Panasonic

Web Datalogger Unit
User's Manual

[Applicable model]
Model No. AFL1200

ARCT1F422E-6

Safety Precautions

Observe the following notices to ensure personal safety or to prevent accidents.
To ensure that you use this product correctly, read this User's Manual thoroughly before use.
Make sure that you fully understand the product and information on safety.
This manual uses two safety flags to indicate different levels of danger.

WARNING

If critical situations that could lead to user's death or serious injury is assumed by mishandling of the product:

-Always take precautions to ensure the overall safety of your system, so that the whole system remains safe in the event of failure of this product or other external factor.
-Do not use this product in areas with inflammable gas. It could lead to an explosion.
-Exposing this product to excessive heat or open flames could cause damage to the lithium battery or other electronic parts.
-Battery may explode if mistreated. Do not recharge, disassemble or dispose of fire.

CAUTION

If critical situations that could lead to user's injury or only property damage is assumed by mishandling of the product.

-To prevent excessive exothermic heat or smoke generation, use this product at the values less than the maximum of the characteristics and performance that are assured in these specifications.
-Do not dismantle or remodel the product. It could cause excessive exothermic heat or smoke generation.
-Do not touch the terminal while turning on electricity. It could lead to an electric shock.
-Use the external devices to function the emergency stop and interlock circuit.
-Connect the wires or connectors securely.
The loose connection could cause excessive exothermic heat or smoke generation.
-Do not allow foreign matters such as liquid, flammable materials, metals to go into the inside of the product. It could cause excessive exothermic heat or smoke generation.
-Do not undertake construction (such as connection and disconnection) while the power supply is on. It could lead to an electric shock.

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Before You Start

Operating environment (Use the unit within the range of the general specifications when installing)

・Ambient temperatures:0 ~ +55 °C
・Ambient humidity: 30% to 85% RH (at 25°C, non-condensing)
・For use in pollution Degree 2 environment.
・Do not use it in the following environments.
- Direct sunlight
- Sudden temperature changes causing condensation.
- Inflammable or corrosive gas.
- Excessive airborne dust, metal particles or saline matter.
- Benzine, paint thinner, alcohol or other organic solvents or strong alkaline solutions such as ammonia or caustic soda.
- Direct vibration, shock or direct drop of water.
- Influence from power transmission lines, high voltage equipment, power cables, power equipment, radio transmitters, or any other equipment that would generate high switching surges.(100mm or more)

Static electricity

- Do not touch connector pins directly to prevent static electricity from causing damage.
- Always rid yourself of any static electricity before handling this product.

Power supplies

- An insulated power supply with an internal protective circuit should be used. The power supply for the control unit operation is a non-insulated circuit.
- If using a power supply without a protective circuit, power should be supplied through a protective element such as fuse.
- If an incorrect voltage is directly applied, the internal circuit may be damaged or destroyed.

Power supply sequence

- Have the power supply sequence such that the power supply of the control unit turns off before the power supply for input and output.
- If the power supply for input and output is turned off before the power supply of the control unit, the control unit will detect the input fluctuations and may begin an unscheduled operation.

Before turning on the power

When turning on the power for the first time, be sure to take the precautions given below.

- When performing installation, check to make sure that there are no scraps of wiring, particularly conductive fragments, adhering to the unit.
- Verify that the power supply wiring, I/O wiring, and power supply voltage are all correct.
- Sufficiently tighten the connector screws.
- Set the mode selector to STOP mode.

Request concerning setting parameters storage

To prevent the accidental loss of setting parameters, the user should consider the following measures.

- Drafting of documents

To avoid accidentally losing setting parameters, destroying files, or overwriting the contents of files, documents should be printed out and then saved.

- Specifying the password carefully.

The password setting is designed to avoid settings being accidentally changed. If the password is forgotten, however, it will be impossible to change the settings even if you want to. When specifying the password, note it in the specifications manual or in another safe location in case it is forgotten at some point.

Precautions on using networks

- **If the product is used with networks for the applications which might lead to death or financial loss, it is recommended that you should take safety measures on designing the system, and by conducting double circuits and so forth.**

- This product supports various network connections such as internet, intranet or telephone network, however, we have no responsibility for the delay or inability of the operation caused by the failures of terminal equipments, communication service by telecommunication carriers or interruption of network, or errors in transmitting means, which are not our responsibility.

- If you make up the system using various networks such as internet, intranet or telephone network, **it is recommended to take measures for protecting against information leak, interception and unauthorized access** according to your network and application.

- Identification is necessary with a user name and password to gain access to this unit. Change the user name and password regularly in order to prevent the information from leaking.

- We do not accept liability for the following cases.

1) Guarantee for any kind of damages to the things/products, caused by physical defects of the product.
2) When the other conditions than the ones specified in these specifications exist for handling, storage and transportation of the product after the delivery.
3) When a damage is caused by the unpredictable phenomena with the technique that was practiced before the product delivery.
4) When a damage is caused by natural disasters such as an earthquake, flood, fire, war, and artificial disasters.
5) When necessary countermeasures are not taken to establish a system despite the precautions described in this specifications.

Chapter 1

Functions and Restrictions of the Unit

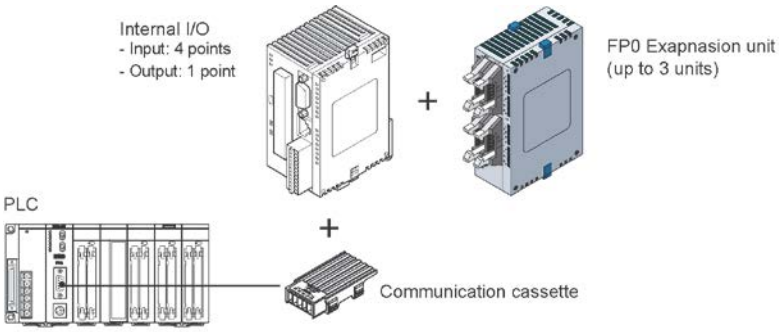
1.1 Features and Functions of the Unit

Web Datalogerr Unit has following 3 features.

1.1.1 Data Sampling and Storage Functions

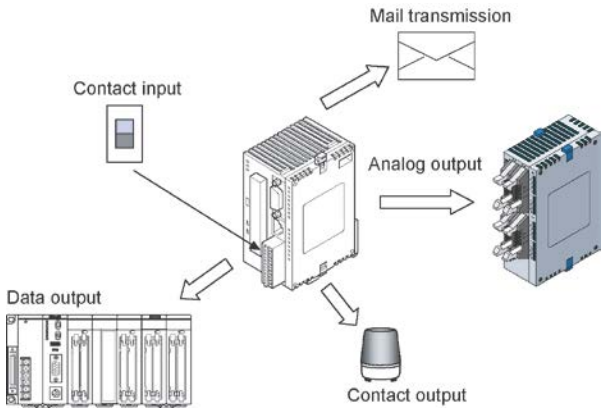
Information such as contact status (total ON time, total switching times), pulse values, analog values (average, minimum, maximum values) can be collected and stored.
Storage data can be saved in the internal memory (SDRAM) or a CF card in CSV format.

The unit supports the following input/output I/F for data sampling.
- Main I/O
- FP0/FP0R expansion unit
- PLC, Eco-power meter, etc. (A communication cassette is required.)



1.1.2 Mail Transmission and Data Setting Functions

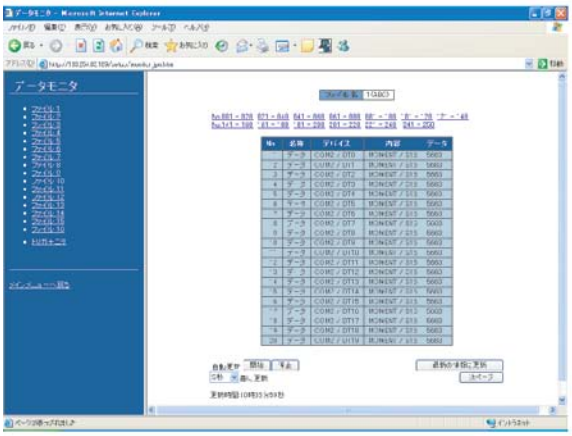
If an input signal meets the predefined condition, or if data exceeds a specified value, the following operations can be performed.
- Contact output
- Analog output
- Data output to connected PLCs
- Mail transmission
- Data storage
The history of trigger occurrence can be saved in a file.
[Example]

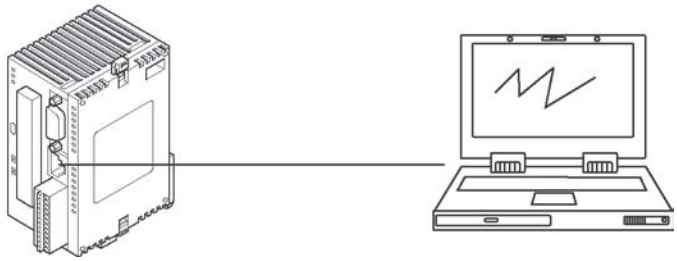


1.1.3 Monitoring Function

Data of Web Datalogger Unit can be monitored via network using a web browser.

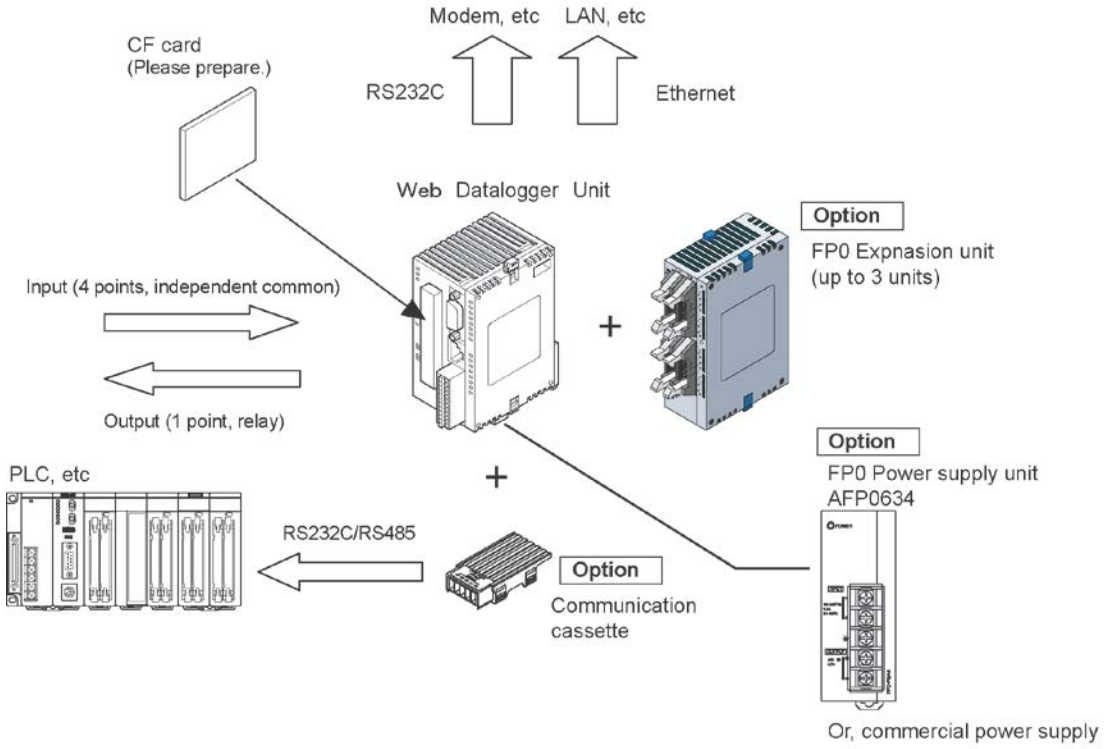
Monitor screen implemented as default





Note)
- Use Internet Explorer6.0 or later version as a browser.

