10 client.

By using a DDE client to access the DDE server, you can retrieve the tag values that are being collected in the project. You can begin retrieving the data from a DDE client after the DDE server starts.

Retrievable Information	Description
Date	The date when the data was collected
Time	The time when the data was collected (excluding the millisecond)
Millisecond	The millisecond when the data was collected
Data number	The serial number of the data. The first data value collected when data collection is started is number zero.
Value	The collected tag value

For information on how to use a DDE client, see the manual for the DDE client.

The application name, topic name, and item number that are used to retrieve data with the DDE client are shown below.

Item		Text String to Specify and Output Information	
Application name		DLGDDE (fixed)	
Topic name		Specify the name of the target project.	
Item name	Date	date	Outputs the date as a text string. The date format is YYYY/MM/DD.
	Time	time	Outputs the time as a text string. The time format is hh:mm:ss.
	Millisecond	msec	Outputs the millisecond as a text string. The millisecond format is msec. The millisecond is expressed using a number between 000 and 999.
	Data number	no	Outputs the data number as a number. The data number starts with zero.
	Value	tagxxxx xxxx is the tag index number.	Outputs the tag value as a number. The value is displayed using the number of decimal places for tags that is specified on the Tag Setting Page.

IMPORTANT

- While DDE is running, do not change the project name (topic name).
- To save files using Excel as a DDE client, set Files of type to Excel 97-2003 book (*.xls).

Note

- If data collected by the DDE server is in error, it is output using indications other than values.
  For the different types of error data, see **section 4.9.2**.
- The time information that is used for DDE queries is the PC time in which the server is installed. The time when the collected data is set to the DDE server is the time that is output.
  Therefore, if Data time is set to Device time, the time and value of the data on the Monitor Page or data recorded to the data file will not be synchronized to the time and value output by the DDE server.
- The data number is output only when Data time is set to PC time. It is not output when Data time set to Device time.
- If communication between the data collection device and the server is disconnected and Data time is set to PC time, OFF is output for the data value. If set to Device time, data updating stops regardless of whether FIFO is being used. This is the same behavior as when the data collection from the device is delayed.

3.3.10 Starting Data Collection and Recording

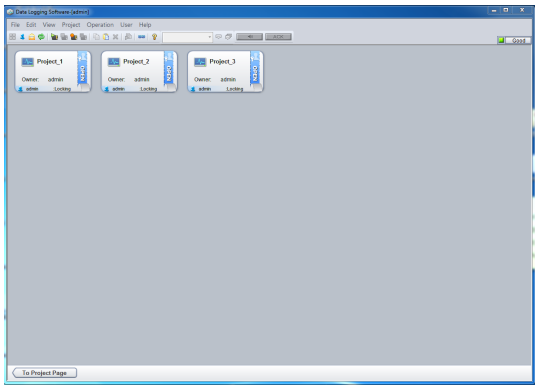
You can start data collection and recording using a configured project.
To close the project without collecting data, click the icon on the right edge of the page.

Controlling an Opened Project Individually

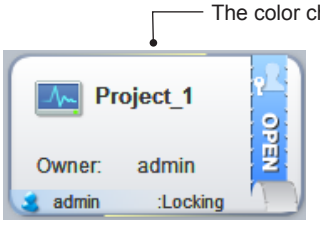
Click the icons that are displayed on the tab on the right side of the screen to collect or start and stop recording. The procedure is similar to **section 3.2.4**.

Controlling Opened Projects Simultaneously

1. Click the icon at the left end of the toolbar.
   The Project List Page appears.



2. On the **Operation** menu, click **Start Monitoring Simultaneously**. Or, click the icon.
   To start recording, on the **Operation** menu, click **Start Recording Simultaneously**. Or, click the icon.
   A confirmation message appears.
3. Click **OK**.
   Data collection starts.



4. To stop, on the **Operation** menu, click **Stop Monitoring Simultaneously**. Or, click the icon.
   To stop recording, on the **Operation** menu, click **Stop Recording Simultaneously**. Or, click the icon.

Note

- Projects that you can simultaneously control are those that you have Operator or higher privileges for.
- If a Modbus device definition file that you are using contains an error, data collection will not start on the corresponding project.

3.4 Registering Modbus Devices

3.4.1 Registration of Modbus Devices

GA10 can connect to devices that use the Modbus protocol.
To register such a device, you must create a Modbus device definition file in advance and save it in **a specific server folder**.

* If you are using GA10 R1.02 or later, UTAdvanced series devices can be connected without creating definition files.

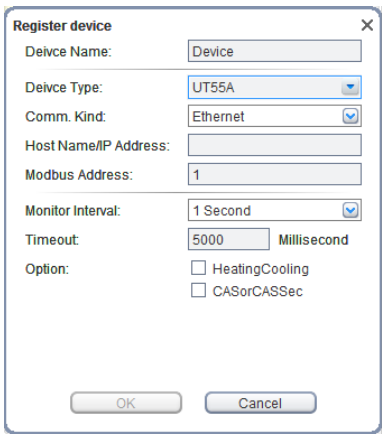
Basic Operation

1 Create a Modbus device definition file in XML format by referring to the provided **example**.
We suggest that you use the Windows standard Notepad or a text editor to edit the file.

2 Save the file.
Save the file using UTF-8 encoding.

3 Place the Modbus device definition file in the C:\Program Files\Yokogawa Electric Corporation\SMARTDAC+ Data Logging Software\Modbus folder of the PC in which the server is installed.

4 Restart the server.
Restart procedure: ▶ section 2.6.1



The name of the registered Modbus device appears next to Device Type in the **Register device dialog box**.*

* A dialog box for registering new devices.

5 Select the registered Modbus device from the **Device Type.**
The input items for communication appear.

6 Input the information, then click **OK**.

Note

When using a Modbus definition file to perform communication through the Ethernet interface, set the scan interval to a value less than the communication timeout value of the device.

3.4.2 What Is a Modbus Device Definition File?

The Modbus device definition file is a file that is referred to when a new Modbus device is registered on the Device Setting Page.
A Modbus device definition file is composed of the following four sections.

Option list

This is where the Modbus device options are defined.

Register list

This is where the Modbus device's registers that are read during data collection are defined. Modbus Function codes, register addresses, data types, and register names are specified in this section.

Channel list

This is where the Modbus device's channels that are read during data collection are defined. You can also specify channel settings, collection data positions, and related alarm information.

Value conversion table

This is where the table for converting the data read from the Modbus device's registers into values for actual use is defined.

Modbus device definition files are in XML format. Descriptions in files have a hierarchical structure.
For details on the format, see "Node Structure" and subsequent pages.

Node Structure of Modbus Device Definition Files

Level 0	Level 1	Level 2	Level 3	Level 4	Level 5	Description	Quantity
ModbusDevice						Definition file root element	1
	Options					Option list node	0 or 1
		Option				Option information	0 to 5
	Registers					Register list node	1
		Register				Register information	1 to 300
	Channels					Channel list node	1
		Channel				Channel information	1 to 300
			Init			Channel default setting	0 or 1
				DecimalPos		Default decimal place	0 or 1
				Min		Default minimum span	0 or 1
				Max		Default maximum span	0 or 1
				Unit		Default unit	0 or 1
			Value			Channel value	1
				DataError		Error data status	0 or 1
				ADError		A/D converter status	0 or 1
				PlusOver		+OVER status	0 or 1
				MinusOver		-OVER status	0 or 1
				Burnout		Burnout information	0 or 1
					Type	Burnout type	0 or 1
					Value	Burnout status	0 or 1
			Alarms			Alarm list node	0 or 1
				Alarm		Alarm information	0 to 4
					Type	Alarm type	0 or 1
					Value	Alarm value	0 or 1
					Set Value	Alarm set value	0 or 1
	TransTables					Value conversion table node	0 or 1
		Table				Value conversion table	0 to 100
			Value			Conversion value	0 to 100

Node Attributes of Modbus Device Definition Files

If an attribute is not specified, the default value will be applied. However, if the Option, Mask, or Trans attribute is not specified, GA10 assumes that the corresponding function is not used and does not apply the default value.

Node Name	Attribute	Type	Mandatory	Range	Default Value	Description
ModbusDevice	Type	string	(A)	Alphanumeric characters, 1 to 15 characters		Modbus device type Note: Match this with the XML file name.
	PortNo	int		1 to 65535	502	Ethernet port number of the Modbus device
	CommandDelay	int		0 to 10000	0	Command delay of the Modbus device. Unit: msec
Option	Name	string	(B)	Alphanumeric characters, 1 to 15 characters		Names of options supported by the Modbus device
Register	Name	string	(A)	Alphanumeric characters, 1 to 15 characters		Register names in the Modbus device
	FunctionCode	int	(A)	3 or 4		Modbus communication function code
	Address	int*2	(A)	1-465535		Modbus register
	DataType	enum	(A)	INT16,UNIT16,INT32_B,INT32_L ,UINT32_B,UINT32_L,FLOAT_B, FLOAT_L *3		Read data type
Channel	Name	string	(A)	1 to 15 Unicode characters		Channel name
	DecimalPos	int		0 to 5	0	Channel decimal place
	Min	double		-1E16 to 1E16	0	Minimum channel span
	Max	double		-1E16 to 1E16	100	Maximum channel span
	ScaleRatio	double		-1E16 to 1E16	1	Channel scaling coefficient
	ScaleOffset *4	double		-1E16 to 1E16	0	Channel scaling offset
	Unit	string		Up to 6 Unicode characters	“”	Channel unit
	Option	string		Alphanumeric characters, up to 15 characters		Option name
DecimalPos Min Max	Register	string	(A)	Alphanumeric characters, 1 to 15 characters		Register name
	Mask*1	int*2		Hexadecimal number, 0 to 65535		Data bit mask
	Trans	string		Alphanumeric characters, up to 15 characters		Value conversion table name
Unit DataError *5 ADError *5 PlusOver *5 MinusOver *5 Burnout\Type *5*6 Burnout\Value Alarm\Type Alarm\Value						
Alarm\Type	Kind	enum		“OFF”,“H”,“L”,“dH”,“dL”,“RH”,“RL”, “tH”,“tL”,“PVH”,“PVL”,“DVH”,“DVL ”,“DVO”,“DVI”,“SPH”,“SPL”,“OTH” ,“OTL”,“ETC”	“OFF”	Default alarm type
Alarm\SetValue	Register	string		Alphanumeric characters, 1 to 15 characters		Register name
Alarm\SetValue	Value	double		-1E16 to 1E16	0	Initial value of the alarm set value
Table	Name	string	(C)	Alphanumeric characters, 1 to 15 characters		Value conversion table name
	ToDataType	enum		Int, String	Int	Target conversion data type
Value	From	int*2	(C)	-2147483648 to 2147483647		Conversion source value
	To	string	(C)	Up to 15 Unicode characters		Conversion target value To convert to a value, specify the value using a character string.

(A): Mandatory item. However, for attribute name Register, node name Type is not mandatory.

(B): Mandatory item to use the option

(C): Mandatory item to convert data

1 If only a mask is available, bit mask is applied to the data value read from the register, and the result is handled as TRUE or FALSE.

2 Decimal and Hexadecimal integers are supported. For hexadecimals, the number must be preceded by a “0x.”

3 For a description of Data Type, see the table below.

4 These are retrieved from registers or the definition file. The user can specify either one or both. In the latter case, register information takes precedence.

5 Scaling calculation: Y = ScaleRatio * X + ScaleOffset
X: Modbus register value (after decimal point calculation; after conversion is a value conversion table is available)
Y: Computed result

6 Channel data status is processed in the following order of precedence: ADError, DataError, Burnout, PlusOver, MinusOver.

7 If the burnout type is set to DownScale (type value is 2) and the burnout status is 1, the data status will be −BURNOUT. If the burnout type is set to UpScale (type value is not 2) and the burnout status is 1, the data status will be +BURNOUT.

8 Node channels include optional attributes. When registering a device in the Register Device dialog box, if you do not select this option, this channel will not be available in the registered device.

Description of Data Type

Value	How to Use
INT16	Use when a signed 16-bit integer is assigned to the device register.
UINT16	Use when an unsigned 16-bit integer is assigned to the device register.
INT32_B	Use when a signed 32-bit integer is assigned to the device register and the smallest register number is assigned to the highest bit.
INT32_L	Use when a signed 32-bit integer is assigned to the device register and the smallest register number is assigned to the lowest bit.
UNIT32_B	Use when an unsigned 32-bit integer is assigned to the device register and the smallest register number is assigned to the highest bit.
UINT32_L	Use when an unsigned 32-bit integer is assigned to the device register and the smallest register number is assigned to the lowest bit.
FLOAT_B	Use when a 32-bit floating-point number is assigned to the device register and the smallest register number is assigned to the highest bit.
FLOAT_L	Use when a 32-bit floating-point number is assigned to the device register and the smallest register number is assigned to the lowest bit.

Note

A read error will occur in the following situations.

- A mandatory item is missing.
- There is a syntax error. However, in the following situations, an error will not occur and the value will be corrected when it is read.
  - There is a limit to the string length for a node attribute, and this limit is exceeded.
  - There is an allowable range for a node attribute, and the value is outside the range.

3.4.3 Modbus Device Definition File Example

A sample Modbus device definition file is provided in the following pages. The sample shows how the XML file should be structured.
When you create a Modbus device definition file, refer to the description of registers in the user's manual of the Modbus device that you want to connect.

```
<?xml version="1.0" encoding="utf-8" ?>
<ModbusDevice Type="SAMPLEA" PortNo="502" CommandDelay="0">  Match Type (Modbus device name) with the file name.

    <Options>
        <Option Name="remote" />
    </Options>

    <Registers>  Specify all the data to load from the device.
        <Register Name="PV1" FunctionCode="3" Address="40003" DataType="INT16" />
        <Register Name="SP1" FunctionCode="3" Address="40004" DataType="INT16" />
        <Register Name="OUT1" FunctionCode="3" Address="40005" DataType="INT16" />
        <Register Name="MOD1" FunctionCode="3" Address="40008" DataType="INT16" />
        <Register Name="PIDNO1" FunctionCode="3" Address="40009" DataType="INT16" />
        <Register Name="SPNO" FunctionCode="3" Address="40010" DataType="INT16" />
        <Register Name="ERROR1" FunctionCode="3" Address="40002" DataType="INT16" />
        <Register Name="BSL" FunctionCode="3" Address="41209" DataType="INT16" />
        <Register Name="PUNI1" FunctionCode="3" Address="41230" DataType="INT16" />
        <Register Name="PDP1" FunctionCode="3" Address="41231" DataType="INT16" />
        <Register Name="PV1Upper" FunctionCode="3" Address="41232" DataType="INT16" />
        <Register Name="PV1Lower" FunctionCode="3" Address="41233" DataType="INT16" />
        <Register Name="SPUpper" FunctionCode="3" Address="40933" DataType="INT16" />
        <Register Name="SPLower" FunctionCode="3" Address="40934" DataType="INT16" />
        <Register Name="SPNOUpper" FunctionCode="3" Address="40940" DataType="INT16" />
        <Register Name="ALM" FunctionCode="3" Address="40011" DataType="INT16" />
        <Register Name="AL1" FunctionCode="3" Address="40915" DataType="INT16" />
        <Register Name="AL2" FunctionCode="3" Address="40916" DataType="INT16" />
        <Register Name="AL3" FunctionCode="3" Address="40917" DataType="INT16" />
        <Register Name="AL4" FunctionCode="3" Address="40918" DataType="INT16" />
        <Register Name="ALM1SP" FunctionCode="3" Address="40302" DataType="INT16" />
        <Register Name="ALM2SP" FunctionCode="3" Address="40303" DataType="INT16" />
        <Register Name="ALM3SP" FunctionCode="3" Address="40304" DataType="INT16" />
        <Register Name="ALM4SP" FunctionCode="3" Address="40305" DataType="INT16" />
    </Registers>

    <Channels>  PV1 channel settings
        <Channel Name="PV1">
            <Init>
                <DecimalPos Register="PDP1" />  Decimal place
                <Min Register="PV1Lower" />
                <Max Register="PV1Upper" />  Maximum and minimum values
                <Unit Register="PUNI1" Trans="PVUnitTable" />  Unit (converted using PV Unit Table described later)
            </Init>
```

Parameters loaded as channel information (PV value, SP value PID No., etc.)

Parameters loaded channel's auxiliary information (unit, decimal place, alarm, etc.)

PV1 basic information

```
<Value Register="PV1">
    <DataError Register="ERROR1" Mask="0x0005" />          Error 1
    <PlusOver Register="ERROR1" Mask="0x0010" />           +over, -over
    <MinusOver Register="ERROR1" Mask="0x0020" />
    <Burnout>
        <Type Register="BSL" />                            Burnout
        <Value Register="ERROR1" Mask="0x0100" />
    </Burnout>
</Value>
<Alarms>
    <Alarm>          First alarm (up to four)
        <Type Register="AL1" Trans="PVAlarmTypeTable" />   Alarm type 2
        <SetValue Register="ALM1SP" />                     Alarm setting
        <Value Register="ALM" Mask="0x0001" />             Alarm value
    </Alarm>
    <Alarm>          Second alarm
        <Type Register="AL2" Trans="PVAlarmTypeTable" />
        <SetValue Register="ALM2SP" />
        <Value Register="ALM" Mask="0x0002" />
    </Alarm>
    <Alarm>          Third alarm
        <Type Register="AL3" Trans="PVAlarmTypeTable" />
        <SetValue Register="ALM3SP" />
        <Value Register="ALM" Mask="0x0004" />
    </Alarm>
    <Alarm>          Fourth alarm
        <Type Register="AL4" Trans="PVAlarmTypeTable" />
        <SetValue Register="ALM4SP" />
        <Value Register="ALM" Mask="0x0010" />
    </Alarm>
</Alarms>
</Channel>

<Channel Name="SP1">          SP1 channel settings
    <Init>
        <DecimalPos Register="PDP1" />
        <Min Register="SPLower" />
        <Max Register="SPUpper" />
        <Unit Register="PUNI1" Trans="PVUnitTable" />
    </Init>
    <Value Register="SP1" />
    <Alarms>
        <Alarm>
            <Type Register="AL1" Trans="SPAlarmTypeTable" />
            <SetValue Register="ALM1SP" />
            <Value Register="ALM" Mask="0x0001" />
        </Alarm>
        <Alarm>
            <Type Register="AL2" Trans="SPAlarmTypeTable" />
            <SetValue Register="ALM2SP" />
```

PV1 values

1. Masked because the parameter contains multiple pieces of information.

PV1 alarm information

2. PV1 Alarm Type Table is used to convert the value into specific units.

```
                <Value Register="ALM" Mask="0x0002" />
            </Alarm>
            <Alarm>
                <Type Register="AL3" Trans="SPAlarmTypeTable" />
                <SetValue Register="ALM3SP" />
                <Value Register="ALM" Mask="0x0004" />
            </Alarm>
            <Alarm>
                <Type Register="AL4" Trans="SPAlarmTypeTable" />
                <SetValue Register="ALM4SP" />
                <Value Register="ALM" Mask="0x0010" />
            </Alarm>
        </Alarms>
    </Channel>
    <Channel Name="OUT1" DecimalPos="1" Min="0.0" Max="100.0" Unit="%">     OUT1 channel settings
        <Value Register="OUT1" />
        <Alarms>
            <Alarm>
                <Type Register="AL1" Trans="OUTAlarmTypeTable" />      A/M1, R/L1, SPNO, PIDNO, Run/Stop channel settings
                <SetValue Register="ALM1SP" />
                <Value Register="ALM" Mask="0x0001" />
            </Alarm>
            <Alarm>
                <Type Register="AL2" Trans="OUTAlarmTypeTable" />
                <SetValue Register="ALM2SP" />
                <Value Register="ALM" Mask="0x0002" />
            </Alarm>
            <Alarm>
                <Type Register="AL3" Trans="OUTAlarmTypeTable" />
                <SetValue Register="ALM3SP" />
                <Value Register="ALM" Mask="0x0004" />
            </Alarm>
            <Alarm>
                <Type Register="AL4" Trans="OUTAlarmTypeTable" />
                <SetValue Register="ALM4SP" />
                <Value Register="ALM" Mask="0x0010" />
            </Alarm>
        </Alarms>
    </Channel>
    <Channel Name="A/M1" DecimalPos="0" Min="0" Max="1">
        <Value Register="MOD1" Mask="0x0001" />
    </Channel>
    <Channel Name="R/L1" DecimalPos="0" Min="0" Max="1" option="remote">
        <Value Register="MOD1" Mask="0x0002" />
    </Channel>
    <Channel Name="SPNO" DecimalPos="0" Min="0" Max="8">
        <Value Register="SPNO" />
    </Channel>
    <Channel Name="PIDNO1" DecimalPos="0" Min="0" Max="8">
        <Value Register="PIDNO1" />
```

```
        </Channel>
            <Channel Name="Run/Stop" DecimalPos="0" Min="0" Max="1">
                <Value Register="MOD1" Mask="0x0004" />
            </Channel>
        </Channels>

        <TransTables>      Parameter values specified as Trans="PVUnitTable" are converted into specific units and used as channel information.
            <Table Name="PVUnitTable" ToDataType="String">
            <Value From="0" To="%" />          If the value is 0, the unit is displayed as %.
            <Value From="1" To="^C" />
            <Value From="2" To="" />
            <Value From="5" To="^F" />
        </Table>                                   Parameter values specified as Trans="PVAlarmTypeTable" are converted into alarm types.
        <Table Name="PVAlarmTypeTable" ToDataType="String">
            <Value From="0" To="OFF" />        If the value is 0, the alarm type is displayed as "OFF".
            <Value From="1" To="H" />
            <Value From="2" To="L" />
            <Value From="9" To="H" />
            <Value From="10" To="L" />
            <Value From="11" To="H" />
            <Value From="12" To="L" />
            <Value From="25" To="ETC" />
            <Value From="26" To="ETC" />
            <Value From="27" To="ETC" />
        </Table>                                   Parameter values specified as Trans="SPAlarmTypeTable" are converted into alarm types.
        <Table Name="SPAlarmTypeTable" ToDataType="String">
            <Value From="28" To="H" />                 If the value is 28, the alarm type is displayed as "H".
            <Value From="29" To="L" />
            <Value From="68" To="H" />
            <Value From="69" To="L" />
        </Table>                                   Parameter values specified as Trans="OutAlarmTypeTable" are converted into alarm types.
        <Table Name="OutAlarmTypeTable" ToDataType="String">
            <Value From="30" To="H" />                 If the value is 30, the unit is displayed as "H".
            <Value From="31" To="L" />
            <Value From="70" To="H" />
            <Value From="71" To="L" />
        </Table>
    </TransTables>
</ModbusDevice>[EOF]
```

Blank

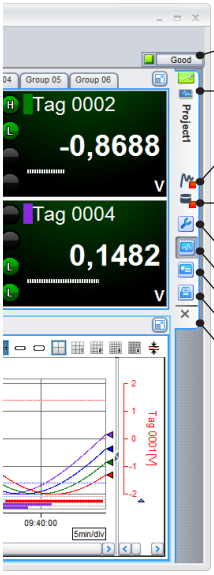
Chapter 4 Monitoring Data Collection

4.1 Monitoring on the Monitor Page

This section explains the Monitor Page for Detail Settings mode. In Simple Settings mode, the Monitor Page consists of the Trend Monitor Set and Digital Monitor Set. The operation is the same.

4.1.1 Displaying the Data Collection Status

You can monitor data collection in the following page.



Client and server communication status
Project tab
Start and stop data monitoring
Not monitoring
Monitoring
Start and stop data recording
Not recording
Recording
Setting Page
Monitor Page
Status Page
Data files Page
Close

- **Client and Server Communication Status**

  The client and server communication status is indicated as Good, Ordinary, or Bad.

- **Project Tab**

  The tab shows the project name, and operation icons. The project alarm status is indicated in red.*

  * Blinking red: Alarm occurring
    Solid red: Alarm acknowledged

- **Start and Stop Data Monitoring**

  Click to start or stop data collection.

- **Start and Stop Data Recording**

  Click to start or stop data recording.

- **Setting Page, Monitor Page, Status Page, and Data files Page**

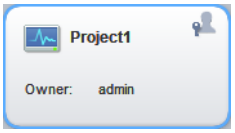
  Click to display the corresponding page.
  Setting Page ▶ **section 3.2**, **section 3.3**
  Monitor Page ▶ **section 4.1.2**
  Status Page ▶ **section 4.7**
  Data files Page ▶ **section 5.1**

- **Close**

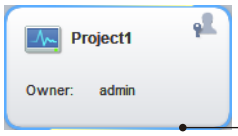
  Click to close the project.

- **Viewing the Project Status in the Project List Page**

  Click the icon to show the Project List Page. You can view the project status.

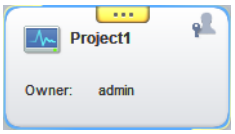


Data not being monitored

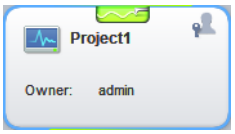


Data monitoring in progress

The boundary color changes.

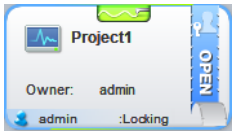


Data recording standby

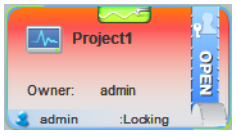


Data recording in progress

You can check the alarm status and alarm ACK status for the opened project.



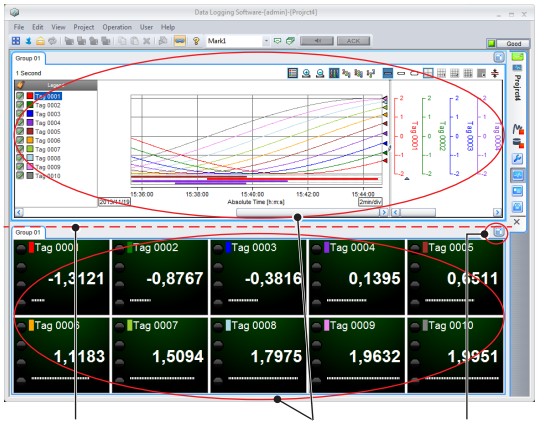
When an alarm is not occurring



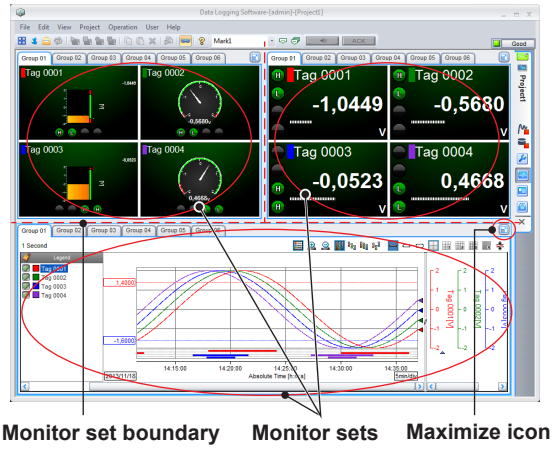
When an alarm is occurring (indicated in red)

4.1.2 Displaying the Monitor Page

Open a project, and click the **Monitor Page** icon on the **Project** tab to open the Monitor Page.
In Simple Settings mode, the Monitor Page consists of the Trend Monitor Set and Digital Monitor Set as shown below.