1.2 System Configuration



1.3 Unit Types

1.3.1 Web Datalogger Unit

Name	No. of I/O points	Product No.
Web Datalogger Unit	Input: 4 points/Relay output:1 point	AFL1200

1.3.2 FP0R Expansion Unit

Name	Specifications					Product No.
	No. of I/O points	Power supply voltage	Input specifications	Output specifications	Connection type	
FP0R-E8 Expansion unit	8 points (Input: 8 points)	-	24V DC ± Common	-	MIL connector	AFP0RE8X
	8 points (Input: 4 points / Output: 4 points)	24V DC	24V DC ± Common	Relay output: 2A	Terminal block	AFP0RE8RS
					Molex connector	AFP0RE8RM
	8 points (Output: 8 points)	24V DC	-	Relay output: 2A	Terminal block	AFP0RE8YRS
	8 points (Output: 8 points)	-	-	Transistor output (NPN)0.3A	MIL connector	AFP0RE8YT
	8 points (Output: 8 points)	-	-	Transistor output (PNP)0.3A	MIL connector	AFP0RE8YP
FP0R-E16 Expansion unit	16 points (Input: 16 points)	-	24V DC ± Common	-	MIL connector	AFP0RE16X
	16 points (Input: 8 points / Output: 8 points)	24V DC	24V DC ± Common	Relay output: 2A	Terminal block	AFP0RE16RS
					Molex connector	AFP0RE16RM
	16 points (Input: 8 points / Output: 8 points)	-	24V DC ± Common	Transistor output (NPN)0.3A	MIL connector	AFP0RE16T
	16 points (Input: 8 points / Output: 8 points)	-	24V DC ± Common	Transistor output (PNP)0.3A	MIL connector	AFP0RE16P
	16 points (Output: 16 points)	-	-	Transistor output (NPN)0.3A	MIL connector	AFP0RE16YT
	16 points (Output: 16 points)	-	-	Transistor output (PNP)0.3A	MIL connector	AFP0RE16YP
FP0R-E32 Expansion unit	32 points (Input: 16 points / Output: 16 points)	-	24V DC ± Common	Transistor output (NPN)0.3A	MIL connector	AFP0RE32T
	32 points (Input: 16 points / Output: 16 points)	-	24V DC ± Common	Transistor output (PNP)0.3A	MIL connector	AFP0RE32P

1.3.3 High-performance Unit

Name	Specifications	Part No.	Product No.	Manual No.
FP0 A/D Converter Unit	<Input specifications> No. of channels: 8 channels Input range: Voltage: 0 to 5V, -10 to +10 V, -100 to 100 mV (Resolution: 1/4000) Current: 0 to 20 mA (Resolution: 1/4000)	FP0-A80	AFP0401	ARCT1F321
FP0 Thermocouple Unit	K, J, T, R thermocouples, resolution: 0.1°C	FP0-TC4	AFP0420	ARCT1F366
	K, J, T, R thermocouples, resolution: 0.1°C	FP0-TC8	AFP0421	
FP0 Analog I/O Unit	<Input specifications> No. of channels: 2 channels Input range: Voltage: 0 to 5V, -10 to +10 V (Resolution: 1/4000) Current: 0 to 20 mA (Resolution: 1/4000) <Output specifications> No. of channels: 1 channel Input range: Voltage: 0 to 5V, -10 to +10 V (Resolution: 1/4000) Current: 0 to 20 mA (Resolution: 1/4000)	FP0-A21	AFP0480	ARCT1F390
FP0 D/A Converter Unit	<Output specifications> No. of channels: 4 channels Output range: (Voltage output type) -10 to +10 V (Resolution: 1/4000) (Current output type) 4 to 20 mA (Resolution: 1/4000)	FP0-A04V	AFP04121	ARCT1F382
		FP0-A04I	AFP04123	

Note)FP0 RTD (Resistance-temperature detector) unit cannot be connected to Web Data Logger unit.

1.3.4 Power supply unit

Name	Specifications	Part No.	Product No.
FP0 Power supply unit	Input voltage: 100 to 240 V AC Free input Output capacity: 0.7A, 24 V DC	FP0-PSA4	AFP0634

1.3.5 Communication Cassettes

A removable communication cassette is used to perform serial data communication or to connect to PLCs.

Name	Description	Part No.	Product No.	Manual No.
FPΣ Communication cassette (1-channel RS232C type)	Equipped with 1-channel 5-wire RS232C port. The RS/CS control is available.	FPG-COM1	AFPG801	ARCT1F333E
FPΣ Communication cassette (2-channel RS232C type)	Equipped with 2-channel 3-wire RS232C port. Communication with two external devices is possible.	FPG-COM2	AFPG802	
FPΣ Communication cassette (1-channel RS485 type)	Equipped with 1-channel 2-wire RS485 port.	FPG-COM3	AFPG803	
FPΣ Communication cassette (1-channel RS485 and 1-channel RS232C type)	Equipped with 1-channel 2-wire RS485 port. Equipped with 1-channel 3-wire RS232C port.	FPG-COM4	AFPG806	

1.3.6 Related Software (Freeware)

Name	Description
IP address Search Tool Configurator WD	IP address search and setting tool for Web Datalogger Unit

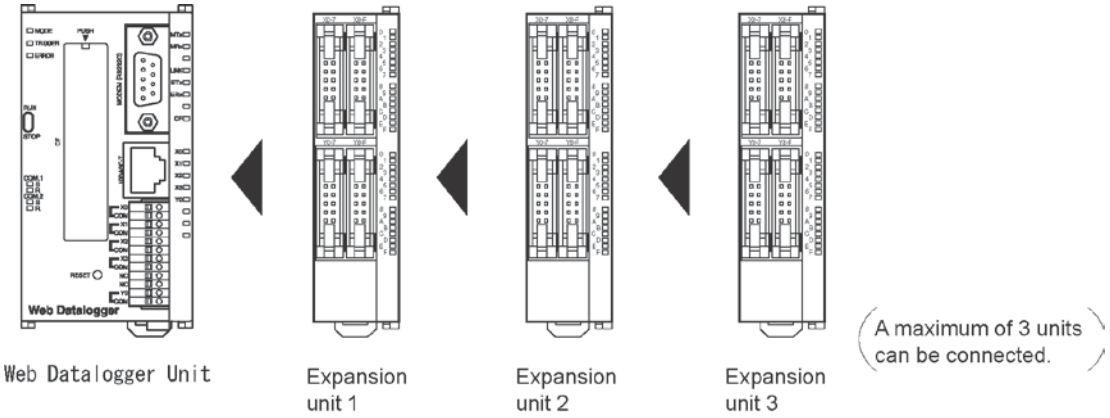
Note) This software can be downloaded from our website

1.3.7 Related Parts

Name	Description		Product No.
Terminal socket	Maintenance parts (Supplied with Web Datalogger Unit)		AFL8800
Battery for FPΣ	Necessary for storing collected data and holding the calendar timer function when the power for Web Datalogger Unit is off.		AFPG804
Power supply cable for FPΣ	Maintenance parts (Supplied with Web Datalogger Unit)	Cable length: 1 m	AFPG805
FP0 mounting plate (Slim type) (10 pcs)	Mounting plate to mount FP0/FP0R expansion unit on a panel vertically.		AFP0803
FP0 mounting plate (Flat type)	Mounting plate to mount Web Datalogger Unit on a panel horizontally.		AFP0804

1.4 Restrictions on Unit Combination

1.4.1 Restrictions on FP0/FP0R Expansion Unit



Up to three expansion units can be added on the right of the Web Datalogger Unit. These expansion units being either expansion units or high-performance units.
A combination of relay output and transistor output types is also possible.

Controllable I/O points

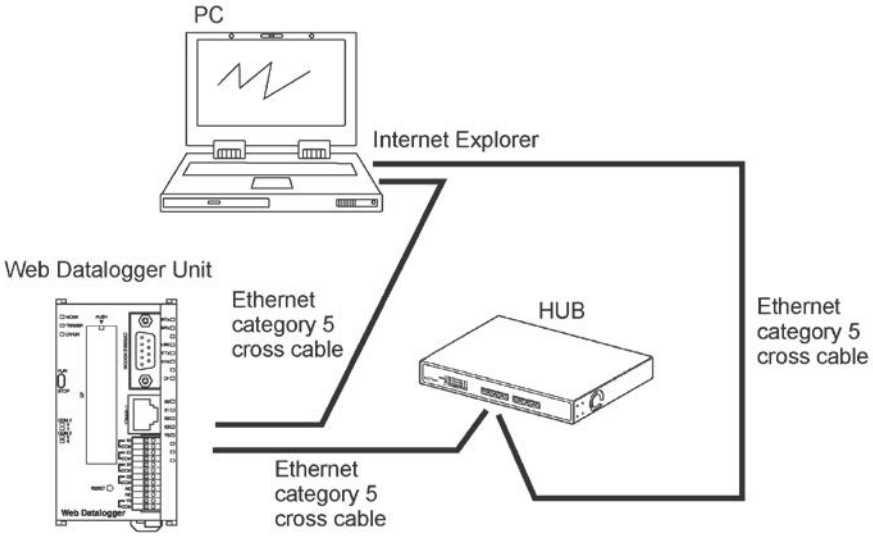
No. of I/O points when using control unit	No. of I/O points when using FP0 expansion unit
5 points (Input: 4 points/Output: 1 point)	Max. 101 points (Input: 52 points/Output: 49 points)

Note) This is the number of points when combining with the transistor type FP0 expansion unit.
FP0 RTD unit cannot be connected.

Note: Install the FP0 thermocouple unit on the right side of all other expansion units.

1.5 Operation Settings

1.5.1 Required Tools for Operation Settings



For the network setting such as IP address or setting for data such as collected data,
a general-purpose browser, Internet Explorer (Ver. 6.0 or later) is used.
Connect the Web Datalogger Unit and a personal computer directly with a category 5 Ethernet crossing cable, or connect them using Hub and a straight cable.

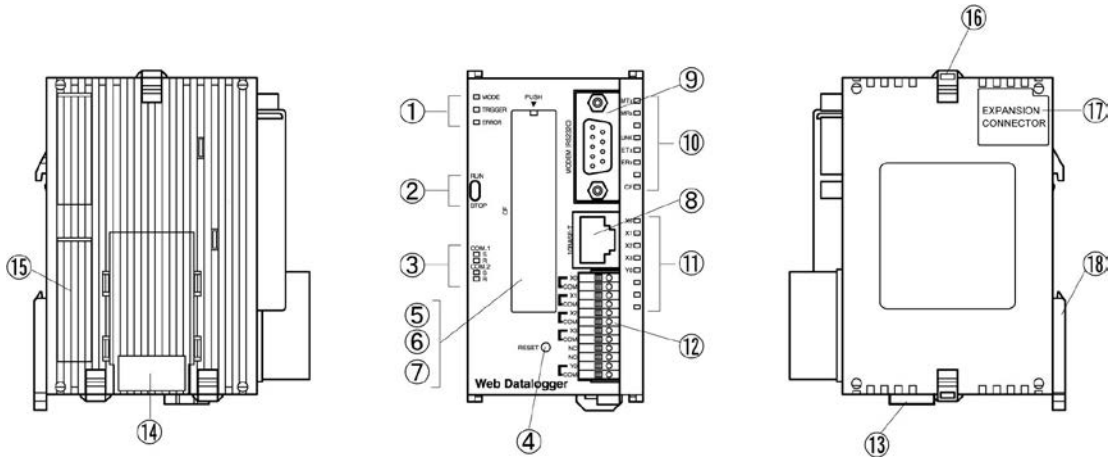
Reference: For information on the detailed settings,
<Chapter 6 Settings for Web Datalogger Unit>

Chapter 2

Specifications and Functions of Web Datalogger Unit

2.1 Part Names and Functions

2.1.1 Part Names and Functions



①**Status indicator LEDs 1**

These LEDs display the current operation status of Web Datalogger Unit such as RUN/STOP and ERROR/ALARM.

LED	LED and operation status
MODE (green)	Lights: RUN mode - When data is being collected or stored.
	Flashes: STOP mode - When collecting/storing data stops.
TRIGGER (green)	Lights: When a trigger occurs
ERROR (red)	Lights: When an error occurs

Reference: For information on the status indication when an error occurs,
<11.1.1 Status Indication by LEDs>

②**RUN/STOP mode switch**

This switch is used to change the operation mode of Web Datalogger Unit.

Switch	Operation mode
RUN (Position: Up)	RUN mode : Executes collecting and storing data.
STOP (Position: Down)	STOP mode : Stops collecting and storing data.

- Switching between RUN and STOP can be also performed by the setting from the Web screen.
- When performing switching from the Web screen, the setting of the mode switch and the actual mode of operation may differ. Verify the mode with the status indicator LEDs 1 (MODE).
- Restart Web Datalogger Unit to operate in the mode set with the RUN/STOP mode switch.

③**Communication status LEDs**

These LEDs display the communication status of the COM1 and COM2 ports.

LED		Description	LED and communication status
COM1	S	Transmitted data	Flashes: Data is being transmitted.
			Goes out: No data is transmitted.
	R	Received data	Flashes: Data is being received.
			Goes out: No data is received.
COM2	S	Transmitted data	Flashes: Data is being transmitted. (In case of 1-channel RS232C type, lights when the RS signal is on.)
			Goes out: No data is transmitted.
	R	Received data	Flashes: Data is being received. (In case of 1-channel RS232C type, lights when the CS signal is on.)
			Goes out: No data is received.

④**Reset switch**

It is used to initialize all settings. Turn on the power supply while this switch is on.

⑤**CF card cover**

Remove the CF card cover to remove/insert a CF card.

Note) Fit the CF card cover when the CF card is inserted. When the CF card cover is fitted, the unit accesses the CF card.

⑥**CF card socket**

Insert the CF card.

⑦**CF card access LED**

Lights while the unit accesses the CF card.

When the CF card cover has been fitted, the access state can be confirmed with the CF. LED of the status indicator LEDs 2.

⑧**Ethernet connector (RJ45)**

It is connected to perform Ethernet communication.

⑨**MODEM (RS232C) connector (D-SUB 9-pin)**

It is connected to perform modem communication.

⑩**Status indicator LEDs 2**

LED	LED and operation status
MTx (green)	Flashes: PPP communication data is being transmitted.
	Goes out: No data is transmitted.
MRx (green)	Flashes: PPP communication data is being received.
	Goes out: No data is received.
LINK (green)	Lights: Ethernet is connected.
	Goes out: Ethernet is not connected.
ETx (green)	Flashes: Data is being transmitted via Ethernet.
	Goes out: No data is transmitted via Ethernet.
ERx (green)	Lights: Data is being received via Ethernet.
	Goes out: No data is received via Ethernet.
CF (green)	Lights: CF card is accessed.
	Goes out: CF card is not accessed.

⑪**I/O indicator LEDs**
These LEDs displays the I/O status.

⑫**I/O terminal block**
It is used to connect the unit to an external I/O device.

⑬**Power supply connector (24 V DC)**
Supply 24 V DC. It is connected using the power supply cable (AFPG805) supplied with the unit.

⑭**Communication cassettes (option)**
These are the optional cassette-type adapters for communication. Any one of the followings can be installed.
- 1-channel RS232C type
- 2-channel RS232C type
- 1-channel RS485 type
- 1-channel RS485 and 1-channel RS232C type in combination

 **Reference:** <Chapter 3 Expansion Unit and Communication Cassettes>

⑮**Battery cover**
This cover is removed to mount the backup battery sold separately.
The calendar timer and stored data can be held with the backup battery.

 **Reference:** <5.7 Installation and Setting of Backup Battery>

⑯**Expansion hook**
This hook is used to secure expansion units. The hook on the right side is also used for installation on the flat-type mounting plate (AFP0804).

⑰**Right-side connector for FP0 expansion**
This is used to connect the FP0 expansion unit installed on the right side of Web Datalogger Unit to the internal circuit.
(The connector is located under the seal.)

⑱**DIN hook**
This hook enables the unit to attach to a rail at a touch. It is also used to install the unit on the slim 30 type mounting plate (AFP0811).

2.2 Input and Output Specifications

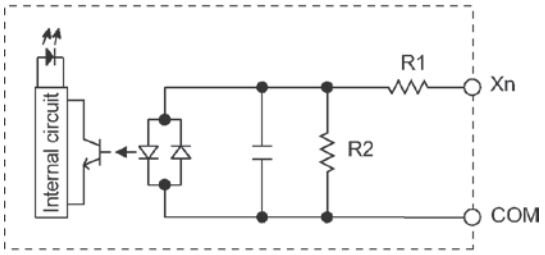
2.2.1 Input specifications

Input specifications (X0, X1, X2 and X3)

Item		Description
Insulation method		Optical coupler
Rated input voltage		12 to 24 V DC
Operating voltage range		10.8 to 26.4 V DC
Rated input current		Approx. 2.8 mA (at 12 V DC) Approx. 5.6 mA (at 24 V DC)
Input points per common		1 point/1 common (Either the positive or negative of the input power supply can be connected to common terminal.)
Min. on voltage/Min. on current		10.8 V DC/3 mA
Max. off voltage/Max. off current		2.4 V DC/1.3 mA
Input impedance		Approx. 4.3 kΩ
Response time	Off → On	1 ms or less
	On → Off	1 ms or less
Operating mode indicator		LED display

Note) This specification is applied when the temperature is 25°C.

Internal circuit



R1 = 4.3 kΩ R2 = 820 Ω

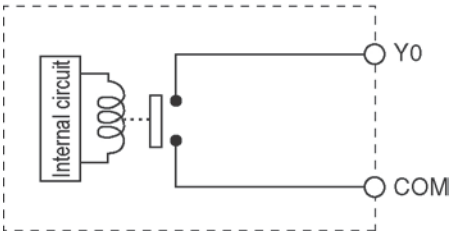
2.2.2 Output specifications

Relay output specifications (Y0)

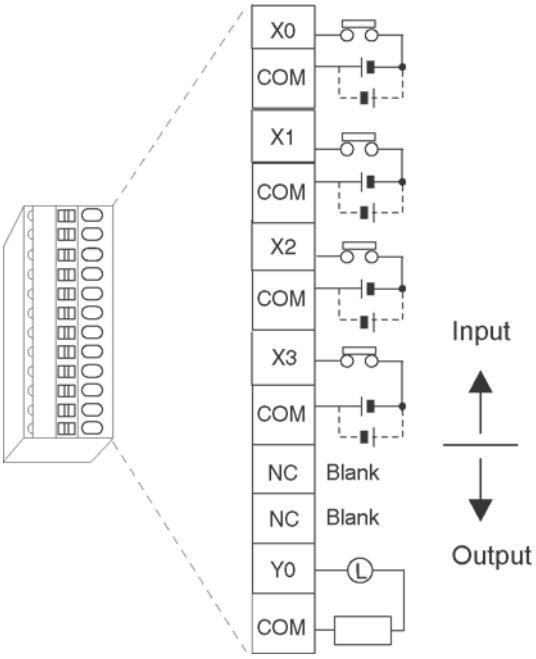
Item		Description
Output type		1a output
Rated control capacity:		2A 250V AC, 2A 30V DC Note)
Output points per common		1 point/common
Response time	Off → On	Approx. 10 ms
	On → Off	Approx. 8 ms
Lifetime	Mechanical	Min. 20,000,000 operations
	Electrical	Min. 100,000 operations
Surge absorber		None
Operating mode indicator		LED display

Note) Resistance load

Internal circuit



2.3 I/O Terminal Layout Diagram



Note) Each COM terminal of the input circuit is electrically independent.

Chapter 3

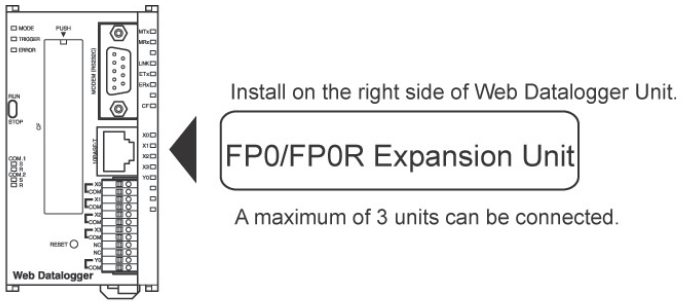
Expansion Unit and Communication Cassettes

3.1 Part Names and Functions

3.1.1 Type of Expansion Unit

Up to 3 FP0/FP0R expansion units (expansion I/O units and high-performance units) can be added to Web Datalogger Unit.

The FP0/FP0R expansion units are connected on the right side of the Web Datalogger Unit.

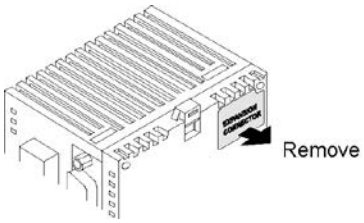


Web Datalogger Unit

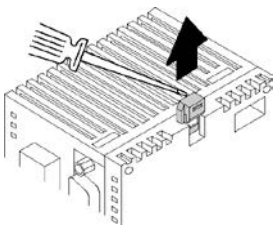
3.1.2 Installing FP0/FP0R Expansion Units

The FP0/FP0R expansion units (expansion I/O unit, high-performance unit) are connected to the right side of the Web Datalogger Unit.
Unit expansion is done using the right-side connector for FP0 expansion and the expansion hooks on the side of the unit.

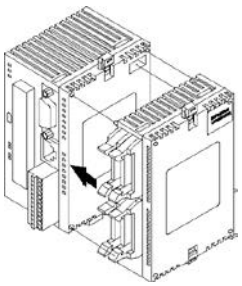
(1) Peel the seal on the right side of the unit to expose the internal right-side connector for the FP0 expansion.



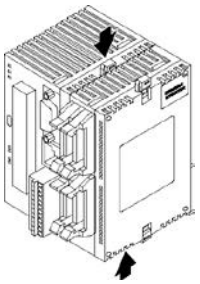
(2) Using a screwdriver or similar tool, pull out the top and bottom expansion hooks.



(3) Align the pins and holes in the four corners of the Web Datalogger Unit and expansion unit, and insert the pins into the holes so that there is no gap between the units.



(4) Press down the expansion hooks raised in Step (2) to secure the unit.



3.2 Types of Communication Cassettes

There are four types of communication cassettes, each having a particular field of application.

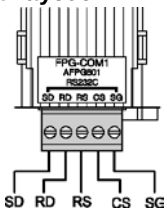
1-channel RS232C type (Product No.: AFPG801)

This communication cassette is equipped with 1-channel 5-wire RS232C port. it supports 1:1 serial communication.

The RS/CS control is also available.

Terminal layout

DLU: Web Datalogger Unit



Pin name	Name	Signal direction	Port
SD	Send Data	DLU→External device	COM1 port
RD	Receive Data	DLU←External device	
RS	Request to Send	DLU→External device	
CS	Clear to Send	DLU←External device	
SG	Signal Ground	—	

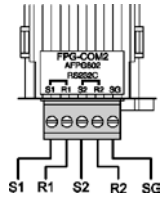
Note1) Data cannot be sent without the pin CS (Clear to Send). When using with a three-wire port, short-circuit the pin RS and CS.

2-channel RS232C type (Product No.: AFPG802)

This communication cassette is equipped with 2-channel 3-wire RS232C port. it supports 1:1 serial communication.

Communication with two external devices is possible.

Terminal layout

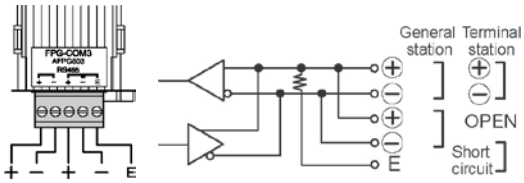


Pin name	Name	Signal direction	Port
S1	Send Data 1	DLU→External device	COM1 port
R1	Receive Data 1	DLU←External device	
S2	Send Data 2	DLU→External device	COM2 port
R2	Receive Data 2	DLU←External device	
SG	Signal Ground	—	COM1 port COM2 port

1-channel RS485 type (Product No.: AFPG803)

This communication cassette is equipped with 1-channel 2-wire RS485 port. it supports 1:N serial communication.

Terminal layout

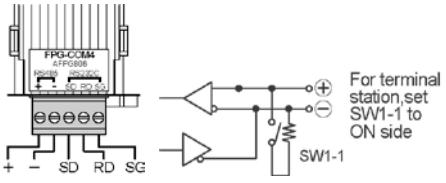


Pin name	Name	Signal direction	Port
+	Transmission line (+)	—	COM1 Port
−	Transmission line (-)	—	
+	Transmission line (+)	—	
−	Transmission line (-)	—	
E	Terminal unit setting	—	

1-channel RS485 and 1-channel RS232C combination type (Product No.: AFPG806)

This communication cassette is equipped with 1-channel 2-wire RS485 port and 1-channel 3-wire RS232C port. The RS485 port supports 1:N serial communication, and the RS232C port supports 1:1 serial communication.

Terminal layout



Pin name	Name	Signal direction	Port
+	Transmission line (+)	—	RS485 (COM1 port)
−	Transmission line (-)	—	
SD	Send Data	DLU→External device	RS232C (COM2 port)
RD	Receive Data	DLU←External device	
SG	Signal Ground	—	

Communication status LEDs

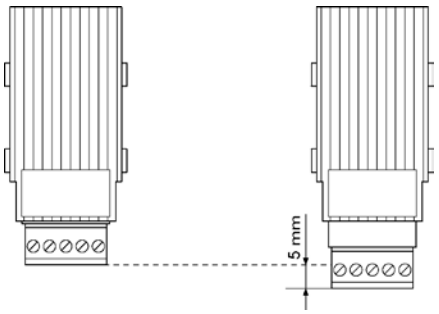
The indication of the Web Datalogger Unit is for 2-channel RS232C type. For the other types, refer to the following.

Indication of DLU	AFPG801	AFPG802	AFPG803	AFPG806
COM1 ■S	SD	SD	SD	RS485 SD
■R	RD	RD	RD	RS485 RD
COM2 ■S	RS	SD	Not used	RS232C SD
■R	CS	RD	Not used	RS232C RD

LED Communication:
Flashes
No communication:
Lights out

SD: Send Data (output)
RD: Receive Data (input)

Difference of dimensions



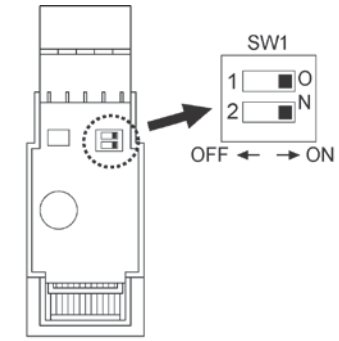
AFPG801
AFPG802
AFPG803

AFPG806
Note) This is 5 mm longer.

Setting of AFPG806 Switch

Only when using RS485 port (COM1)

It is necessary to set the built-in switch and the configuration setting of the unit both to specify the baud rate.



Backside of cassette

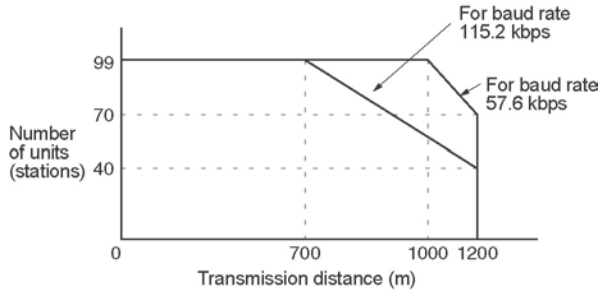
SW1-1 terminal resistance	OFF ON	General station (intial value)	OFF ON	Terminal station
SW1-2 Baud rate	OFF ON	19200 bps	OFF ON	115200 bps (initial value)

3.2.1 Communication Cassettes - Communication Specifications

Product No.	AFPG801	AFPG802	AFPG803	AFPG806	
Interface	**RS232C 1 ch** Note7)	**RS232C 2 ch** Note7)	**RS485 1 ch** Note7)	**RS232C 1 ch** Note7)	**RS485 1 ch** Note5) Note6)
Transmission distance	15 m	15 m	1200 m Note1) Note2)	15 m	1200 m Note1) Note2)
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps				19200, 115200 bps Note3) Note4)
Communication method	Half-duplex communication				
Synchronous method	Start stop synchronous system				
Communication format	Stop bit: 1 bit/2 bits				
	Parity: None/Even/Odd				
	Data length: 7 bits/8bits				
Data transmission order	Transmits from bit 0 character by character.				
No. of connected units	-	-	Max. 99 units	-	Max. 99 units

Note1) The transmission distance is limited by the specified baud rate and No. of connected units. When using a baud rate of 38400 bps or less,
the allowable settings are a maximum of 1200 m and 99 units.

RS485 Transmission distance limitation



Note2) When using a C-NET adapter, the maximum number of connected units is 32, and the baud rate is limited to 19200 bps or less.