In Detail Settings mode, the Monitor Page that you configured opens.



- **Resizing the Monitor Set**

  To resize the Monitor Set, **Resize the Monitor Set** on the Acquisition & Monitor Setting page must be set to **On**.
  Move the pointer near the boundary of the Monitor Set to change the pointer to ↕ or ↔. In this condition, drag the pointer to move the boundary to the desired position.

- **Maximizing the Monitor Set**

  Click the Maximize icon in the upper right of the Monitor Set to expand the Monitor Set to fill the entire window. Click to return to its original size.

- **Switching the Display Group at Once**

  On the **View** menu, click **Group Link**. Or, click the icon on the toolbar.
  When you change the display group of one Monitor Set, the display group of other Monitor Sets also changes.
  To cancel linking, on the **View** menu, click **Group Link** to unselect it. Or, click the icon on the toolbar to unselect it.

4.1.3 Setting General Display Options

- **Tag Display Form**

  From the list of options that appears when you click **Tag Display Form** on the **View** menu, select the items to display as tags. This applies to all pages.

- **User Display Form**

  From the list of options that appears when you click **User Display Form** on the **View** menu, select the items to display as user names. This applies to all pages.

- **Screen Background Color**

  On the **View** menu, click **Style**, and click **Light** or **Dark** to select the background color. This applies to all pages.

- **Date Format**

  From the list of options that appears when you click **Date Format** on the **View** menu, select the date format. This applies to all pages.

- **Month Display Form**

  From the list of options that appears when you click **Month Display Form** on the **View** menu, select the month display format. This applies to all pages.

Item	Description
Digit	Example: “10” for October
Character	Example: “OCT” for October

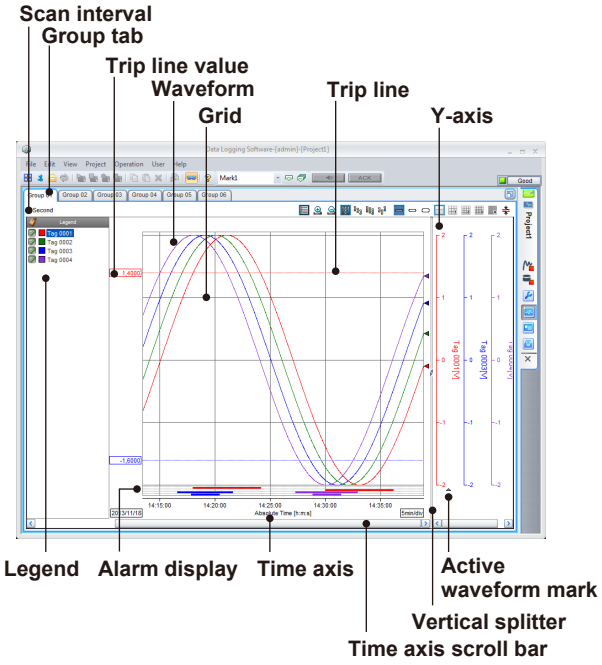
- **Decimal Point**

  On the **View** menu, click **Decimal Point** to select the symbol to use for the decimal point. This applies to all pages.

Item	Description
.	Period
,	Comma

4.2 Monitoring on the Trend Display

4.2.1 Displayed Content



- **Scan Interval**

  The data collection interval.
- **Group Tab**

  Switches the displayed group. Alarms occurring in tags of each group are indicated in red.
- **Waveform**

  Displays each waveform according to its corresponding data tag color.

  ▶ "Waveform Display"
- **Grid**

  The grid shown in the waveform display area.
- **Trip Line**

  Trip line assigned to a tag. Only the trip line of the active waveform is displayed.
  Moving the trip line
  Drag the value of the trip line to the desired position.
- **Y-axis**

  Displays the Y-axis scale, title, and unit. Each y-axis is displayed according to its corresponding tag color.
- **Legend**

  Displays tags, tag colors, waveform display on/off check boxes, and Y-axis display on/off check boxes.
- **Alarm Display**

  Displays alarms using bars from occurrence to release.
- **Time Axis**

  The right end shows the most recent data time.
- **Vertical Splitter**

  Use the vertical splitter to adjust the width of the Y-axis display area.
  When you move the pointer over the vertical splitter, the pointer changes to ⟺. In this condition, drag the pointer to expand or reduce the width of the Y-axis display area.

Waveform Display

- **Active Waveform**

  The front-most displayed waveform is called the *active waveform*.
- **Changing the Active Waveform**

  Click a tag in the Legend or a Y-axis to make the corresponding waveform the active waveform. When a Y-axis is shared among multiple waveforms, the waveform with the smallest waveform number will become the active waveform. The active waveform mark (▲) moves below the Y-axis of the active waveform.
- **Automatically Updating the Displayed Data (monitor mode)**

  When the time-axis scroll bar is at the right end or when it is not displayed, the data display is automatically updated. This mode is called *monitor mode*. The right end of the waveform is the most recent data.
- **Viewing Past Data (playback mode)**

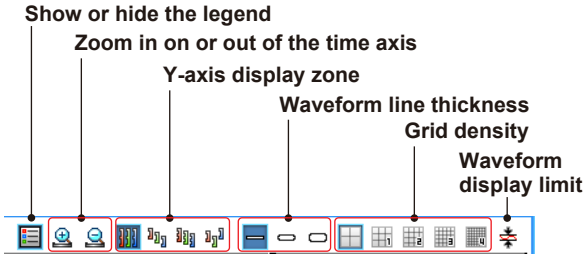
  Move the time-axis scroll bar from the right end to view past data. This mode is called *playback mode*. Automatic updating of the data display stops. Returning the scroll bar to the right end switches GA10 back to monitor mode. If you do not operate the scroll bar for 30 minutes, GA10 will return to monitor mode.

When Collecting Data Using Device Time

The window is divided by a combination of device and scan interval. Trends of up to four devices can be displayed at each scan interval.

4.2.2 Changing the Display

You can change the display using the icons in the upper right.



- **Show or Hide the Legend**

  You can show or hide the legend.
- **Zoom in on or out of the Time Axis**

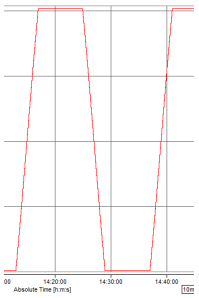
  You can zoom in on or out of the time axis.

- **Y-axis Display Zone**

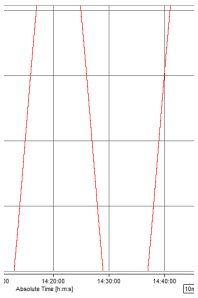
  You can switch the Y-axis display zone.
  ▶ section 4.2.3
- **Waveform Line Thickness**

  You can change the waveform line thickness. This applies to all waveforms.
- **Grid Density**

  You can change the grid density.
- **Waveform Display Limit**



With limit



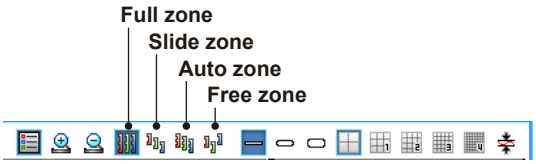
Without limit

When you click the icon to select it, waveform display limit is enabled. When you apply the waveform display limit, the Y-axis display range is limited to the minimum and maximum values that you specified using Scale in Display Group. Measured values that are less than the minimum scale value are set to the minimum value, and values that are greater than the maximum scale value are set to the maximum value. When you click the icon to unselect it, waveform display limit is disabled. In this condition, measured values outside the scale are displayed as they are.

4.2.3 Controlling the Y-axis

- **Y-axis Display Zone**

  You can select the Y-axis display zone.
  Y-axis display zone specifies the scale position and length. It is the waveform position and range.



  - Full Zone: Displays all waveforms in the maximum range
  - Slide Zone: Displays each waveform cascaded from the top to the bottom of the waveform display area
  - Auto Zone: Divides the waveform display area into equally spaced zones in accordance with the number of waveforms and displays the waveforms
  - Free Zone: Displays waveforms in user-specified zones
- **Operations in Free Zone**

  In Free Zone mode, you can change the Y-axis display zone as you like.
  Zoom in/out on the Y-axis
  When you move the pointer near the lower or upper edge of the Y-axis scale, the pointer changes to ↕. In this condition, drag the pointer to move the desired position to zoom in or out on the Y-axis.
  Moving the Y-axis
  When you move the pointer on an Y-axis scale, the pointer changes to ↕. In this condition, drag the pointer to move the desired position to move the Y-axis to the desired position.
- **Compact Mode and Detail Mode**

  A Y-axis can be displayed in compact or detail mode. In compact mode, scale values are hidden, narrowing the width of the Y-axis.
  In detail mode, if you move the pointer on the Y-axis and click the icon at the top of the Y-axis, the mode changes to compact. In compact mode, if you click the icon, the mode changes to detail.
- **Scrolling a Y-axis Scale**

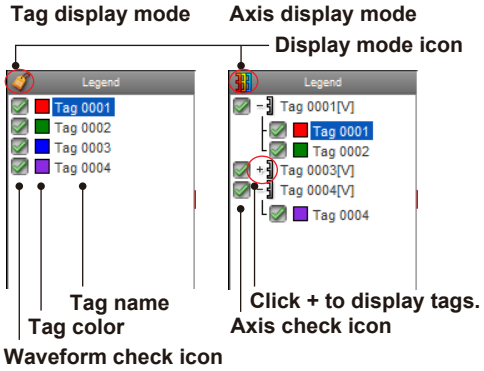
  When you move the pointer on an Y-axis scale, the pointer changes to 🔍 or ↕.
  Spinning the mouse wheel in this condition causes the Y-axis scale to scroll, maintaining the difference between the upper and lower limits of the scale.
  Click the scale initialization icon to return the scale to its original position.
- **Zooming in or out on an Y-axis Scale**

  When you move the pointer on an Y-axis scale, the pointer changes to 🔍 or ↕. Clicking when the pointer is 🔍 shows a scale zoom in/zoom out icon.
  Click an arrow of the icon or spin the mouse wheel to zoom in or out on the scale value in reference to the icon position.
  Click the scale initialization icon to return the scale to its original position.
- **Changing the Active Waveform**

  ▶ "Waveform Display"

4.2.4 Showing and Hiding Waveforms (Using the Legend)

The legend can be displayed in tag display mode or axis display mode. Each time you click the display mode icon, the mode toggles between tag display and axis display.



- **Tag Display Mode**

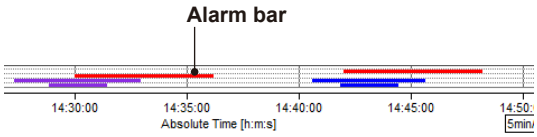
  The tags assigned to the display group are displayed. Waveforms whose waveform check icons are selected are shown. If you click an icon to clear the check box, the waveform will be hidden.

- **Axis Display Mode**

  A list of Y-axes used by tags is displayed. Expand a Y-axis to display a list of tags that are using the Y-axis. If you click an Y-axis check icon to clear the check box, the axis and waveform data sharing the axis will be hidden.

4.2.5 Viewing the Alarm Occurrence Status

When you click **Alarm** on the **View** menu to add a check mark, alarm bars are displayed in the alarm display area. Remove the check mark to hide the alarm bars.



The bars show the data range in which alarms are occurring for the tags displayed in the group. The alarms are from the top alarm level 1, alarm level 2, alarm level 3, and alarm level 4.

- Alarm bars are displayed with tag display colors.
- The alarm bars of the active waveform area always shown in front. If the alarm bars of multiple tags are overlapped and you want to view the alarm bars in the back, make the appropriate waveform the active waveform.

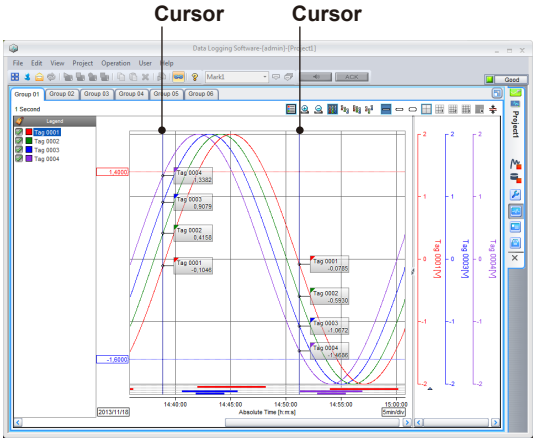
4.2.6 Reading Values with Cursors

You can use cursors to read values from waveforms. You can display two cursors: cursor A and cursor B.

- **Showing and Hiding Cursors**

1. Click a point in the waveform graph.
   Cursor A (vertical line) appears, and the value at the intersection of the cursor and waveform is displayed.
2. Drag the cursor, and release the mouse button.
   Cursor B (vertical line) appears, and the value at the intersection of the cursor and waveform is displayed.
3. To clear the cursors, on the **View** menu, click **Erase** cursor.

If the cursor value displays of multiple tags are overlapped and you want to view the cursor values in the back, make the appropriate waveform the active waveform. Or, use the cursor value dialog box.
When a cursor is displayed, the waveform display enters playback mode, and automatic updating of data display stops.

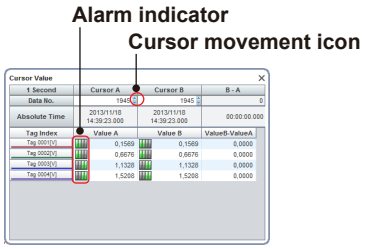


- **Cursor Value Transparency**

  On the **View** menu, click **Cursor value transparency** to choose **Transparent** or **Opaque**.