Note3) When using the communication cassette AFPG806(COM4), the baud rate of its RS485 port should be defined by the Web Datalogger Unit and the dip switch in the communication cassette. The baud rate for the RS232C port can be set by the Web Datalogger Unit only.

Note4) The termination resistance for the RS485 port in the communication cassette AFPG806(COM4) is set by the dip switch in the communication cassette. There is no termination resistance at the RS232C port.

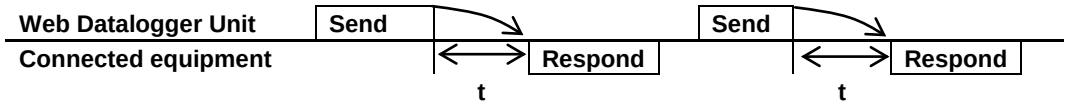
Note5) When connecting the FPΣ, the response time, i.e. the time after receiving a command until a response is returned, may be adjusted by the following instruction of the FPΣ if necessary..
(SYS1 MCOM1, WAITn n = 0 to 999 (Delay a response for [n] scan.)

Note6) When data is transmitted from Web Datalogger Unit via the RS485 communication of communication cassette AFPG803 or AFPG806(COM4), start the transmission of the data to Web Datalogger Unit after the time mentioned below passes at a receiver.

Note7) For wiring the RS232C, a shielded wire must be used to increase noise suppression.

Precaution When Performing RS485 Communication

When performing the RS485 communication with Web Datalogger Unit, Web Datalogger Unit occupies the communication line for a given time after transmitting data. Start the transmission to Web Datalogger Unit after the time mentioned below passes at a receiver.



Condition of t:

Communication condition	When using AFPG803	When using AFPG806
4800 bps	4.2 ms or more	Do not select.
9600 bps	2.1 ms or more	Do not select.
19200 bps	1.1 ms or more	1.1 ms or more
38400 bps	0.6 ms or more	Do not select.
57600 bps	350μs or more	Do not select.
115200 bps	200μs or more	200μs or more

Following adjustments are required depending on the types of connection equipment.

With FPΣ:

SYS1 instruction is available for FPΣ, which enables to change the time after receiving a command until a response is returned.

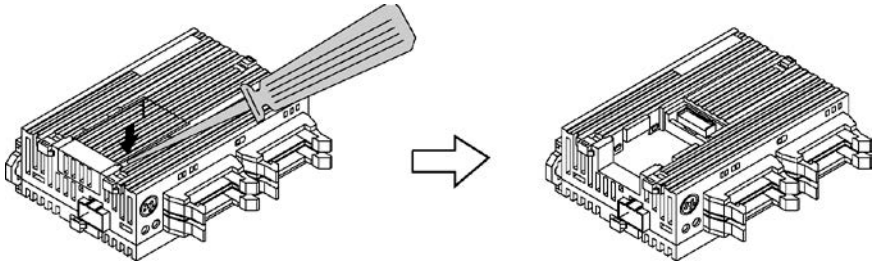
Reference: <FPΣ User's Manual ARCT1F333E>

3.2.2 Installation and Wiring

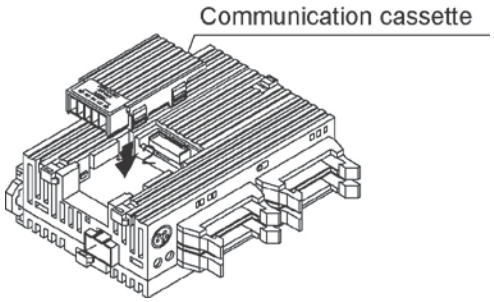
Installation of Communication Cassette

1. Turn off the power supply for the FPΣ before installing a communication cassette.

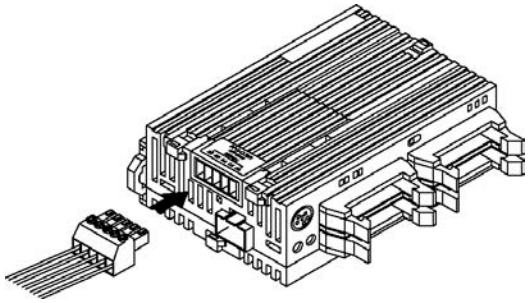
2. Remove the cover using a screwdriver.



3. Install the communication cassette.



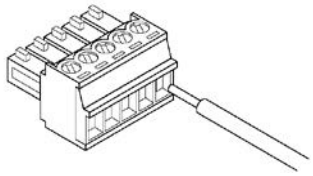
4. Plug in the communication connector.



Wiring

Accessory communication connector/Suitable wires

The communication cassette is supplied with a communication connector, which has a screw-type terminal block. Use the following items for wiring.



Accessory communication connector

If additional connectors are needed, use the communication connector manufactured by Phoenix Contact.

No. of pins	Phoenix Contact product ID	
	Model No.	Product No.
5 pins	MC1, 5/5-ST-3, 5	1840395

Suitable wires (Twisted wire)

No. of wires	Size	Cross-sectional area
1	AWG#28 to 16	0.08 mm^2 to 1.25 mm^2
2	AWG#28 to 18	0.08 mm^2 to 0.75 mm^2

Use the above wires shielded.
it is recommended to ground the shielded part.

Pole terminal

If you with to use pole terminals, Phoenix Contact Co. offers the following models.

Manufacturer	Cross-sectional area (mm^2)	Size	Part No.	
			With insulating sleeve	Without insulating sleeve
Phoenix Contact Co.	0.25	AWG #24	AI 0,25 – 6 BU	A 0,25 – 7
	0.34	AWG #22	AI 0.34 – 6 TQ	A 0,34 – 7
	0.50	AWG #20	AI 0,5 – 6 WH	A 0,5 – 6
	0.75	AWG #18	AI 0,75 – 6 GY	A 0,75 – 6
	1.00	AWG #18	–	A 1 – 60
	0.5×2	AWG #20 (for 2 pcs)	AI – TWIN 2× 0.5 – 8 WH	–

Pressure welding tool pole terminals

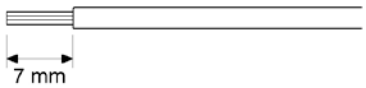
Manufacturer	Phoenix Contact product ID	
	Model No.	Product No.
Phoenix Contact Co.	CRIMPFOX 6	1212034

Screwdriver for terminal block

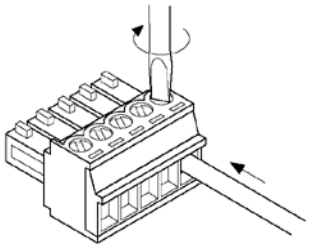
To tighten the terminals of the communication connector, use a screwdriver by Phoenix Contact Co. (product No. 1205037, blade size 0.4 x 2.5, model No. SZS 0, 4 x 2, 5). The tightening torque should be 0.22 to 0.25 Nm (2.3 to 25 kgfcm).

Wiring method

1. Remove the wire's insulation.

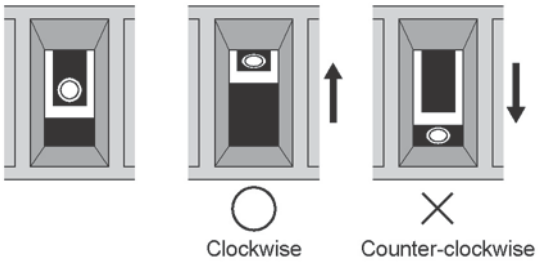


2. Insert the wire into the terminal hole until it stops. Tighten the screw clockwise to fix the wire in place. (The tightening torque should be 0.22 to 0.25 Nm (2.3 to 25 kgfcm).)



Notes for wiring

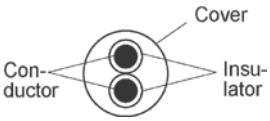
- When removing the wire's insulation, be careful not to scratch the core wire.
- Do not twist the wires to connect them.
- Do not solder the wires to connect them. The solder may break due to vibration.
- After wiring, make sure stress is not applied to the wire.
- In the terminal block socket construction, if the wire is fastened upon counter-clockwise rotation of the screw, the connection is faulty. Disconnect the wire, check the terminal hole, and then re-connect the wire.
- If two wires are connected to the plus and minus terminals of the RS485 of AFPG806(COM4), use the wires of the same cross-sectional area which is 0.5 to 0.75 mm^2.



Cables

Please use the following cables for systems using RS485 type communication cassettes.

Suitable wires (Twisted wire)

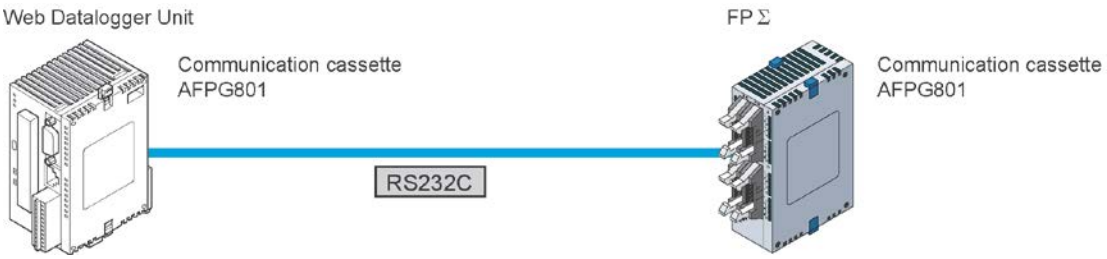
Type	Cross-sectional view	Conductor		Insulator		Cable diam.	Sample appropriate cable
		Size	Resistance (at 20°C)	Material	Thickness		
Shielded twisted pair		1.25 mm^2 (AWG16) or more	Max. 16.8 Ω/km	Polyethylene	Max. 0.5 mm	Approx. 8.5 mm	Hitachi Cable, Ltd. KPEV-S1.25 mm^2 x 1P Belden 9860
		0.5 mm^2 (AWG20) or more	Max. 33.4 Ω/km	Polyethylene	Max. 0.5 mm	Approx. 7.8 mm	Hitachi Cable, Ltd. KPEV-S0.5 mm^2 x 1P Belden 9207
VCTF		0.75 mm^2 (AWG18) or more	Max. 25.1 Ω/km	Polyvinyl chloride	Max. 0.6 mm	Approx. 6.6 mm	VCTF-0.75 mm^2 x 2C(JIS)

Note:

- Use shielded twisted pair cables.
- Use only one type of transmission cable. Do not mix more than 1 type.
- Twisted pair cables are recommended in noisy environments.
- When using shielded cable with crossover wiring for the RS485 transmission line, ground one end.
- If two wires are connected to the plus and minus terminals of the RS485 of AFPG806(COM4), use the wires of the same cross-sectional area which is 0.5 to 0.75 mm^2.

3.2.3 Example of 1:1 Communication

This is an example of the connection between Web Datalogger Unit and FPΣ via 1:1 communication.



Web Datalogger Unit side

Symbol	Pin No.
SD	1
RD	2
RS	3
CS	4
SG	5

FP Σ side

Symbol	Pin No.
SD	1
RD	2
RS	3
CS	4
SG	5

Note) When using with a three-wire port, short-circuit the pin RS and CS.

Setting

Web Datalogger Unit

External device (COM1)	
Operation mode	PLC connection (Our MEWNET-FP series)
Connection method	1:1
Unit No.	Not selectable
Baud rate (bps)	9600
Data bit	8
Parity	Odd
Stop bit	1
Communication timeout	3 seconds

FPΣ

COM port 1	
Unit No.	1
Communication mode	Computer link
Communication format	Data length: 8 bits Parity check: Odd Stop bit: 1
Baud rate (bps)	9600

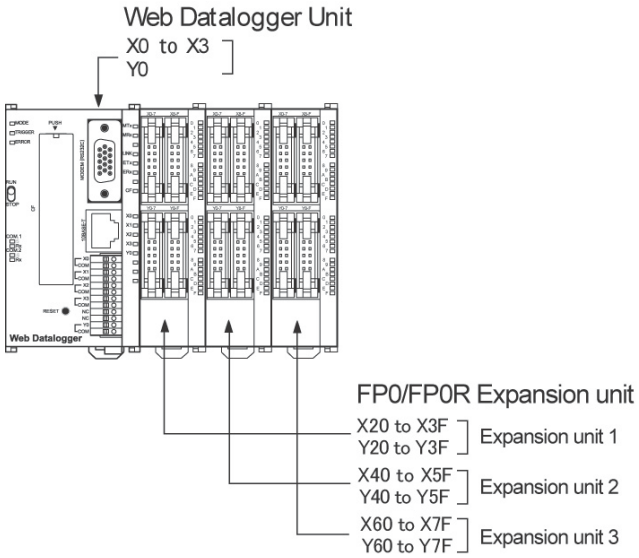
When Web Datalogger Unit is in the RUN mode with the above settings, data can be read from FPΣ.

Reference: For information on the settings of Web Datalogger Unit, <Chapter 6 Setting for Web Datalogger Unit>

Chapter 4

I/O Allocation

4.1 I/O Allocation



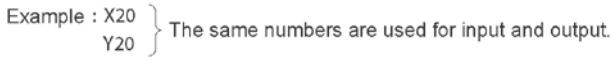
Note) The usable I/O numbers are different depending on the units.

Devices to be used on Web Datalogger Unit
The following devices are used on Web Datalogger Unit.

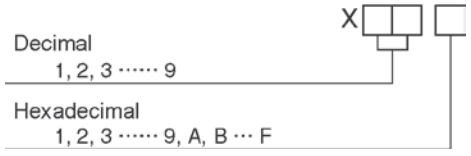
X: Input contact of Web Datalogger Unit or FP0/FP0R expansion unit
Y: Output contact of Web Datalogger Unit or FP0/FP0R expansion unit
R: Internal relay of Web Datalogger Unit
DT: The current value of storage device is stored.
AD: Analog input contact of FP0/FP0R expansion unit

[Example] When an A/D converter unit is used for the expansion unit 1, channel 0 is "AD10".
DA: Analog output contact of FP0/FP0R expansion unit
[Example] When an A/D converter unit is used for the expansion unit 2, channel 0 is "DA20".

Regarding I/O number
- Specifying X and Y numbers
On Web Datalogger Unit, the same numbers are used for input and output.



- Expression of numbers for input/output relays
I/O relays "X", "Y" and "R" are expressed as a combination of decimal and hexadecimal numbers as shown below.



4.2 Allocation of Web Datalogger Unit

4.2.1 I/O Number of Web Datalogger Unit

The I/O allocation of Web Datalogger Unit is fixed.

Number of allocation	I/O number
Input	X0 to X3
Output	Y0
Internal relays	R0 to R15F
Data registers	DT0 to DT7999

Note) Internal relays can be turned on/off via MEWTOCOL externally.
Data storage and mail transmission can be performed when triggers occurs using internal relays.

4.2.2 Special Internal Relays

The following special internal relays are used for Web Datalogger Unit.
These internal relays can be referred with MEWTOCOL.

R9000: Turns on when a self-diagnostic error occurs.
R9005: Turns on when a battery error occurs. (Non-hold)
R9006: Turns on when a battery error occurs. (Hold)
R9013: Turns on for only one scan after RUN.
R9020: Turns on in RUN (operation) mode.
R9021: Turns on when logging data.
R902A: Turns on when CF access error occurs.
R902B: Turns on when the CF card cover is installed.

4.3 Allocation of FP0/FP0R Expansion Unit

FP0/FP0R expansion units should be connected on the right side of Web Datalogger Unit.
The I/O numbers start with the lowest number from the expansion unit closest to the Web Datalogger Unit in order.

4.3.1 I/O Number of FP0/FP0R Expansion Unit

- I/O numbers do not need to be set as I/O allocation is automatically performed when an expansion unit is added.
- The I/O allocation of expansion unit is determined by the installation location.

Unit type		Number of allocation	Expansion unit 1	Expansion unit 2	Expansion unit 3
FP0/FP0R Expansion unit	E8X	Input (8 points)	X20 to X27	X40 to X47	X60 to X67
	E8R	Input (4 points)	X20 to X23	X40 to X43	X60 to X63
		Output (4 points)	Y20 to Y23	Y40 to Y43	Y60 to Y63
	E8YT/P E8YR	Output (8 points)	Y20 to Y27	Y40 to Y47	Y60 to Y67
	E16X	Input (16 points)	X20 to X2F	X40 to X4F	X60 to X6F
	E16R E16T/P	Input (8 points)	X20 to X27	X40 to X47	X60 to X67
		Output (8 points)	Y20 to Y27	Y40 to Y47	Y60 to Y67
	E16YT/P	Output (16 points)	Y20 to Y2F	Y40 to Y4F	Y60 to Y6F
	E32T/P	Input (16 points)	X20 to X2F	X40 to X4F	X60 to X6F
		Output (16 points)	Y20 to Y2F	Y40 to Y4F	Y60 to Y6F
FP0 Analog I/O unit	FP0-A21	Input CH0	AD10	AD20	AD30
		Input CH1	AD11	AD21	AD31
		Output CH0	DA10	DA20	DA30
FP0 A/D conversion unit	FP0-A80	Input CH0 to 7	AD10 to AD17	AD20 to AD27	AD30 to AD37
FP0 Thermocouple unit	FP0-TC4 FP0-TC8				
FP0 D/A conversion unit	FP0-A04V FP0-A04I	Output CH0 to 3	DA10 to DA13	DA20 to DA23	DA30 to DA33

4.4 Data Registers of Web Datalogger Unit

4.4.1 Data Registers

The following data registers (DT) are used for Web Datalogger Unit.
The current values of the data that Web Datalogger Unit stores are reflected in DT0 to 7999.
These registers can be read/written by the MEWTOCOL.

File No.	Registration No.	Register starting No.	DT range
1	1	DT0	DT0 to DT499
	2	DT2	
	...		
	250	DT498	
2			DT500 to DT999
3			DT1000 to DT1499
4			DT1500 to DT1999
5			DT2000 to DT2499
6			DT2500 to DT2999
7			DT3000 to DT3499
8			DT3500 to DT3999
9			DT4000 to DT4499
10			DT4500 to DT4999
11			DT5000 to DT5499
12			DT5500 to DT5999
13			DT6000 to DT6499
14			DT6500 to DT6999
15			DT7000 to DT7499
16	1	DT7500	DT7500 to DT7999
	2	DT7502	
	...		
	250	DT7998	

Note: If a block number is skipped over in registration, the blank block will be omitted to register the registered block numbers in DT.

Example)

Block No.	Registration	DT
1	Registered	DT0, 1
2	Registered	DT2, 3
3	Not registered	—
4	Not registered	—
5	Registered	DT4, 5

However, the starting register numbers allocated to each file number do not change.

Chapter 5

Installation and Wiring

5.1 Installation

5.1.1 Installation Environment and Space

Operating environment (Use the unit within the range of the general specifications when installing)

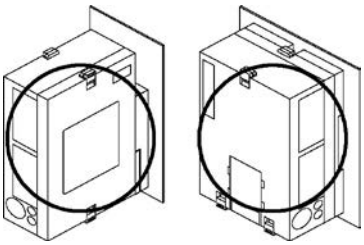
・Ambient temperatures:0 ~ +55 °C
・Ambient humidity: 30% to 85% RH (at 25°C, non-condensing)
・For use in pollution Degree 2 environment.
・Do not use it in the following environments.
- Direct sunlight
- Sudden temperature changes causing condensation.
- Inflammable or corrosive gas.
- Excessive airborne dust, metal particles or saline matter.
- Benzine, paint thinner, alcohol or other organic solvents or strong alkaline solutions such as ammonia or caustic soda.
- Direct vibration, shock or direct drop of water.
- Influence from power transmission lines, high voltage equipment, power cables, power equipment, radio transmitters, or any other equipment that would generate high switching surges.(100mm or more)

Static electricity

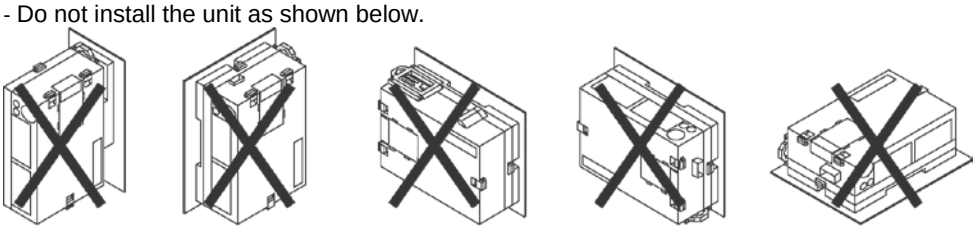
- Do not touch connector pins directly to prevent static electricity from causing damage.
- Always rid yourself of any static electricity before handling this product.

Measures regarding heat discharge

Always install the unit oriented with the power supply connector on the lower side in order to prevent the generation of heat.



- Do not install the unit as shown below.



Upside-down installation

Upside-down installation

Installation such that the input and output terminal blocks face down

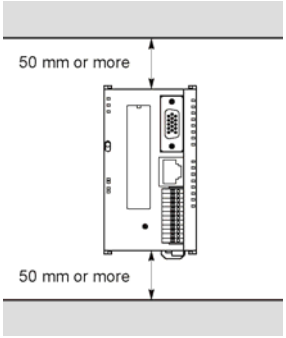
Installation such that the input and output terminal blocks on top

Horizontal installation of Web Datalogger Unit

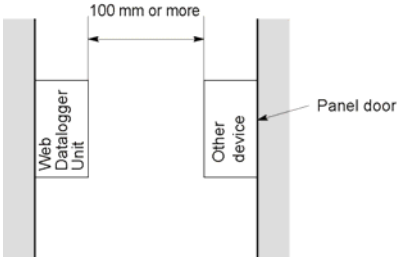
- Do not install the unit above devices with high calorific power such as heaters, transformers and large scale resistors.

Installation space

- Leave at least 50 mm of space between the wiring ducts of the nit and other devices to allow heat radiation and unit replacement.



- Maintain at least 100 mm of space between devices to avoid adverse affects from noise and heat when installing a device or panel door to the front of the Web Datalogger Unit.



- Leave at least 100 mm of space from the front surface of the Web Datalogger Unit in order to allow room for wiring.

5.1.2 Installation

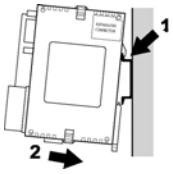
Attachment to DIN rail and removal from DIN rail

The unit can be simply attac hed to DIN rail.

Installation method

(1) Fit the upper hook of the unit onto the DIN rail.

(2) Without moving the upper hook, press on the lower hook to fit the unit into position.

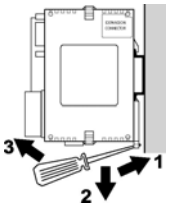


Removal method

(1) Insert a slotted screwdriver into the DIN rail attachment lever.

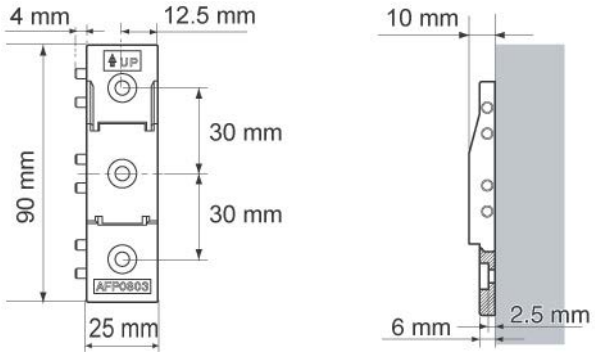
(2) Pull the attachment lever downwards.

(3) Lift up the unit and remove it from the rail.

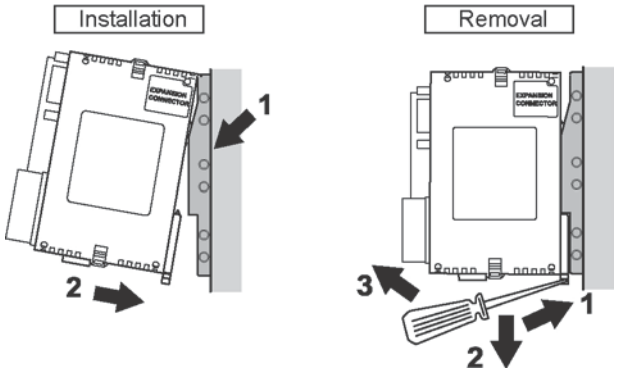


5.1.3 Installation Using the Optional Mounting Plate

When using the slim type FP0 mounting plate (AFP0803)
Use M4 size pan-head screws for attachment of the mounting plate and install according to the dimensions shown below.

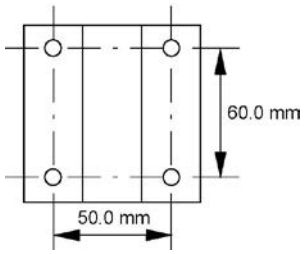


The rest of the procedure is the same as that for attaching the unit to the DIN rails.



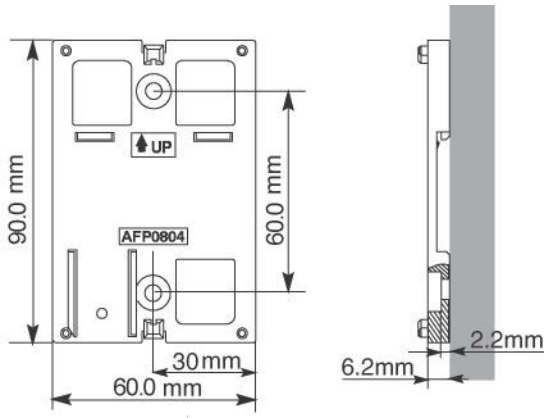
Note:
- Use two mounting plates coupled for Web Datalogger Unit.
- When using expansion units, tighten the screws after joining all of the necessary mounting plates to be connected. Tighten the screws at each of the four corners.

[Example] When using 2 expansion units

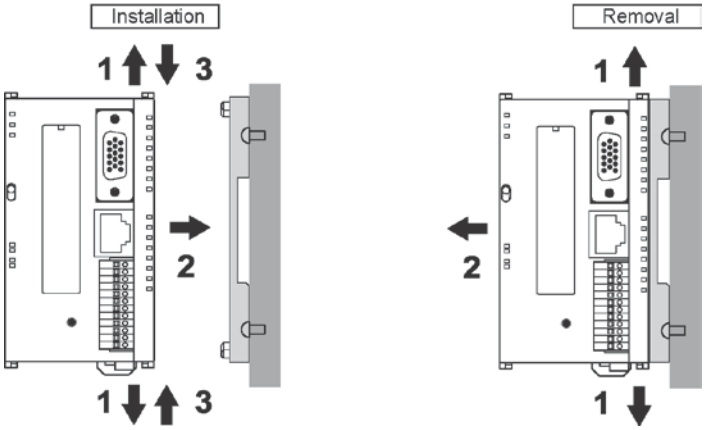


When using the flat type mounting plate (AFP0804)

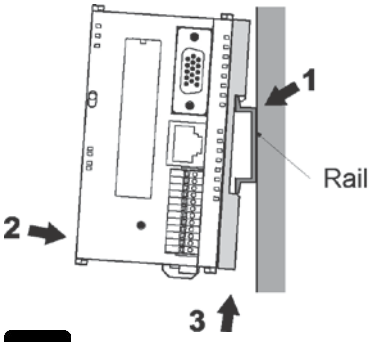
Use M4 size pan-head screws for attachment of the mounting plate and install according to the dimensions shown below.