- **Reading the Difference between Two Cursors**

  On the **View** menu, click **Cursor value**. The Cursor Value dialog box appears. From this dialog box, you can read the difference between cursors A and B.
  Click the cursor move icon ( ) to move the cursor by 1 data point.



- Data No.
  A sequence number of collected data points taking the first collected data point to be zero.
- Alarm indicator
  The status of alarm level 1, alarm level 2, alarm level 3, and alarm level 4, are displayed from the left.

Displayed Content	Description
Red	Alarm occurrence
Green	Alarm release
Gray	Alarm not set

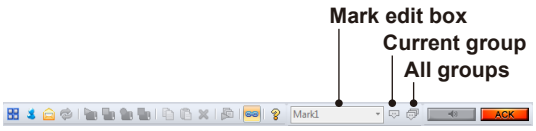
When **Alarm** in the **View** menu is not checked, alarm indicators are not shown.

To close the cursor value dialog box, click the ✕ icon in the upper right.

4.2.7 Adding Marks

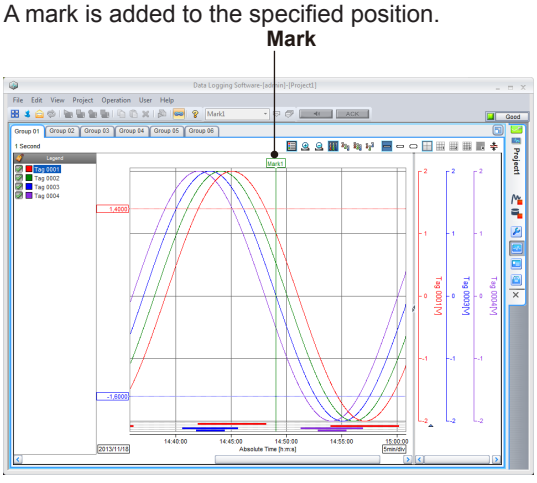
You can add marks to data. To add a mark, specify the mark string and the data to add the mark to.

1 Type the string in the mark edit box.
You can edit the displayed string as well as select from a list of strings that you used in the past from the drop-down menu. The drop-down menu displays the most recent five strings.



2 Click the data position you want to add a mark to display a cursor.
To add a mark to the most recent data, perform step 3 in monitor mode. Step 2 is not necessary.

3 On the **Project** menu, click **Append Mark** and then **Current Group** or **All Groups**. Or, click the **Current Group** or **All Groups** icon.
A mark is added to the specified position.



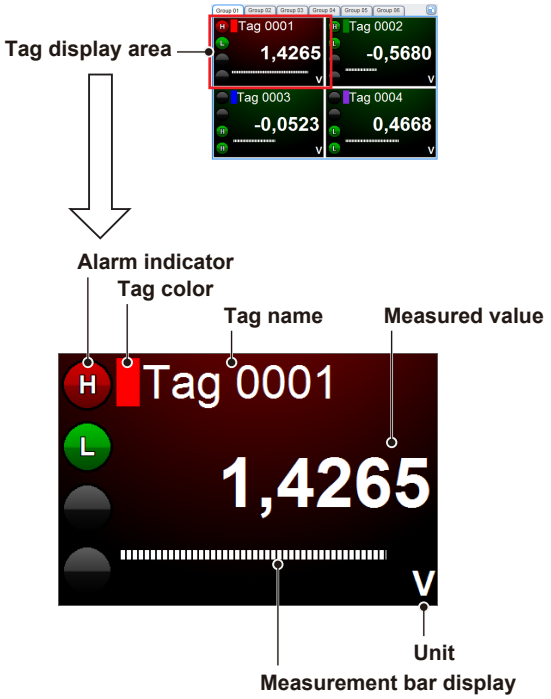
- **Adding a Mark to the Current Group**
  If you select Current Group, a mark is added only to the group shown on the trend monitor.
- **Adding a Mark to All Groups**
  If you select All Groups when data is being collected using PC time, a mark is added to all groups.
  If data is being collected using device time,
  - In playback mode, a mark is added at the same position as cursor A to all display groups that contain tags of the same device and of the same collection interval as the monitor set subwindow that you added a mark to.
  - In monitor mode, a mark is added to all groups.
- **When Marks Are Overlapped**
  Sometimes marks overlap and the string of the lower mark cannot be read. Clicking a mark with Shift held down moves the mark to the back.

Note

- Marks that have been added cannot be deleted or edited.
- Mark information is saved in data files. (Only binary data files.) Mark information added to data positions in files that have already been closed is saved in the data file that is currently being recorded. You can view these marks by displaying connected data files.

4.3 Monitoring on the Digital Display

4.3.1 Displayed Content



- **Tag Display Area**

  Tag alarm status is indicated in the alarm color.

  * The alarm colors specified on the Acquisition & Monitor page.

- **Alarm Indicator**

  The status of alarm level 1, alarm level 2, alarm level 3, and alarm level 4, are displayed from the top. Tag alarm status is indicated in the alarm color. Alarm indicators show a character that indicates the alarm type.*

  * It is not shown if the display area is limited.

  Characters that indicate alarm types ▶ section 4.5.3

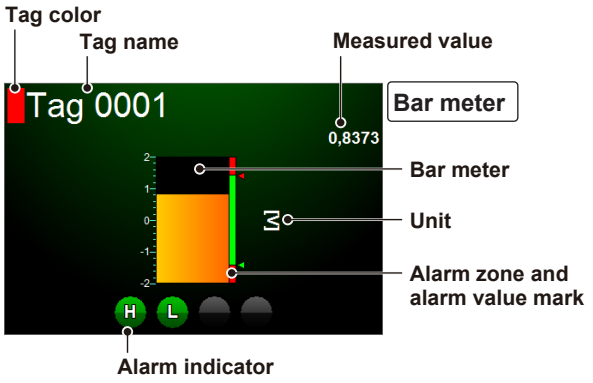
4.3.2 Showing and Hiding Alarm Indicators

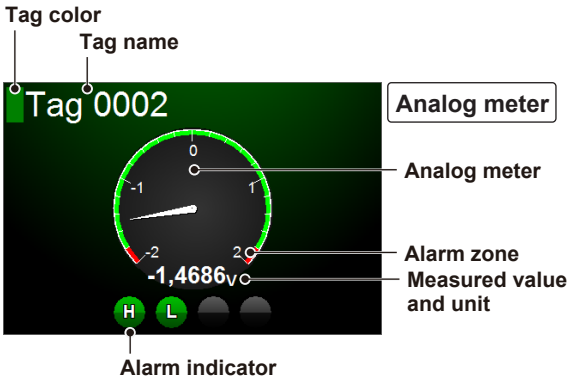
When you click **Alarm** on the **View** menu to add a check mark, alarm indicators are shown. To not show alarm indicators, click **Alarm** on the **View** menu to unselect the command.

4.4 Monitoring on the Meter Display

4.4.1 Displayed Content

There are bar meters and analog meters.





- **Tag Display Area**

  Tag alarm status is indicated in the alarm color.

- **Alarm Zone**

  The zone where alarms occur is indicated in the alarm color.

- **Alarm Value Mark (bar meters only)**

  Indicates the alarm value of data collection devices. This appears when the alarm type is set to high limit, low limit, difference high limit, difference low limit, delay high limit, or delay low limit.

Displayed Content	Description
	Indicates that the alarm type is high limit or difference high limit.
	Indicates that the alarm type is low limit or difference low limit.
	Indicates that the alarm type is delay high limit.
	Indicates that the alarm type is delay low limit.

- **Alarm Indicator**

  The status of alarm level 1, alarm level 2, alarm level 3, and alarm level 4, are displayed from the left. Tag alarm status is indicated in the alarm color. A character that indicates the alarm type is displayed.*

  * It is not shown if the display area is limited.

  Characters that indicate alarm types ▶ section 4.5.3

  You can show and hide alarm indicators.

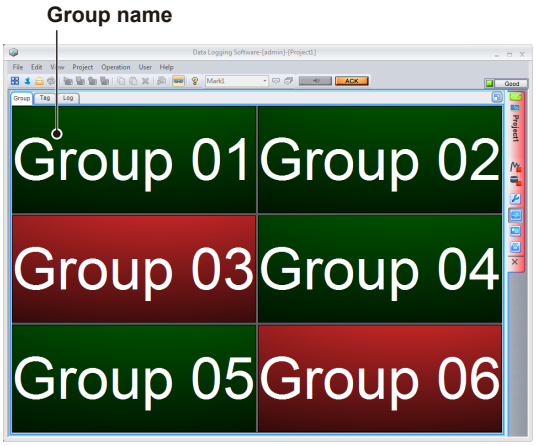
  ▶ section 4.3.2

4.5 Monitoring Alarms

An alarm Monitor Set displays alarm information of monitored tags in three formats.

4.5.1 Group Overview

Click the **Group** tab. Alarm information is displayed at the group level. Groups that do not have alarms set on any tags are not displayed.



- **Alarm Occurrence Display**

  Alarm occurrence is displayed in the alarm color in the group display area.

4.5.2 Tag Overview

Click the **Tag** tab. Alarm information is displayed for tags in the display group. Tags that do not have alarms set are not displayed.

- **Alarm Occurrence Display**

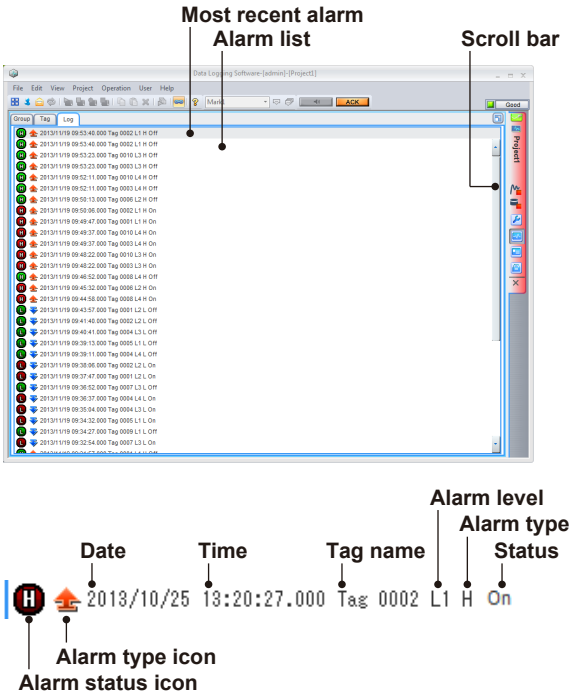
  Alarm occurrence is displayed in the alarm color in the tag display area.

- **Alarm Indicator**

  The status of alarm level 1, alarm level 2, alarm level 3, and alarm level 4, are displayed from the left. Tag alarm status is indicated in the alarm color.

4.5.3 Alarm Overview

Click the **Log** tab. The history of all monitored tags' alarm occurrences and releases is displayed. The top line is the most recent entry. The display is automatically updated as alarms occur and are released.
If data is being collected in device time, the history is displayed by dividing the window for each device.



- **Most Recent Alarm**

  The top line always displays the most recent entry.

- **Alarm List**

  The history of alarms are displayed in the order of occurrence. Move the scroll bar down to view past alarms. This condition is called *playback mode*. In playback mode, the history is not automatically updated (the line showing the most recent alarm is automatically updated). Move the scroll bar to its top position to exit playback mode.

- **Alarm Status Icon**

Indication	Description
Alarm-on color*	Alarm occurrence
Alarm-off color*	Alarm release

* The alarm colors specified on the Acquisition & Monitor page. If ACK has not been executed, the icon background blinks.

- **Alarm Type Icons**

Displayed Content	Description
	High limit alarm, measurement high limit alarm, deviation high limit alarm, setting high limit alarm, output high limit alarm
	Low limit alarm, measurement low limit alarm, deviation low limit alarm, setting low limit alarm, output low limit alarm
	Difference high limit alarm
	Difference low limit alarm
	High limit on rate-of-change alarm
	Low limit on rate-of-change alarm
	Delay high limit alarm
	Delay low limit alarm
	Deviation out limit alarm
	Deviation in limit alarm
	Other alarm

- **Date and Time**

  The date and time of alarm occurrence and release.

- **Alarm Level**

Displayed Content	Description
L1	Alarm level 1
L2	Alarm level 2
L3	Alarm level 3
L4	Alarm level 4

- **Alarm Type**

Displayed Content	Description
H	high limit alarm
L	Low limit alarm
dH	Difference high limit alarm
dL	Difference low limit alarm
RH	High limit on rate-of-change alarm
RL	Low limit on rate-of-change alarm
tH	Delay high limit alarm
tL	Delay low limit alarm
PVH	Measurement high limit alarm
PVL	Measurement low limit alarm
DVH	Deviation high limit alarm
DVL	Deviation low limit alarm
DVO	Deviation out limit alarm
DVI	Deviation in limit alarm
SPH	Setting high limit alarm
SPL	Setting low limit alarm
OTH	Output high limit alarm
OTL	Output low limit alarm
ETC	Other alarm

- **Status**

Displayed Content	Description
ON	Indicates that an alarm has occurred.
OFF	Indicates that an alarm has been released.

4.6 Checking Alarms

4.6.1 Displaying the Alarm Overview Dialog Box

While displaying the Monitor Page, click **Alarm list List** on the **View** menu to display the alarm overview dialog box.
The displayed content and operation in this dialog box are the same as those of the alarm list of the alarm Monitor Set.
Click ✕ in the upper right of the dialog box to close it.

- **Page Switching and Dialog Box Display**

  The dialog box stays open until you close it. If you move to another page with the dialog box open, the dialog box disappears. But, if you return to the Monitor Page, the dialog box will appear again.
  If you change the project while the dialog box is open, the alarm information of the opened project will be displayed in the dialog box.

4.6.2 Alarm Notification with Sound

On the **Operation** menu, click **Alarm Sound** to add a check mark. When an alarm occurs, the PC will beep.
To stop the alarm sound, on the **Operation** menu, click **Turn Alarm's Sound Off**. Or, click the  icon.
To disable the alarm sound, on the **Operation** menu, click **Alarm Sound** to remove the check mark.

Note

- To generate alarm sounds, the PC must be equipped with a sound generating function and sound must be turned on.
- You cannot change the sound.

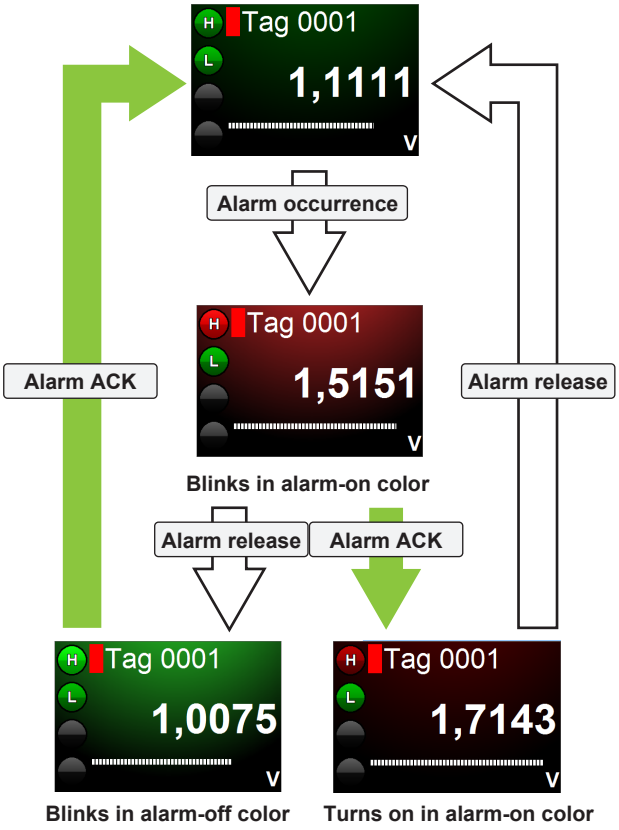
4.6.3 Perform Alarm ACK Operations

If an alarm occurs in a monitored tag after data monitoring is started, the corresponding area blinks in the alarm color to indicate the alarm occurrence. An alarm ACK operation refers to the act of stopping this blinking.
On the **Project** menu, click **Alarm ACK**. Or, click the 

icon.
The blinking alarm indication stops.

- **Alarm ACK Operation and Alarm Indication Transition**

  The following figure shows how the alarm indication transitions as an alarm occurs, is released, and is acknowledged with alarm ACK. The figure shows an example of a Digital Monitor Set tag.



  - If an alarm occurs and is released before the alarm ACK operation, the color changes to that when alarm is not occurring, but blinking continues until the alarm ACK operation is executed.
  - If an alarm occurs again after an alarm ACK operation is executed, blinking will start again.
  - Alarm ACK operations do not affect data collection devices.

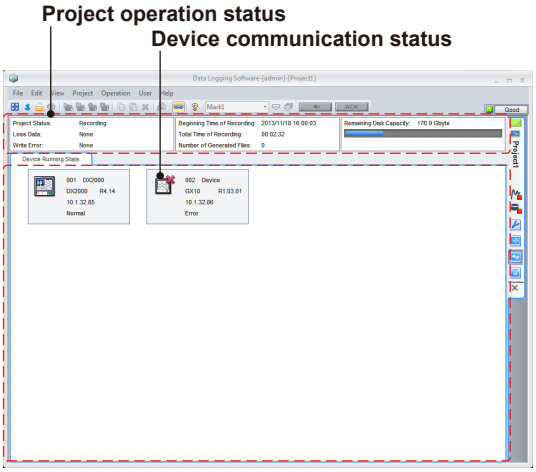
4.7 Checking the Project Operation Status

Click the **Status Page** icon on the Project tab to display the Status Page. A Status Page is used to monitor:

- The project data collection and recording status
- The communication status between the data collection device in the project and the server

The displayed data is automatically updated periodically.

4.7.1 Displayed Content



- **Project Status**

  Stop Monitoring, Monitoring, Record Standby, or Recording

- **Loss Data**

  Recording data dropout status

- **Write Error**

  Whether data writing to the data file is being performed normally

- **Beginning Time of Recording**

  The time of the first data value in the first data file that is created after recording to data files is started

- **Total Time of Recording**

  The elapsed time since the start of recording.
  The timer continues until all recordings stop or when Recording Standby is reached.

- **Number of Generated Files**

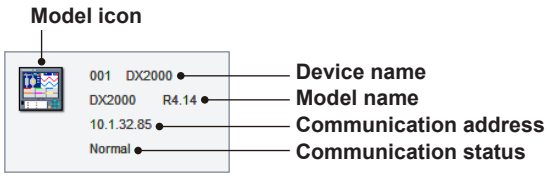
  The number of data files that have been created after recording was started

- **Remaining Disk Capacity**

  The free space on the disk that contains the data file save destination directory.
  In the following conditions, “-----” is displayed, and the bar does not display the amount of space used.
  - Not recording.
  - The data file save destination folder is set to a network folder.

- **Device Communication Status**

  The status of communication with the devices in the Device List is displayed. Nothing is displayed when data collection is stopped.



Item	Description
Model icon	Device icon
Device name	Device name and device number
Model name	Model name and release number or software name and release number
Communication address	IP address
Communication status	Communication status between the server and device Normal, Error, Retrying

4.8 Controlling Devices during Data Collection

4.8.1 Controlling Device Computation from GA10

On the **Project** menu, click **Start Computing**, **Stop Computing**, **Clear Computing**, or **Clear&Start Computing**.
Computation is collectively controlled on the devices that meet the following conditions.

- Devices that are in the Device List of the project
- Devices that have computation functionality
- Devices that support **Start Computing**, **Stop Computing**, **Clear Computing**, and **Clear&Start Computing**.

Connected Device, Software	Start Comp.	Stop Comp.	Clear Comp.	Clear&Start Computing
µR10000, µR20000	Yes	Yes	No	Yes
DX1000, DX1000N, DX1000T	Yes	Yes	Yes	Yes
DX2000, DX2000T	Yes	Yes	Yes	Yes
MV1000, MV2000	Yes	Yes	Yes	Yes
CX1000, CX2000	Yes	Yes	Yes	Yes
FX1000	Yes	Yes	Yes	Yes
MX100, MW100	No	No	No	No
DA100, DR130, DR230, DR240	Yes	Yes	Yes	Yes
GX10, GX20, GP10, GP20	Yes	Yes	Yes	Yes
DAQLOGGER, DAQ32Plus, MXLOGGER	No	No	No	No
Devices supporting the Modbus protocol	No	No	No	No

Yes: Supported No: Not supported
* When connected over an Ethernet network, the user registered in the device must have privileges to use computation for this feature to work.

4.9 Things to Consider

4.9.1 Time Zone and Daylight Saving Time

Be sure to set the same time zone and daylight saving time settings on the PC running the GA10 server, the PC running the GA10 client, and the data collection devices. If they are not the same, data time may not be displayed correctly.

4.9.2 Error Data

If collected or recorded data is in error, it is displayed or recorded using indications other than values. For the different types of error data, see “Data that indicates errors.”

- **Data Display in a Digital Monitor Set or Meter Monitor Set**

Display	Data Condition*
+OVER	+OVER
–OVER	-OVER
INVALID	INVALID
BURNOUT	BURNOUT
ILLEGAL	ILLEGAL
LACK	LACK
OFF	OFF

* See “Data that indicates errors.”

- **Display in the Trend Monitor Set**

Waveform	Cursor Value	Data Condition*
Drawn exceeding the scale upper limit	+OVER	+OVER
Drawn exceeding the scale lower limit	-OVER	-OVER
Nothing	INVALID	INVALID
	BURNOUT	BURNOUT
	ILLEGAL	ILLEGAL
	LACK	LACK
	(blank)	OFF

* See “Data that indicates errors.”

- **Data in Recording Data Files**

Data in Binary Data Files	Data in Excel Data Files	Data Condition*
+OVER	+OVER	+OVER
–OVER	–OVER	-OVER
INVALID	INVALID	INVALID
BURNOUT	BURNOUT	BURNOUT
ILLEGAL	ILLEGAL	ILLEGAL
LACK	LACK	LACK
OFF	OFF	OFF

* See “Data that indicates errors.”

- **Data That Indicates Errors**

The following table shows the different types of data that indicates errors.

Data	Description
+OVER	+Over-range data
–OVER	-Over-range data
SKIP	Channels that have been set to skipped
INVALID	Invalid data
	The data type and decimal place specified on the Tag Setting Page do not match those of the collected data.
BURNOUT	Burnout data
ILLEGAL	Illegal data
LACK	Indicates that the device failed to acquire the data
OFF	Indicates one of the following conditions. • Data collection has not been performed since the project was opened. • Channels are not assigned to tags. • When the data time is set to PC time, the collected data is SKIP data. • Communication error condition • Initialized condition as a result of changing the Device Setting Page or Tag Setting Page while data collection is stopped • An attempt was made to collect data from a device using the backfill function, but there is no data recorded in the device.

4.9.3 Reflecting Changes Made on the Monitor Page to the Setting Page

If the access privilege is Owner or Manager, changes made to the following settings on the Monitor Page are reflected on the corresponding Setting Page (Display Group or Acquisition & Monitor). If the access privilege is Operator or Monitor, the changes are not reflected.

- Monitor Set size adjustment
- Waveform display on/off state, Y-axis display on/off state, Detail/Compact, Zoom in/Zoom out, and movement in the Trend Monitor Set
- Trip line position

4.9.4 Changing the Time on the Device after Starting Data Collection and Recording

Do not change the time on the device after starting data collection and recording, because doing so will cause adverse effects on the monitor screen and recorded data.

Related topic “Changes to devices during data collection and recording”: ▶ Q11

4.10 Viewing the Log

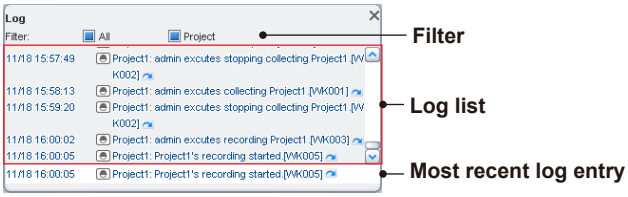
You can view the log that the server sends in the Log dialog box. You can open the Log dialog box at any time when you are logged in to the server. The dialog box stays open until you close it.

4.10.1 Displayed Content in the Log Dialog Box

Up to 1000 log events that occur from when the user logs in to the server until the user logs out are displayed.
There are two types of logs: system log (displayed in yellow), which deals with the server, and project log (displayed in blue), which deals with projects.
System log includes events such as server login and logout. Project log includes data collection start and stop.
System logs are sent to all users. Project logs are sent to users that have the projects opened.

4.10.2 Opening the Log Dialog Box

On the **View** menu, click **Log**. The log dialog box opens.

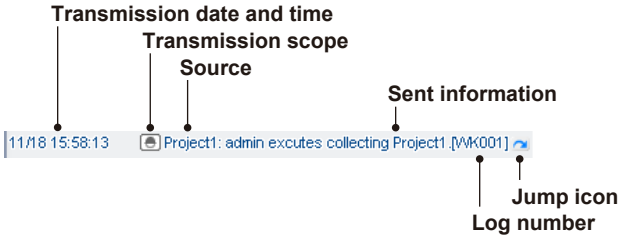


- **Filter**

  The events that correspond to the filter box that you clicked and turned blue appear. For details, see “Transmission scope.”

- **Log List**

  The log events are displayed in the order of occurrence. If there are events that do not fit in the dialog box, a scroll bar appears.



- **Most Recent Log Entry**

  This line always displays the most recent log entry.

- **Transmission Date and Time**

  The date and time when the log was transmitted.

- **Transmission Scope**

  Indicates the log transmission scope

Icon	Description
	Sent to all users (system log). Set the Filter to Log to display the corresponding log.
	Sent to users that that have the relevant projects opened (project log). Set the Filter to project to display the corresponding log.

- **Source**

  SYS or the project name

- **Sent Information**

  The log information

- **Log Number**

  The number of the log event.

- **Jump Icon**

  Displayed when there is a page associated with the log event. Clicking the icon shows the relevant page. For example, if you click the icon for a “recording started” event, the corresponding project’s Monitor Page will be displayed.

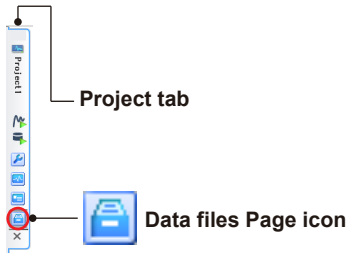
To close the log dialog box, click the ✕ icon in the upper right.