Raise the expansion hooks of the unit. Align the expansion hooks with the mounting plate and press the hooks.



A unit with an attached mounting plate can also be installed sideways on a DIN rail.



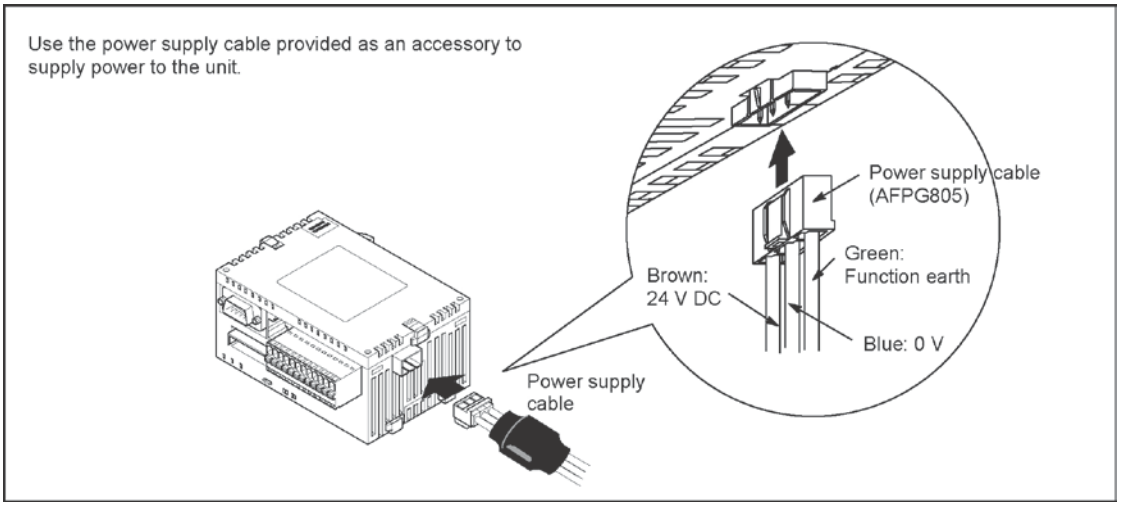
Note:

The flat type mounting plate (AFP0804) should be used only with the Web Datalogger Unit as a stand-alone unit.

It should not be used when the unit is being used in combination with an FP0/FP0R expansion unit.

5.2 Wiring of Power Supply

5.2.1 Wiring of Power Supply



Power supply wiring for the unit

Use the power supply cable (Part number: AFPG805) that comes with the unit to connect the power supply.

Brown: 24 V DC

Blue: 0 V

Green: Function earth

Power supply wire

To minimize adverse effects from noise, twist the brown and blue wires of the power supply cable.

Power supply type

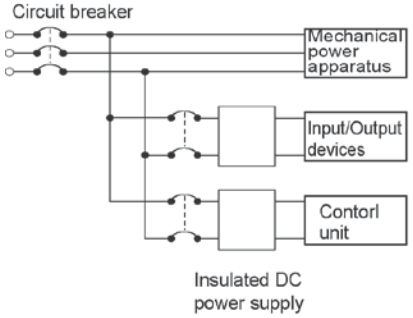
- To protect the system against erroneous voltage from the power supply line, use an insulated power supply with an internal protective circuit.
- The power supply for the operation on the unit is a non-insulated type.
- If using a power supply device without an internal protective circuit, always make sure power is supplied to the unit through a protective element such as a fuse.

Power supply voltage

Rated voltage	24 V DC
Operating voltage range	21.6 V DC to 26.4 V DC

Wiring system

- Isolate the wiring systems to the Web Datalogger Unit, input/output devices, and mechanical power apparatus.



Measures regarding power supply sequence

- The power supply sequence should be set up so that power to the Web Datalogger Unit is turned off before the input/output power supplies.
- If the input/output power supplies are turned off before the power to the Web Datalogger Unit, the unit will defect the input fluctuations and may begin an unscheduled operation.
- Be sure to supply power to the Web Datalogger Unit and an expansion unit from the same power supply, and turn the power on and off simultaneously for both.

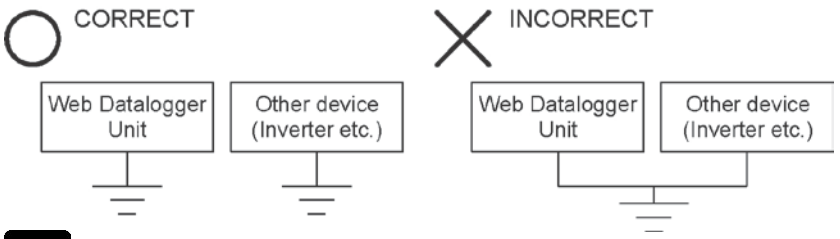
5.2.2 Grounding

In situations of excess noise

Under normal conditions, the inherent noise resistance is sufficient. However, in situations of excess noise, ground the instrument to increase noise suppression.

Exclusive grounding

- For grounding purposes, use wiring with a minimum of 2 mm^2. The grounding connection should have a resistance of less than 100 Ω.
- The point of grounding should be as close to the Web Datalogger Unit as possible. The ground wire should be as short as possible.
- If two devices share a single ground point, it may produce an adverse effect. Always use an exclusive ground for each device.

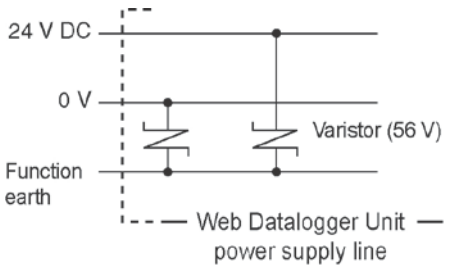


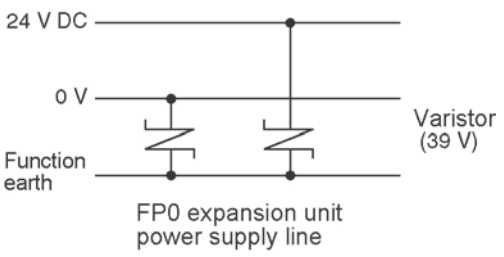
Note:

Depending on the surroundings in which the equipment is used, grounding may cause problems.

[Example]

Since the power supply line of the Web Datalogger Unit is connected to the function earth through a varistor, if there is an irregular potential between the power supply line and earth, the varistor may be shorted.



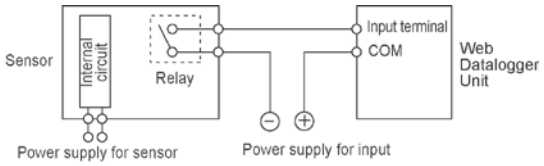


5.3 Wiring of Input and Output

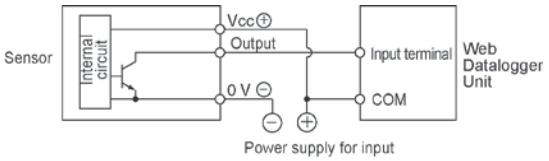
5.3.1 Input Wiring

Connection of photoelectric sensor and proximity sensor

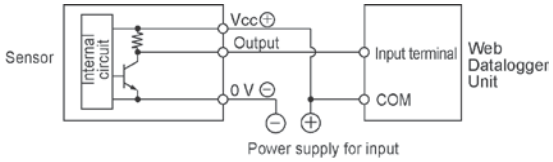
Relay output type



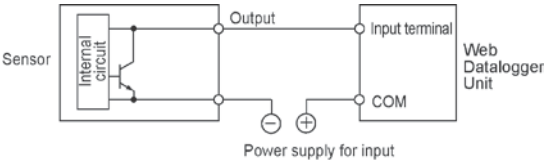
NPN open collector output type



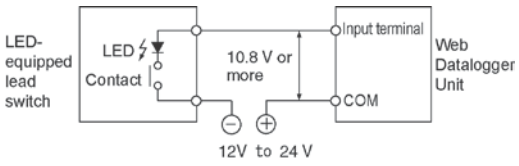
Voltage output type



Two-wire output type

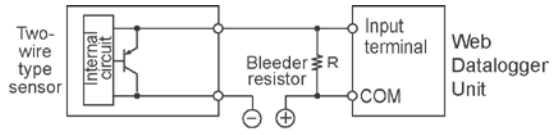


Precaution when using LED-equipped lead switch



When a LED is connected in series to an input contact such as LED-equipped lead switch, make sure that the voltage applied to the Web Datalogger Unit input terminal is greater than the ON voltage. In particular, take care when connecting a number of switches in series.

Precaution when using two-wire type sensor



If the input of Web Datalogger Unit does not turn off because of leakage current from the two-wire type sensor "photoelectric sensor or proximity sensor", the use of a bleeder resistor is recommended, as shown on the left.

I: Sensor's leakage current (mA)
R: Bleeder resistor (kΩ)

The off voltage of the input is 2.4 V, therefore, select the value of bleeder resistor "R" so that the voltage between the COM terminal and the input terminal will be less than 2.4 V. The input impedance is 4.3 kΩ.

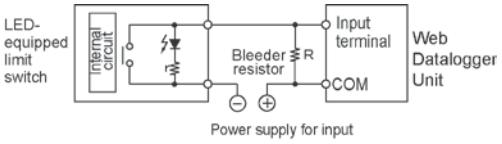
$$I \times \frac{4.3R}{4.3+R} \leqq 2.4 \quad \text{Therefore,} \quad R \leqq \frac{10.32}{4.3I-2.4} \ (k\Omega)$$

The wattage W of the resistor is:

$$W = \frac{(\text{Power supply voltage})^2}{R}$$

In the actual selection, use a value that is 3 to 5 times the value of W.

Precaution when using LED-equipped limit switch



If the input of Web Datalogger Unit does not turn off because of leakage current from the LED-equipped limit switch, the use of a bleeder resistor is recommended, as shown on the left.

r: Internal resistor of limit switch (kΩ)
R: Bleeder resistor (kΩ)

Turn off voltage of input is 2.4 V, therefore when the power supply voltage is 24 V,

The current will be greater than $I = \frac{24-2.4}{r}$

The resistance R of the bleeder resistor is:

$R \leq \frac{10.32}{5.6I-2.4}$ (kΩ)

The wattage W of the resistor is:

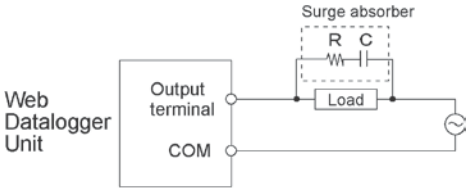
$W = \frac{(\text{Power supply voltage})^2}{R} \times (3 \text{ to } 5 \text{ times})$

5.3.2 Output Wiring

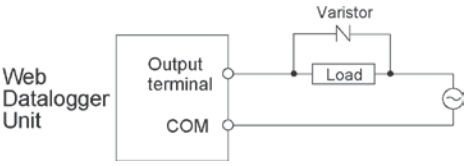
Protective circuit for inductive loads

- With an inductive load, a protective circuit should be installed in parallel with the load.
- When switching DC inductive loads with relay output, be sure to connect a diode across the ends of the load.

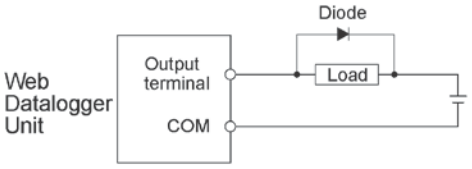
When using an AC inductive load



Example of surge absorber:
Resistance(R): 50 Ω
Capacity(C): 0.47 μF



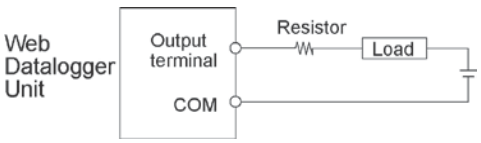
When using a DC inductive load

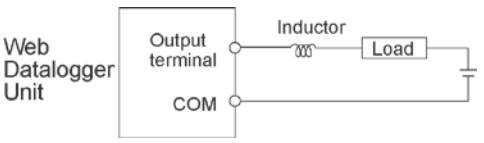


Diode:
Reverse voltage: 3 times the load voltage
Average rectified forward current: Load current or more

Precautions when using capacitive loads

When connecting loads with large in-rush currents, to minimize their effect, connect a protection circuit as shown below.





5.3.3 Precautions Regarding Input and Output Wirings

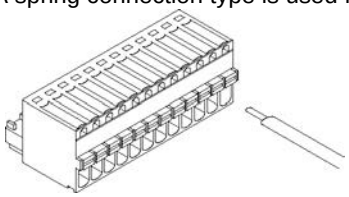
Separate the input, output, and power lines

- Be sure to select the thickness (dia.) of the input and output wires while taking into consideration the required current capacity.
- Arrange the wiring so that the input and output wirings are separated, and these wirings are separated from the power wiring, as much as possible. Do not route them through the same duct or wrap them up together.
- Separate the input/output wires from the power and high voltage wires by at least 100 mm.
- The I/O wiring should be shorter than 50 m.

5.4 Wiring of Terminal Block Type

Attached terminal block/Suitable wires

A spring connection type is used for the terminal block. The suitable wires are given below.



Terminal block socket

The terminal socket manufactured by Phoenix Contact is used.