Blank

Chapter 5 Managing Recording Data

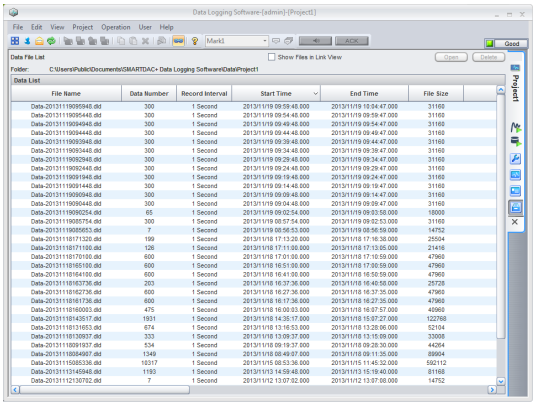
5.1 Displaying a List of Data Files

Click the **Data files Page** icon on the Project tab to display the Data File List Page.



5.1.1 Displayed Content

The data files in the data file save destination directory are listed. Only data files saved in binary format are displayed. Data files saved in Excel format are excluded.

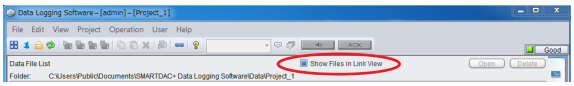


Item	Displayed Content
File Name	Name of the data file
Data Number	Number of data values in the data file
	The total number of data values if files are linked and displayed*
Record Interval	Recording interval used to create the data file
Start Time	The time of the first data value in the data file
	The time of the first data of the entire data if files are linked and displayed*
End Time	The time of the last data value in the data file
	The time of the last data of the entire data if files are linked and displayed*
File Size	Data file size
	The total data size if files are linked and displayed*
Comment 1	Title and content of Comment 1 to 8 that were specified when the file was created
Comment 2	
Comment 3	
Comment 4	
Comment 5	
Comment 6	
Comment 7	
Comment 8	

* Does not include the values of deleted files and other files that do not exist

- **Showing Files in Link View**

You can link and display files that have been divided by the auto save function, power failures, or other means (factors) on the recorder.
Click the **Show Files in Link View** to turn the box blue. Files are linked from the start of recording to the end of recording and displayed in one line. Clicking the box again to turn it to white returns the page to the individual file display.



- **Deleting Files**

1. Click the file you want to delete.

Selecting multiple consecutive files
Example: Selecting consecutive files: File005, File006, and File007

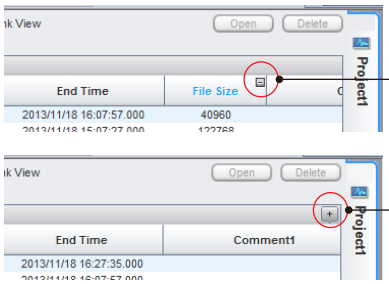
- Click File005. Drag to File007, and release the mouse button.
- Click File005 to select it. While holding the Shift key down, click File007.

2. Click **Delete**.
A confirmation dialog box appears.

3. Click **OK**.
The files are deleted.

- **Showing and Hiding Columns**

If you move the pointer over a column title, a hide icon appears. Click it to hide the column. When you hide a column, a show icon will appear in the upper right of the page. Click this icon to show the hidden columns.



The results of showing and hiding columns apply to every project in the same client.

- **Adjusting Column Widths**

  When you move the pointer near a boundary of a column title, the pointer changes to ⟺. In this condition, drag the pointer to move the boundary to the desired position. The results of adjusting column widths apply to every project in the same client.

- **Sorting the File List**

  Click a column title to sort the file list on the basis of the clicked column. Click it again to sort in reverse order. A sort mark (△, ▽) appears in the column title area.

- **Refreshing the Display**

  On the **View** menu, click **Refresh**.
  The most recent file information is retrieved from the server, and the page is refreshed.

5.2 Displaying Recording Data

Recording data can be displayed in Universal Viewer.

1. Select the file you want to view.
   You can select multiple link files.

2. Click **Open**.
   Universal Viewer starts, and the data in the file is displayed.

You can also double-click the file to open it.

Note

- For instructions on how to use Universal Viewer, see the Universal Viewer User's Manual.
- GA10 recording data (.dld extension) can be displayed on Universal Viewer version R1.03 and later.

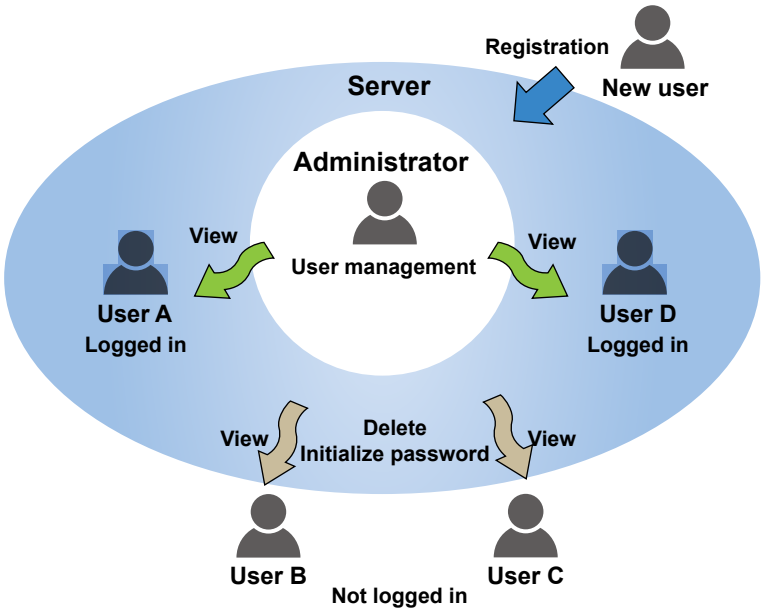
Chapter 6 Managing Users

6.1 Administrator and Users

In GA10, you can set server access privileges.
There are two types of server access privileges: administrator and user. The administrator manages all users. The administrator can perform the following operations in addition to all the operations available to users.

- Register users
- Delete users
- Initialize user passwords
- View the login status of users

The following sections explain how to use the User Management Page.



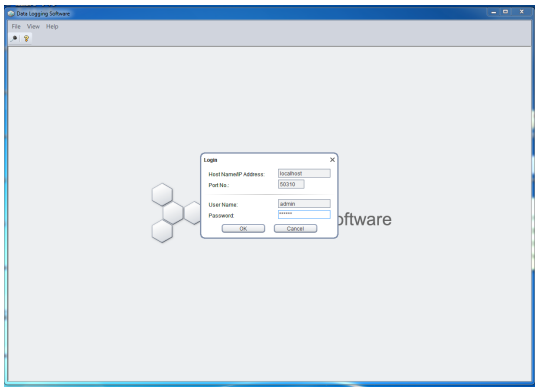
Note that at the GA10 project level, users can be assigned one of four project access privileges: Owner, Manager, Operator, and Monitor. These privileges are assigned for each project using Details Settings mode.
For details, see **page 3-30**.

6.2 Managing User Status

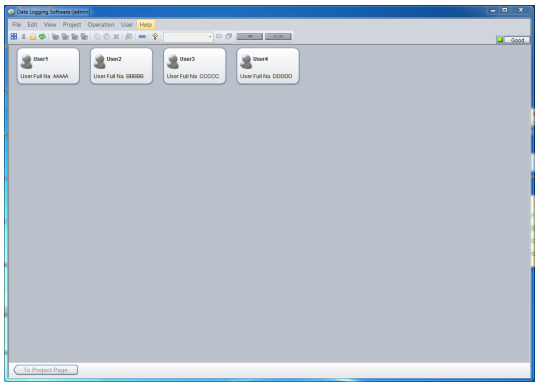
6.2.1 Using the User Management Page

The administrator can view the status of other users on the User Management Page.

1. Start the client, and log in to the server with GA10 administrator privileges.

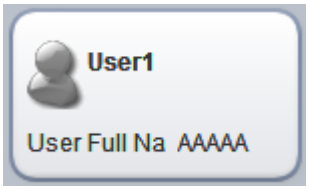


2. On the **View** menu, click **User Management Page**.
   Or, click the icon.
   The User Management Page appears.

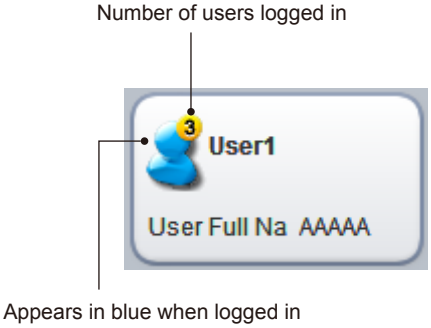


3. Check the user status by looking at the icons (see below).

Not logged in



Logged in



6.3 Changing User Information

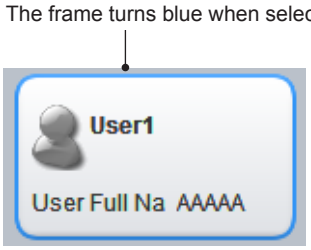
This section explains how to change the user full name and password. This procedure can also be performed by a user who is logged in.

6.3.1 How the Administrator Changes Other User Information

The administrator performs the following procedure to change the full name and initialize the password of a user.

1. Follow steps 1 and 2 in section 6.2 to display the User Management Page.

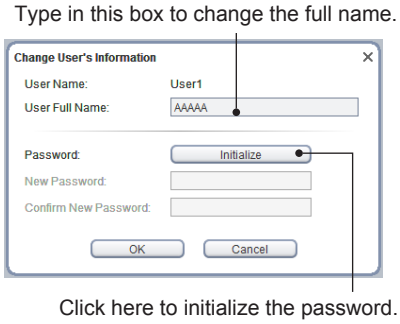
2. Select the user you want to change.
   The user is selected.



3. Double-click the selected user.
   The Change User's Information dialog box opens.

4. To change the full name, type the new name.

   To initialize the password, click **Initialize**.



5. Check the information, and click **OK**.
   The full name or password will be changed.

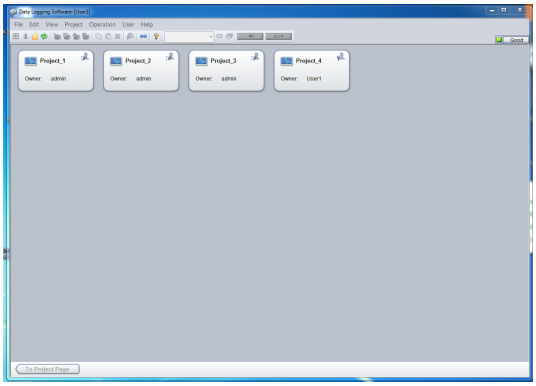
Note

You cannot change the information if the applicable user is logged in or if the user has been deleted from another client.

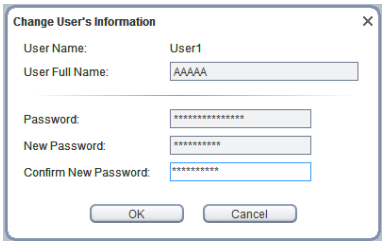
6.3.2 How Users Change Their Information

The following example shows how the administrator or a user changes his or her full name and password.

1. Start the client, and log in to the server.
   The Project List Page appears.



2. On the **User** menu, click **Change Information**.
   The Change User's Information dialog box opens.
3. Change the full name or password, view the changes, and click **OK**.
   To change the password, type the current and new passwords.



Note

- You can change the full name and password simultaneously.
- Enter the password using 4 to 30 alphanumeric characters..

The default values of the settings in the Change User's Information dialog box are shown below.

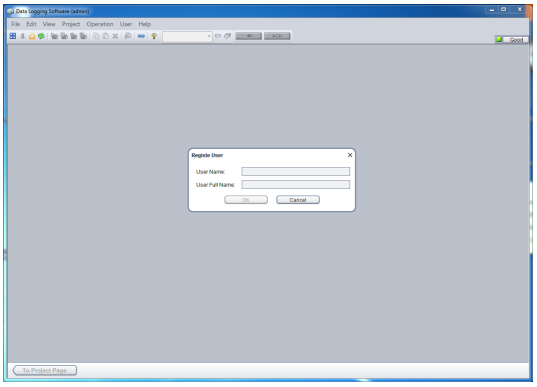
Item	Initial value
Full Name	User full name before change
Password	Nothing is displayed.
New Password	Nothing is displayed.
Confirm New Password	Nothing is displayed.

6.4 Registering and Deleting Users

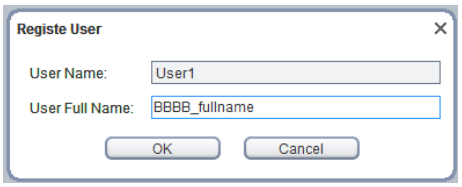
Only the administrator can register and delete other users.

6.4.1 Registering a New Users

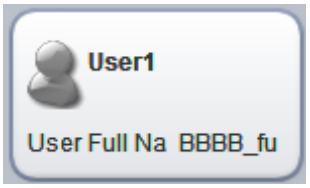
1. Start the client, and log in with the administrator account that you created earlier.
2. On the **View** menu, click **User Management Page**.
   Or, click the icon.
   The User Management Page appears.
3. On the **User** menu, click **Register New User**.



   The Change User's Information dialog box appears.
4. Type the user name and user full name that you want to register.
   Enter a name that is easy for the administrator to identify.



5. Check the entered information, and click **OK**.
   The user is registered, and an icon is added in the window.



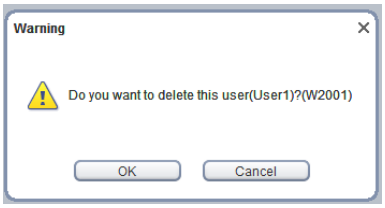
6. In the case of an administrator, on the **File** menu, click **Logout** to log out.

A registered user can log in without a password.
Follow the instructions in **6.3.2 How Users Change Their Information** to set a password.

6.4.2 Deleting a User

You cannot delete a user that is logged in.
We recommend that you check the user access privileges before deleting the user.

1. Follow steps 1 and 2 in section 6.2 to display the User Management Page.
2. Select the user you want to delete.
   The user is selected.
3. On the **Edit** menu, click **Delete**.
   Or, click the icon.
   A warning message appears.

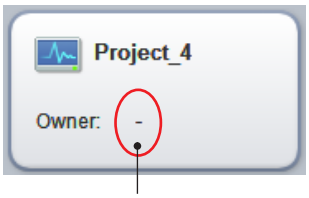


4. To proceed, click **OK**.
   The user will be deleted.

6.4.3 Changing a Project Owner

If you delete an owner user

If the administrator deletes a user, the access privileges granted to the user is lost. If the deleted user had been a project owner, the project will no longer have any owner. This condition is displayed as follows.



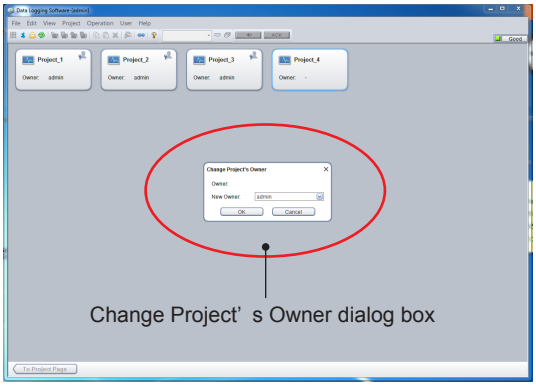
Displays a dash when there is no owner.

To change a project owner (specify a new owner), follow the procedure below.

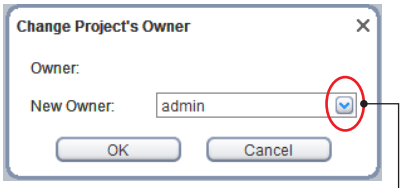
Note

Only the owner of the relevant project or the administrator can change the owner.

1. Display the Project List Page.
   On the **View** menu, click **Project List Page**. Or, click the icon.
2. Select the project you want to change.
3. On the **Project** menu, click **Modify Owner**.
   A Change Project's Owner dialog box appears.



4. From the **New Owner** list, select a user.
   Any user registered in the server can become a project owner.



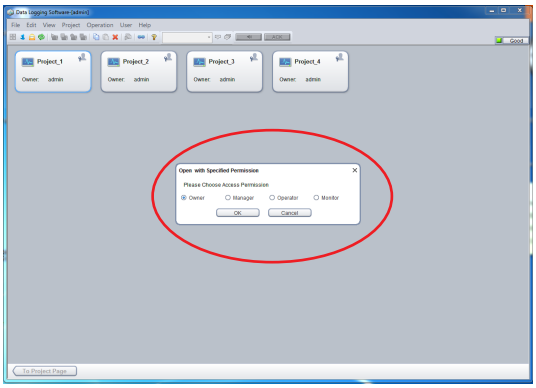
Select a new owner.

5. After selecting the new owner, click **OK**.
   The owner will be changed.

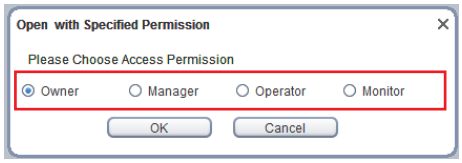
6.4.4 Opening a Project at a Specific Privilege Level

A user assigned to a project can open the project at a privilege level that is lower than the assigned privilege level.

1. Display the Project List Page.
2. Select a project.
3. On the **Project** menu, click **Open with Specified Permission**.
   An Open with Specified Permission dialog box appears.



4 Select the privilege level that you want to use to open the project.
You can select any level up to your assigned level.
The following figure is an example of a user who is assigned the Manager level. The user cannot select the Owner level, because it is higher than the Manager level.



5 Click **OK**.
The dialog box closes, the Project Page appears.

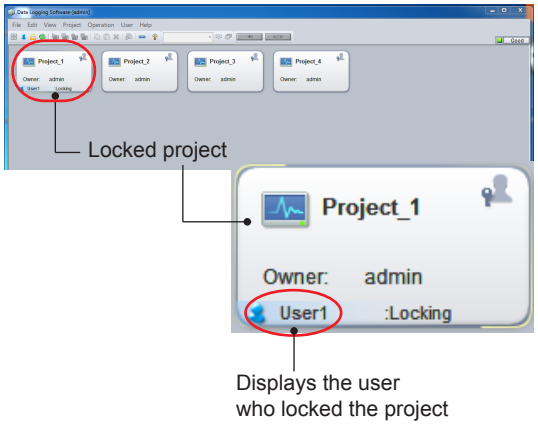
Note

Only the operations allowed at the specified privilege level can be used in the project. However, if the project is locked, users other than the user who applied the lock can only access the project at the Monitor level.

6.4.5 Unlocking a Project by Force

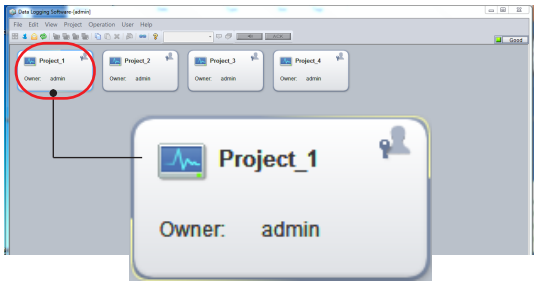
The administrator can only unlock locked projects.

1 On the Project List Page, select the locked project.



2 On the **Project** menu, click **Unlock Project Forcibly**.
A confirmation message for unlocking appears.

3 To proceed, click **OK**.
The dialog box closes, and the name of the user who locked the project disappears from the project.



Blank

Chapter 7 Troubleshooting

7.1 Messages That GA10 May Display

Messages may appear on the screen during operation. This section describes the messages and how to respond to them.

Messages

Code	Message	Description and Solution
M1001	OK to switch to detail setting mode? Unavailable to back to simple setting mode.	------
M1002	Do you want to start the monitoring all at once?	------
M1003	Do you want to stop the collecting all at once?	------
M1004	Do you want to start the recording all at once?	------
M1005	Do you want to stop the recording all at once?	------
M1006	Do you want to stop the recording?	------
M1007	Do you want to log out?	------
M1008	Do you want to enforce to be unlock?	This is a message that asks the administrator to confirm the unlocking of the locked project.
M1009	Do you want the user(%s)'s password to be initialized?	This is a message that asks the administrator to confirm the initialization of a user password. xxx indicates the name of the user whose password will be initialized.
M1010	Trial version is time up, operation is prohibited.	This message appears when a client accesses the server after the server trial period has expired.
M1011	Successed in Activation.	This message indicates that the client license has been registered successfully.
M1012	Server is activated. Please restart server.	After the server license registration is complete, the server needs to be restarted.
M1013	Option is added to server. Please restart server to enable option.	After an option is added to the server, the server needs to be restarted.
M1014	Is it OK to exit?	This message asks whether you want to close the client.
M1015	Device structure changed. OK to perform auto-assignment of tag and display group information?	This message asks whether you want to initialize the tag and display group information and automatically assign tags to display groups when the Devices List information is updated.
M1016	OK to update the selected device's channel information? (Updated tag information will appear in the tag settings screen.)	This message asks whether you want to update the device channel information. If you click OK, GA10 will access the selected device, retrieve its channel information, and reflect the information on the Tag Setting Page.
M1017	Update the selected tag information?	This confirmation message appears when on the Tag Setting Page, you click Refresh on the View menu. Click OK to update the tag information.

Warning Messages

Code	Message	Description and Solution
W2001	Do you want to delete this user(%s)?	This message asks whether you want to delete the registered user. xxx indicates the name of the user that will be deleted.
W2002	Do you want to delete this device(%s)?	This message asks whether you want to delete the device from the Devices List on the Device Setting Page or the Registered Devices List. xxx indicates the name of the device that will be deleted.
W2003	Do you want to delete this data file(%s)?	This message asks whether you want to delete the data file from the Data files Page. xxx indicates the name of the data file that will be deleted.
W2004	Do you want to delete the Project(%s)?	This message asks whether you want to delete the project. xxx indicates the name of the project that will be deleted.
W2005	The release number(%s)of handled meters is out of support.	The release number of the device is not supported. Thus, proper data collection cannot be guaranteed. Consider updating the firmware or using a supported device. For the supported models and versions, See the General Specifications (GS 04L65B01-01EN).
W2006	Total number of channels of registered devices exceeded the supported range.	This message notifies that when you are registering a device to the device list or updating the device information, the total number of channels of registered devices exceeds the number of tags that can be supported. Click OK to proceed with the operation.

Error Messages

Code	Message	Description and Solution
E3001	Unable to connect to the specified server.	Check for problems in the communication path to the server and IP address and port number settings. If you cannot connect to the server, stop the server firewall, or register DFMServer.exe and DLGServer.exe as exceptions in the server firewall configuration.
E3002	Login failed. Please confirm the user name or the password.	GA10 is connected to the server, but the user information for logging in is not correct. Check the user name and password that you have entered.
E3003	Connected clients has reached maximum, you can not log in.	Wait for the other client to log out.
E3004	Unable to connect to the server.	Check for problems in the communication path to the server.
E3005	The user name already exists, the user can not be registed.	A user with the same name is already registered. Check the user name, and register with a different name.
E3006	The password is incorrect.	The password that you entered for changing the password is incorrect. Check the current password, and re-enter it.
E3007	Please enter at least four characters for the password.	Enter 4 to 30 characters for the password.
E3008	The new password and the comfirmed password does not match.	Enter the new password and confirmation password so that they match.
E3009	You can not delete the logged user.	Delete the user after the relevant user logs out.
E3010	Users to change is logged into the server. The basic information can not be changed.	Modify the basic information after the relevant user logs out.
E3011	User to be initialized is logged in to the server, user can not be initialized.	Initialize the user after the relevant user logs out.
E3012	The maximum number of logins has been reached, the user can not log in.	Delete registered users first, and then register additional users.
E3013	Since the Project name you entered already exists, the project can not be created.	A project with the same name is already registered. Check the project name, and register with a different name.
E3014	Since the Project name you entered already exists, you can not change it.	A project with the same name is already being used. Check the project name, and change to a different name.
E3015	The Project which is opening, can not be deleted.	Delete the project after closing the relevant project.
E3016	The Project which is running, can not be deleted.	Delete the project after stopping the relevant project.
E3017	The maximum number of registered devices has been reached ,the device cannot be registered.	Delete any of the devices registered in the server first, and then register the new device.
E3018	The equipment in use can not to be removed.	The device that you want to delete is being used in a project. Check that the device is not being used in another project. Delete the device from the Devices List on the Device Setting Page of other projects, and then delete the device.
E3019	Original owner is opening projects, you cannot change the owner.	When the administrator tried to change the owner of a project, the current owner had the project opened. Change the owner after the current owner closes the project.
E3020	Server can not receive device information.	Check the information for accessing the device and the communication path between the server and device.
E3021	Fail to create record folder.	The specified drive does not exist. Change the data file save destination folder.
E3022	Failed to start Universal Viewer.	Check whether Universal Viewer is installed in the PC.
E3023	An error occurred while reading the file.	Failed to load the file when importing a project or tag information. Check that the file for importing is correct.
E3024	An error occurred while writing the file.	Check that the export destination folder is not set to read-only and that there is enough free disk space.
E3025	User manual does not excit in the specified location.	Place the PDF manuals in the client installation folder.
E3026	Failed to start Adobe Reader.	Check whether Adobe Reader is installed and the version.
E3027	Simultaneous running projects has reached the maximum number, failed to start monitoring.	The number of running projects in the server has reached the maximum number. Stop data collection in other projects.
E3028	Because the maximum concurrent number of connected devices is reached, collecting cannot start.	Data collection cannot be started because the maximum device connections will be exceeded. Stop data collection in other projects or change the data collection device.
E3029	Because the maximum device number that can be registered is reached, the Project can not be created.	Delete any of the registered projects first, and then register the new project.
E3030	Because the maximum number of open projects is reached, the project cannot be opened.	The number of projects that the client has opened has reached the maximum number. Close any of the opened projects.
E3031	Failed to delete data file.	Another client may be using the data file that you want to delete.
E3032	Failed to open data files.	Update the information on the Data files Page, and check that the relevant data file exists.