No. of pins	Phoenix Contact model number	
	Model No.	Product No.
12 pins	FK-MC0, 5/12-ST-2, 5	1881422

Suitable wires (Twisted wire)

Size	Nominal cross-sectional area
AWG#28 to 20	0.14 mm^2 to 0.5 mm^2

Pole terminal without a compatible insulation sleeve

If a pole terminal is being used, the following models should be used.

Manufacturer	Cross-sectional area	Size	Product No.
Phoenix Contact Co.	0.25 mm^2	AWG#24	A 0, 25-7
	0.34 mm^2	AWG#22	A 0, 34-7
	0.50 mm^2	AWG#20	A 0, 5-6

Pressure welding tool for pole terminals

Manufacturer	Phoenix Contact model number	
	Part No.	Product No.
Phoenix Contact Co.	CRIMPFOX 6	1212034

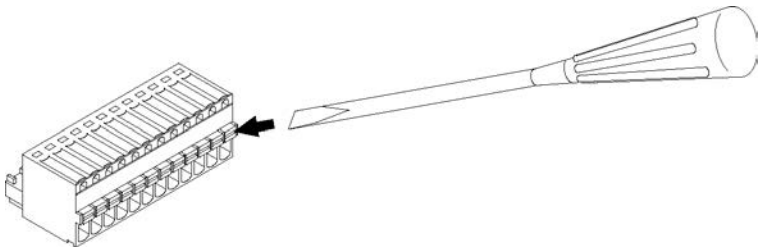
For tightening the terminal block

For inserting a wire, use a screwdriver (Phoenix Contact Co., Product No.: 1205202) with a blade size of 0.4 x 2.0 (Part No. SZS 0.4 x 2.0).

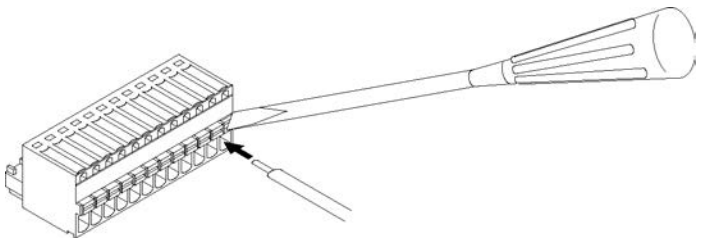
Wiring method

(1) Remove the wire's insulation.

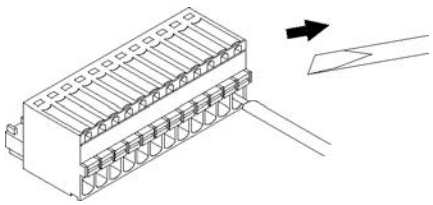
(2) Press the orange switch of the terminal block with a tool such as a slotted screwdriver.



(3) Insert the wire into the terminal block until it contacts the back of the block socket with pressing the orange switch.



(4) Remove the tool from the switch.



Notes for wiring

- When removing the wire's insulation, be careful not to scratch the core wire.
- Do not twist the wires to connect them.
- Do not solder the wires to connect them. The solder may break due to vibration.
- After wiring, make sure stress is not applied to the wire.

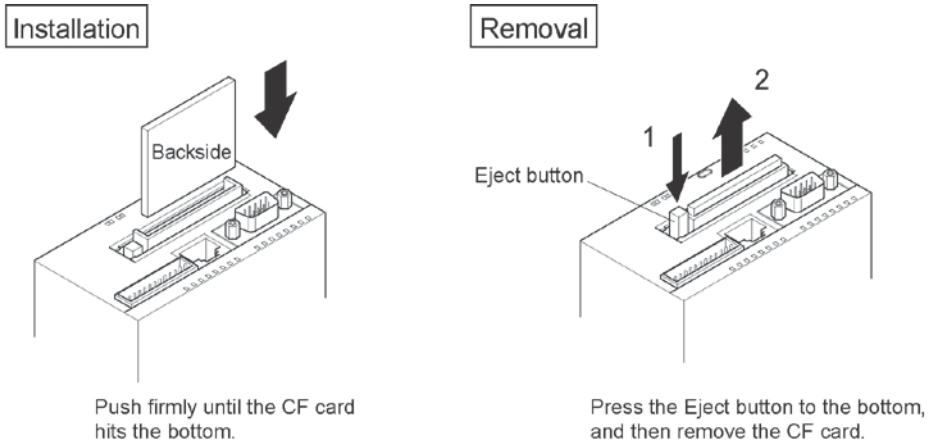
5.5 Installation of CF Card

CF card I/O specifications

Item	Specifications
Slot	TYPE I-compliant
Capacity	8 M to 2 GB (Microdrive is not possible.)

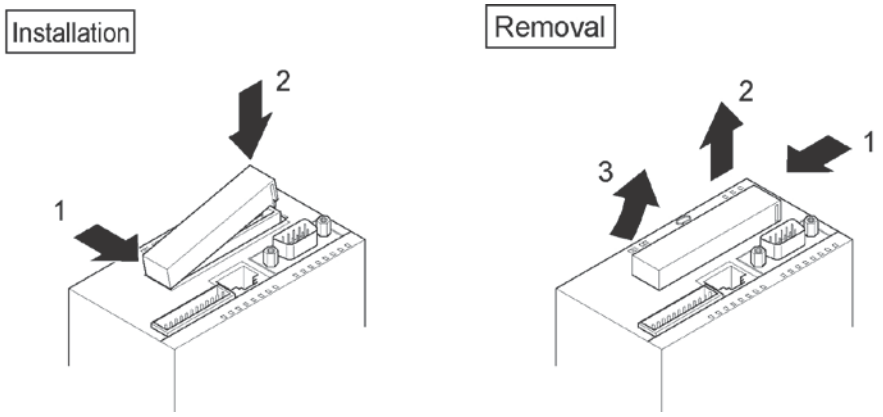
Note1) CF (Compact Flash) is a trademark of San Disk Corporation in USA.
Note2) The CF card of which usable ambient temperature is 20°C or more should be used.
Note3) Data may be damaged if temporary blackout occurs during writing. It is recommended to use a UPS (uninterruptible power system).

Removal of CF card



Note1) The protection cover must be installed after inserting the CF card. If the cover is not installed, reading and writing the CF card cannot be performed due to the access error.
Note2) The CF card should be taken out after the CF protection cover is removed and the access LED is turned out.

Installation of CF card cover



5.6 Safety Measures

5.6.1 Safety Measures

Precautions regarding system design
On the system using Web Datalogger Unit, malfunction may occur for the following reasons:

- Power on timing differences between the Web Datalogger Unit and input/output or mechanical power apparatus.
- Response time lag when a momentary power drop occurs.
- Abnormality in the Web Datalogger Unit, external power supply or other devices.

In order to prevent a malfunction resulting in system shutdown, choose the adequate safety measures listed in the following:

Emergency stop circuit
Provide an emergency stop circuit to the Web Datalogger Unit externally to turn off the power supply of the output device.

Start up sequence
The Web Datalogger unit should be started after booting the I/O device and mechanical power apparatus.
[Procedure]
- Turn on the power supply of the Web Datalogger Unit, and then set the mode selector to the RUN mode from the STOP mode.
- Provide a timer circuit outside to delay the startup of the power supply for the Web Datalogger Unit.

Note) When stopping the operation of the Web Datalogger Unit, stop the Web Datalogger Unit first, and then turn off the input/output device.

Grounding
When installing the Web Datalogger Unit next to devices that generate high voltages from switching, such as inverters, do not ground them together. Use an exclusive ground for each device.

5.6.2 Momentary Power Failures

Operation of momentary power failures
If the duration of the power failure is less than 3 ms, the Web Datalogger Unit continues to operate. If the power is off for 3 ms or longer, operation changes depending on the combination of units, the power supply voltage, and other factors.(In some cases, operation may be the same as that for a power supply reset.)

5.6.3 Protection of Power Supply and Output Sections

Power supply
An insulated power supply with an internal protective circuit should be used. The power supply for the Web Datalogger Unit operation is a non-insulated circuit, so if an incorrect voltage is directly applied, the internal circuit may be damaged or destroyed.
If using a power supply without a protective circuit, power should be supplied through a protective element such as fuse.

Protection of output
If current exceeding the rated control capacity is being supplied in the form of a motor lock current or a coil shorting in an electromagnetic device, a protective element such as a fuse should be attached externally.

5.7 Installation and Setting of Backup Battery

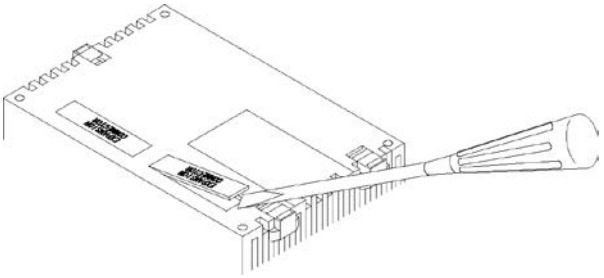
Installing an optional backup battery in the unit enables to backing up the calendar timer as well as collected data.

Battery (Option)

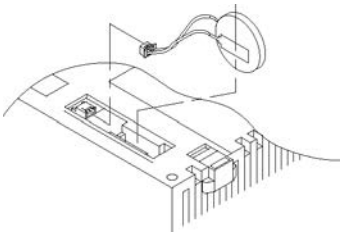
Name	Product No.
Battery for FPΣ	AFPG804

5.7.1 Installation Method

(1) Using a screwdriver or similar tool, open the battery cover.

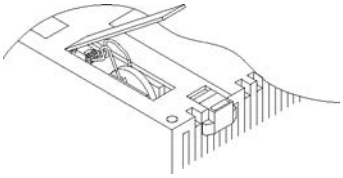


(2) Connect the connector, and place the battery.



Note) When replacing the battery, turn off the power after supplying the power more than 30 minutes, and then fit the new battery within 5 minutes of removing the old one.

(3) Insert the code between the connector and the battery, and fit the cover.



Note) The code becomes in an upward direction after placing the battery. If the cover is fit as it is, the code will be bent.

Key Point: After replacing the battery, select "Configuration" -> "Setting of Operations When Error Occurs" on the main menu from a browser, and select "Check" for the item "Decrease of Battery Voltage".

5.7.2 Time for Replacement of Backup Battery

The ERROR LED on the unit will flash if the battery voltage drops.

The battery remains effective for about a week after the LED starts flashing.
However, in some cases, the problem is not detected immediately. The battery should be replaced as soon as possible, without turning off the power supply.

Note) When replacing the battery, turn off the power after supplying the power more than 30 minutes, and then fit the new battery within 5 minutes of removing the old one.

5.7.3 Lifetime of Backup Battery

The life of the backup battery will eventually expire and therefore it is important to replace it with a new battery periodically. Refer to the table below for a guide as to when to replace the battery.

Item	Description
Battery lifetime	250 days or more (Typical lifetime in actual use: approx. 5 years (at 25 °C)) (Suggested replacement interval: 1 year) (Value when no power is supplied at all.)

Chapter 6

Settings of Web Datalogger Unit

6.1 Preparation

Various settings of Web Datalogger Unit (hereinafter called DLU) are defined using a web browser on a PC connected to the DLU.

Factory default settings

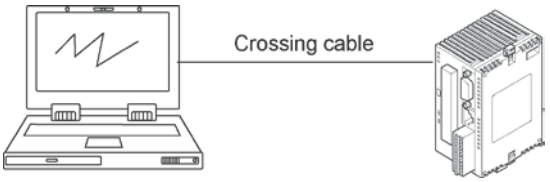
Item	Default
IP address	192.168.1.5
Subnet mask	255.255.255.0
Default gateway	192.168.1.1
User name	admin
Password	dlu

Note:
- The usable web browser for the settings is Internet Explorer6.0 or later.
- Use lower-case characters for entering a user name and password.

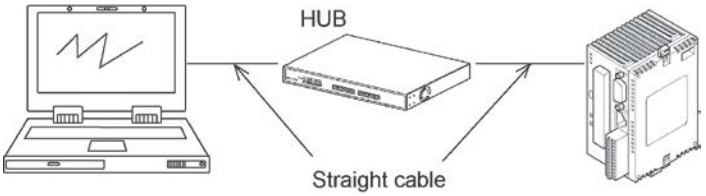
6.1.1 Connecting PC to DLU

Connect the PC to be used for setting with the DLU with an Ethernet cable.
There are two connection methods as below.

1. Directly connect the PC to the DLU with a crossing cable.



2. Connect the PC to the DLU with a HUB.



Note) A crossing cable may be used depending on the used HUB.

6.1.2 Opening a Web Browser and Displaying Setting Screens

Specify the IP address of the PC to display the setting screens of the DLU as below.

IP address Note)	192.168.1.10
Subnet mask	255.255.255.0
Default gateway	Not necessary to set.

Note) The IP address of the PC can be set arbitrarily in the range of 192.168.1.2 to 192.168.1.254.
(However, 192.168.1.5 cannot be used.)
This manual describes the above setting as an example.

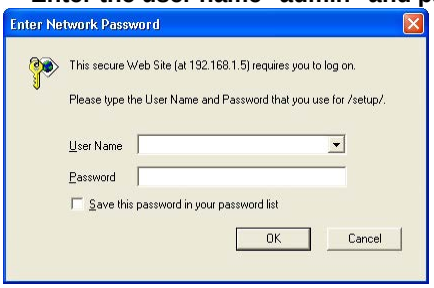
Note: For the details of the method to change the IP address of PC, refer to the help or manuals for respective OS.