Code	Message	Description and Solution
E3033	Fail to launch web browser.	A Web browser may not be installed.
E3034	Operation failed because there is no right to access Project.	Ask the project owner to grant project access privileges.
E3035	Operation failed because the target user does not exist.	The user may already have been deleted. Update the information on the User Management Page, and check whether the user exists.
E3036	Fail to import project because registered devices reach the maximum number.	Delete unneeded devices from the Registered Devices List.
E3037	Project is closed, because Project lock status is released forcibly.	To use the project, open it again.
E3038	Operation failed because the project is locked by another user.	Use the project after the project is unlocked.
E3039	Specified new owner does not exist, you can not change the owner.	The user may already have been deleted. Set the new owner to an existing user.
E3040	Operation failed because Project is deleted.	The project may already have been deleted. Update the information on the Project List Page, and check that the project exists.
E3041	Serial no is invalid. Activation failed.	Check the license number, and enter it correctly.
E3042	Server has not been activated. Adding option to software failed.	Register the server license first, and then add options.
E3043	Tag upgrade option's serial no is invalid. Fail to add option's serial no.	Adding the option would cause the number of tags to exceed the maximum recording tags in the project. In the server information dialog box, check the current number of tags, and check whether the option that you tried to add is appropriate.
E3044	Part of the data files can not be deleted.	Some of the data files that you tried to delete could not be deleted. They may be in use.
E3045	Part of the data files can not be opened.	Some of the data files that you tried to open could not be opened. Update the information on the Data files Page, and check that the data files exist.
E3046	Failed in registration. The administrator authority is required. Please restart as an administrator or run as administrator and restart.	Log on again as a Windows administrator. Or, choose Run as administrator when starting Data Logging Software. (In Windows 7, right-click the software icon, and click Run as administrator.)
E3047	Insufficient memory available to the OS. Operation failed.	Try the following: • Stop other running programs. • Reduce the number of simultaneously running projects. • Increase the PC RAM. • If you are using a 32 bit edition, try a 64 bit edition.
E3048	Since the number of tags in the imported project configuration information exceeded the number of tags supported by the current server,failed to import.	The number of tags in the project that you are trying to import exceeds the number of tags handled by the current server. Consider increasing the number of tags handled by the server.
E3049	Failed to operate some projects or all project at once.	If Start Monitoring Simultaneously cannot be executed, it could be any of the following reasons. • The number of simultaneously running projects or simultaneously connected devices exceeds the limit. • There is not enough available memory on Windows. If Start Recording Simultaneously cannot be executed, it could be any of the following reasons in addition to the reasons listed above. • The data save destination folder failed to be created. Close projects that do not require data collection. To start recording, change the data file save destination folder.
E3050	Insufficient memory available to the OS. Project will close.	Try the following: • Stop other running programs. • Reduce the number of simultaneously running projects. • Increase the PC RAM. • If you are using a 32 bit edition, try a 64 bit edition.
E3051	Fail to start monitoring because the necessary setting is not correct.	There is an error in the information that is used during data collection. Check for errors in Modbus device definition files.
E3052	Operation failed because device has been deleted.	Update the device information on the Registered Devices List.
E3053	Searching is not allowed because auto-search in progress.	Another client is searching devices with different search conditions. Wait for the search operation to complete, and try searching again.
E3054	Failed to update the information of some specified tags or all tags.	Check the communication status of the device used by the tag to be updated.

Code	Message	Description and Solution
E3055	Cannot write to specified recording folder.	Below are possible reasons. Check the condition of the save destination. • There is not enough free space on the data save destination drive. • If the data save destination is an external storage device, the device is not inserted properly or is removed. • The data save destination is set to read-only. • The data save destination drive is broken. • A location (folder) that is restricted by the operating system of the server is specified.
E3056	Connecting this version's server is not available.	Make sure that the version of the added client is the same as the server version. Download the latest version of the software from the following URL: **www.smartdacplus.com/software/en/**

7.2 Frequently Asked Questions (FAQ)

Q1 Can the server and client be installed and run in the same PC?

A1

Yes. The server and client can be installed in the same PC or in different PCs.

Q2 Is there a way to back up the recording data files automatically?

A2

You can use the mail transmission feature to send generated data files as email attachments. You can store the data files as back up in the device receiving the email messages.

Q3 The communication between the server and a data collection device was interrupted and then restored. How does the server behave when communication is restored?

A3

Resuming data collection and recording

The server will retry to connect approximately every 30 seconds. When reconnection is successful, the server resumes data collection and recording.

Recording data

The way that the server handles recording data when communication is restored varies depending on whether data is being collected in PC time or device time.

- **If data is being collected using PC time**

  The data during which communication was not possible will not be recorded.
- **If data is being collected using device time**

  After communication is restored, the server prioritizes the collection of data that can be gathered in real time through communication. Then, the server collects data that could not be collected from devices and fills the missing data in the recorded data files. This function is called *backfill*. Backfill only works when the necessary conditions are met. If the conditions are not met, the data during which communication was not possible will not be recorded. See **Q4**.

Q4 How does backfill work?

A4

When a communication error occurs between a server and device, data dropout occurs in the data file that the server is recording. Backfill is a function that fills the dropped data in the recording file by retrieving the missing data from the device after the system recovers. Data is retrieved automatically from the device when the following conditions are met.

Operating conditions

On the GA10 side

- Applicable data: Binary data (Excel data is not included)
- Data time is set to Device time.

On the connected device side

- Applicable devices: GX10, GX20, GP10, GP20, DX1000, DX2000, DX1000N, DX1000T, DX2000T, FX1000, MV1000, MV2000
- Internal memory contains the event data file corresponding to the data loss location.
- The recording interval of the event data file is the same as the acquisition interval of the device.
- FTP transferring of files is enabled.(FTP server function: ON, Port number: 21)
- The multi batch function is not in use.

When the communication interference is eliminated, the backfill function operates automatically. The restored data is saved as a new file, and you can view it on the Data files Page. Marks that indicate that backfill has been performed are added to the beginning and end of the restored section of the data.

In the case of a short communication interference,* data loss may be restored even when the above settings are not specified. In such a case, GA10 does not create a new file but writes directly to the recording file.

* The length of interruption time that makes this operation possible varies depending on the connected device.

Note the following points.

- **Handling of files collected by backfilling**

  Files collected by backfilling are the same as normal data files except for the point given below.
  - The file division conditions specified on the recording setting page do not apply. Therefore, the files may become larger than normal data files.
- **Other information**
  - Backfill is not performed if a communication error or other error had occurred at the start of recording.
  - If a backfill operation cannot start due to a device access failure or other reason, GA10 will access the device every hour.
  - If the server stops during a backfill operation, the operation will stop. Even if the server is restarted, the previous backfill operation will not be performed.
  - If any of the following settings on the device is changed after starting data collection, backfill will not be performed.
    Acquisition interval, time, channel on/off, decimal place, unit, span (scale), alarm on/off, alarm type, and alarm value
  - If the advanced security function (/AS) option is enabled on the GX/GP, backfill operation is not performed for user levels other than monitor.

Q5 The server stopped or the server PC shut down and then restarted. How does the server operate after it restarts?

A5

Server recovery

The server retains the most recent status information just in case the host PC shuts down. When the PC restarts, the server recovers the operation based on the status information.

Resuming data collection and recording

The server resumes data collection and recording after it restarts unless the user had manually stopped the server or shut down the host PC.
Depending on the power-off condition, monitoring and recording after restarting will behave as shown in the following table.

Power-off Condition	Description	Monitoring/Recording after Restart	File Division Display Division	Backfill Operation
Sudden power-off	Unpredictable shutdown such as a power failure or PC power cord disconnection	Resume	Divide	No operation
Normal restart	Shutdown by a user, restart due to Windows updating, and the like	Stop	Divide	No operation

Monitoring and recording are not affected by logging off of the PC.

Q6 A communication error occurred between the client and server. Will data collection continue?

A6

Because data collection is performed between the server and data collection devices, the operation continues even when a communication error occurs between the client PC and server PC.
When a communication error occurs between the client PC and server PC, the client logs out from the server. The project that was open is closed. In this situation, if data collection was in progress and the project's Keep Lock State was set to ON, the project will remain locked.
To control the project before the communication recovers, perform either of the procedures below from a client on another PC using the same project.

- Open the project using the same user.
- Log in as an administrator. On the **Project** menu, click **Unlock Project Forcibly** to unlock the project.

Q7 Unable to control the project. Why?

A7

Below are possible reasons.

- The user is not assigned privileges to control the project. → Open the project using a user who has privileges to control the project, such as Owner, Manager, or Operator.
- The project is locked. → If an owner, manager, or operator user is logged in, the project is locked. Other users can only monitor the project. Wait until the other user using the project closes it.
- The project is locked. → If data collection is in progress and the project's Keep Lock State is set to ON, the project remains locked even when an owner, manager, or operator closes the project. To control the project, perform either of the following procedures.
    - Ask the user who locked the project to unlock the project.
    - Clear the Keep Lock state.

Q8 I forgot the user password. What do I do?

A8

If the administrator password is lost, there is no recovery method. Contact your nearest YOKOGAWA dealer.
If a user password is lost, the administrator can initialize the password. Then, the user can log in with the initialized password (blank) and set a new password.

Q9 The device data and the data collected and recorded by the software are not synchronized. Why?

A9

Data collected using Device time is recorded as-is by the software. In this situation, the device data and the collected and recorded data are synchronized.
However, data collected using PC time are timestamped with the PC time and the values are adjusted accordingly. In this situation, the device data and the collected and recorded data based on PC time may not be synchronized.

Q10 Can the recorded data be printed?

A10

Data files can be printed using Universal Viewer. Universal Viewer is supplied with this software and installed along with this software.

Q11 Device settings were changed. At what point are the changes applied to data collection?

A11

Changes to devices before data collection is started

This software retrieves device information when the device is registered to the Device List. If this information is different from the actual device information at the start of data collection, the software will collect data but will handle it as invalid data.
Check the following settings and match them.

Channel data type, unit, span, decimal place, alarm type, and alarm value

You can use **Update Setting** on the Device List to update the settings.

Changes to devices during data collection and recording

If you change the device settings during data collection and recording, the changes will not be reflected to the software. Stop the data collection, apply the setting changes using either of the methods below, and restart the data collection.

- Execute Update Setting of the devices in the devices List.
- Register the device again.

However, if data is being collected using Device time and you change the device's acquisition interval, the software will reset the entire monitor data, restart monitoring, and stop recording.

Do not change the time on the device after starting data collection and recording, because doing so will cause adverse effects on the monitor screen and recorded data.

Q12 What is the difference between setting the Data time to PC time and setting the Data time to Device time?

A12

For information on the different data collection conditions, see also **"Setting Data Collection Conditions" on page 3-19**.
The following table summarizes the major differences. For a detailed explanation, see the following pages.

Differences / Mode	Description	Backfill	Collection and Record Interval	Display		Saved Data Files
				Trend Monitor	Alarm Overview	
PC time	Time on the server PC	No	Select from available options	No display limitations because all the data can be displayed on the same time axis.		Data can be saved to a single file.
Device time	Time on the device	Yes (fills dropped data using data on the device)	The interval on each device is used, so it is not possible to specify a single interval.	If there are multiple devices with different times or scan intervals, Monitor Sets are subdivided to display each combination of device and scan interval..	The page is subdivided and a list is displayed for each device.	Files are divided by a combination of device and scan interval.

What is PC time?

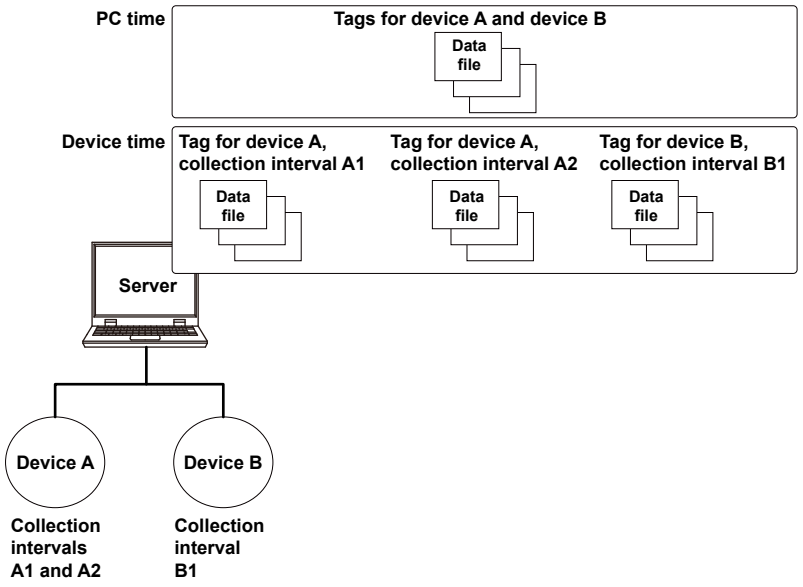
PC time is the time information that the server PC uses. In PC time mode, the server attaches PC timestamps on the data collected from devices. This data is displayed on the Monitor Page and saved in recording files.

- Data collected using PC time will not necessarily be synchronized to the data of the corresponding devices.
  ▶ Q9
- The timestamps attached to data in PC time mode are determined so that data collection would always occur at midnight (00:00:00).
- The data collection interval and record interval are specified on GA10.
- The data of all tags is saved to the same file.

What is Device time?

Device time is the time information that the data collection device uses. In Device time mode, the server collects and records data at the data acquisition intervals of devices. If there are multiple acquisition intervals in a single device, data is collected and recorded at each acquisition interval. Device data and collected data are synchronized (the values and timestamps match).

- **Data collection and recording**
  - Data is collected separately for each device and for each data collection interval.
  - Data is collected and recorded at the devices' data acquisition intervals. You cannot specify the data collection interval or record interval on GA10.
  - Data is saved to separate files for each device and for each data acquisition interval.



The device number, device name, and device acquisition interval are included in the names of data files. Below is the file name format when date and time are included.
FileName-DeviceNo-DeviceName-Interval-YYYYMMDDhhmmss.ext
FileName: The file name string specified by the user
DeviceNo: Device number on the Device Setting Page
DeviceName: Device name on the Device Setting Page
Interval: The acquisition interval of each device

- **Monitor**
  The trend monitor displays data based on a single time axis. If there are multiple devices, the Monitor Set will be divided and waveforms in the display group will be displayed in windows divided at the interval level. Only up to four divided windows can be displayed. Anything in excess will not be displayed.

  A similar behavior will also occur in alarm lists. The page will be divided, and the lists will be displayed separately at the device level.

- **Filling data dropouts**
  If data collection is set to Device time mode, the backfill function can be used.
  What is the backfill function? **Q4**

- **Mail transmission function**
  In the email transmission based on alarm occurrence and release, the software monitors relevant tags for each device and for each data collection interval to transmit email.
  In the email transmission based on the specified period, the software sends email for each device and for each data collection interval.
  In the email transmission based on the specified duration, the software calculates the duration and sends email for each device and for each data collection interval.

Index

Blank