[Procedure]

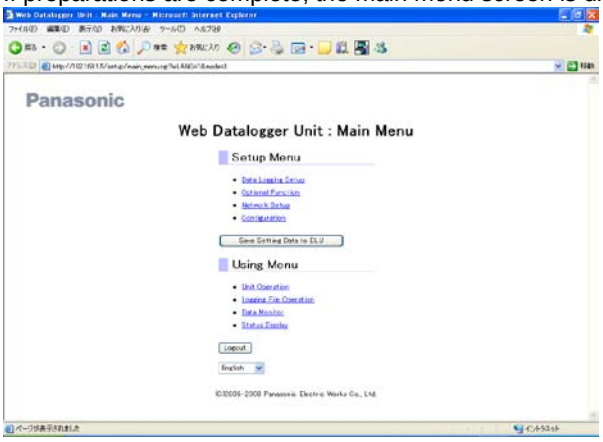
1. Input "http://192.168.1.5/setup/" in the address input area.

(The last slash "/" must be input.)

2. Once the connection between the PC and DLU has been established, the following dialog is displayed.
Enter the user name "admin" and password "dlu" with lower-case characters, and click "OK".



If preparations are complete, the main menu screen is displayed.



6.1.3 Setting Items in Main Menu

Each item in the DLU Main Menu is used to define the following settings.

Setup menu

Item	Description
Data logging setup	- Configuration of DLU (Settings for expansion units or communication cassettes) - Triggers to be used for storage (Constant cycle, contact state, designated date, etc.) - Number of records to be stored in a file - Stored devices
Optional functions	- E-mail transmission - Data output (Contact output, analog output, writing of data to devices such as PLC) - Connection with PCWAY Note)
Network setup	- IP address of DLU - IP address of a mail server - Modem setup - Dial-up setup
Configuration	- User registration to access DLU - Group registration necessary for mail transmission - Setting for the layout of storage files - Settings for the timeout and the operation when error occurs - Clock setting

Note) PCWAY is Excel add-in software for our PLC monitor.

Using menu

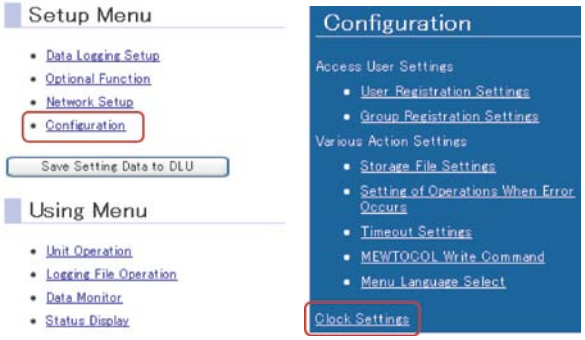
Item	Description
Unit operation	- RUN/STOP mode selection - Reading/save of setting data - Initialization of setting data - Firmware update
Logging file operation	- Download or delete of stored files
Data monitor	- Monitor of the current values of stored data
Status display	- Version information - Last update date and user name of setting data - Memory usage - Network setting information (LAN, PPP)

6.1.4 Clock Settings

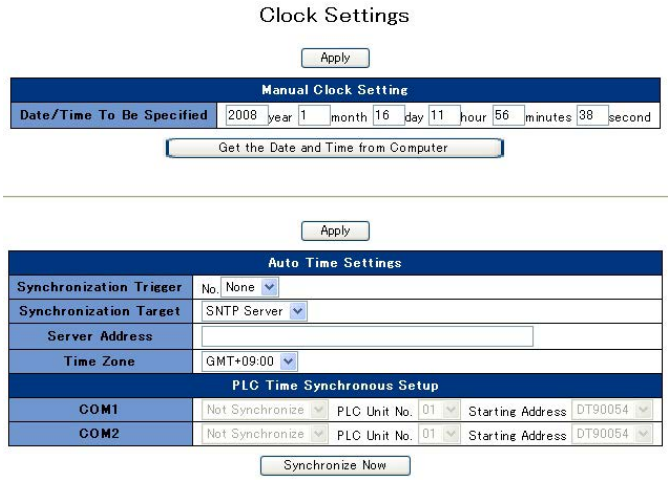
A clock is built in DLU. Indefinite data has been set at the factory.
Set the correct time and date before using the DLU.

[Procedure]

1. Click "Configuration" on the main menu, and then click "Clock Settings" from the list on the left.



2. The "Clock Settings" screen is displayed on the right. Set the current time in the setting area on the top of the screen.



The following two setting methods are available.

1. Enter the date(year/month/day) and time(hour/minute/second) manually.

Enter the current date and time, and then click "Apply".
Once "Apply" is clicked, the clock starts.

2. Transfer the time of PC to the DLU.

Clicking "Get the Date and Time from Computer" transfers the date (y/m/d) and time (h/m/s) of the used PC to the DLU.
Once the time of the PC has been transferred, the clock starts.

Key Point:

- The current time can be checked by clicking "Display Present Time".
- The time can be also set using SNTP server.
  At the same time, the time of PLC connected to the DLU can be also set.
- The clock data of the PLC can be read to set the DLU.
- Select the synchronization trigger and target to adjust the clock.

6.1.5 User Registration Settings

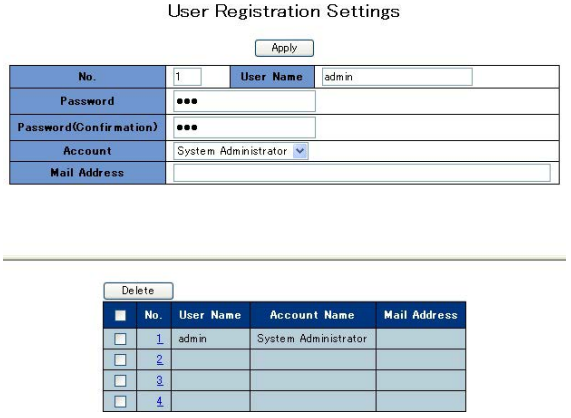
Setting or monitoring the DLU can be performed by registered users only.
Register users who can access the DLU if necessary.

[Procedure]

1. Click "Configuration" on the main menu.

2. The "User Registration Settings" screen is displayed on the right.

A user has been registered in No.1 by default. (User name: admin, Password: dlu)
To add a user, click the number to register the new user from the list at the bottom. Then set the items above.



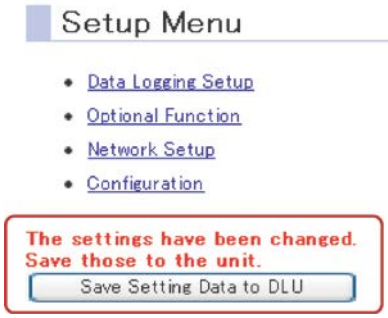
Setting items	Description
User name	Within 16 characters
Password	Within 16 characters (case-sensitive)
Password (Confirmation)	Enter the same characters as above.
Account	"System Administrator": Setting and monitoring DLU is allowed. "Limited Account": Only data monitor and status display is allowed.
Mail address	Within 48 characters (This setting is not mandatory.)

Note:

- A maximum of 16 users can be registered.
- The setting without registered users is not allowed.
- Passwords are not displayed on the setting screen. Do not forget the specified passwords.
- One user must be registered as "System Administrator". It is not possible to register all users as "Limited Account".

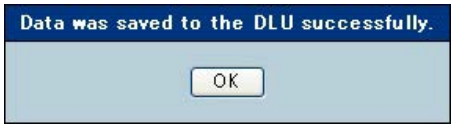
3. Click "Apply" after completing the settings for each item.
The settings are reflected in the list at the bottom, and the contents are temporarily stored.

4. Click "Back to Main Menu" to return to the main menu.
A message "The settings have been changed. Save those to the unit." blinks. Click "Save Setting Data to DLU".



5. Click "OK".
The setting data is recorded in the DLU.

6.When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



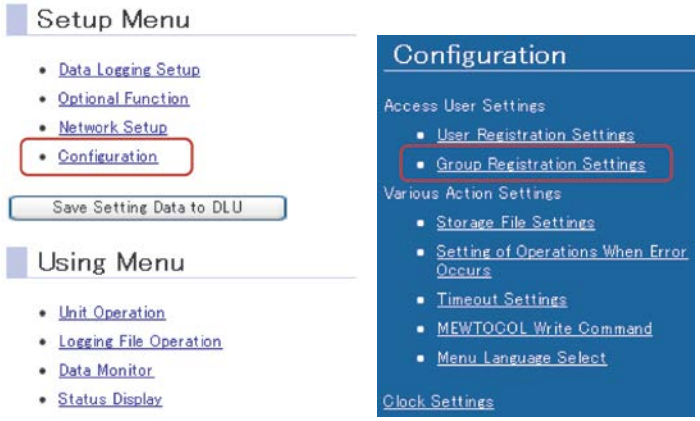
Note:
If you want to delete the registered user, check the box next to the registration number to be deleted, and click "Delete".

6.1.6 Group Registration Settings

When a mail is sent from DLU using the mail transmission function, the destination should be "Group". Group is a unit to manage some users together.

[Procedure]

1. Click "Configuration" on the main menu, and then click "Group Registration Settings" from the list on the left.

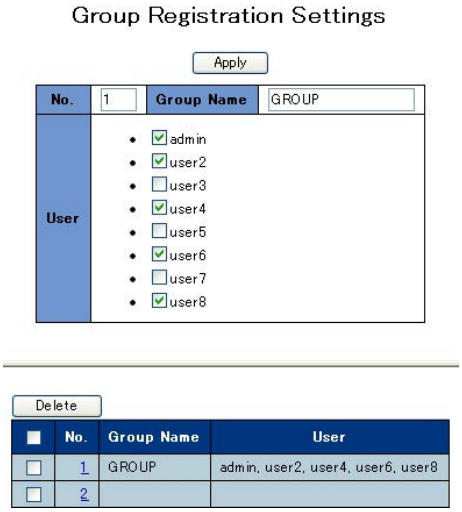


2. The "Group Registration Settings" screen is displayed on the right.

(As an example, 8 users have been registered.)

Check the users to be grouped from the "User" area, and click "Apply".

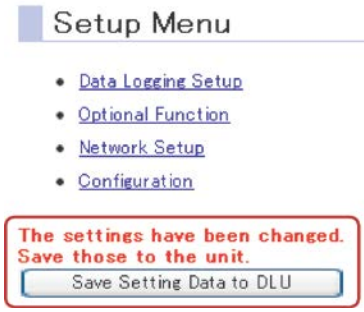
The registered group is shown in the list at the bottom.



Note:

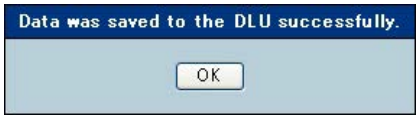
- Specify a group name within 32 characters.
- A maximum of 16 groups can be registered.
- In one group, from a minimum of 1 user to a maximum of 16 users can be registered.
- A user can be registered in several groups.

3. Click "Back to Main Menu" to return to the main menu.
A message "The settings have been changed. Save those to the unit." blinks. Click "Save Setting Data to DLU".



4. Click "OK".
The setting data is recorded in the DLU.

5.When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



Note:
If you want to delete the registered user, check the box next to the registration number to be deleted, and click "Delete".

6.1.7 DLU IP Address Setting

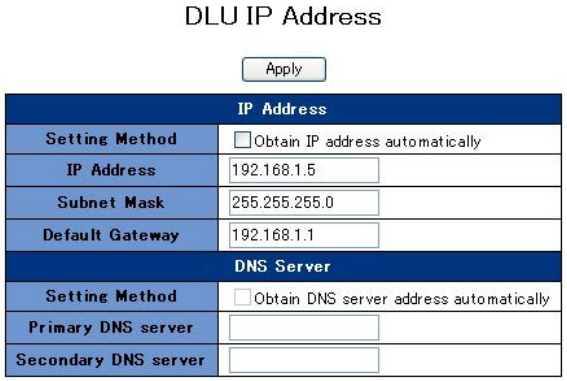
The factory default IP address is "192.168.1.5".

Note: If the default IP address is used, this setting is not need to be changed.

[Procedure]

1. Click "Network Setup" under the main menu.

2. As the IP address setting screen is displayed on the right, enter a new IP address with dotted-decimal numbers if you want to change the default setting. Then, click "Apply".



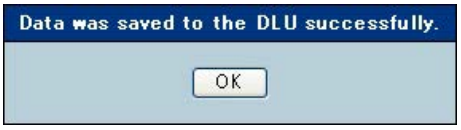
3. Click "Back to Main Menu" to return to the main menu.

A message "The settings have been changed. Save those to the unit." blinks. Click "Save Setting Data to DLU".

4. Click "OK".

The setting data is recorded in the DLU.

5.When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



Note:

- For each IP address, ask network administrators.

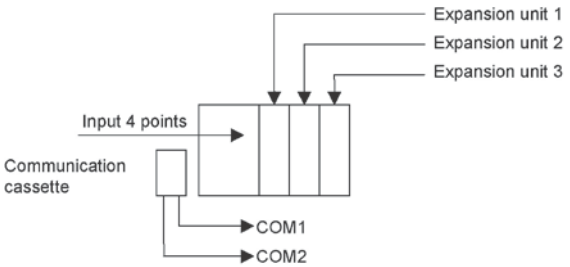
- DNS servers are necessary to specify the IP address needed to use the following functions by "Name" instead of IP address.
  - Mail transmission function (SMTP server or POP server in some cases)
  - Auto time setting function (SNTP server)

- If you fail to obtain an IP address automatically, the default IP address "192.168.1.5" is set.

6.2 Overview of Data Logging

DLU supports the followings as interface for collecting data.

- Internal digital input (4 points)
- FP0/FP0R expansion unit (A maximum of 3 units can be installed.)
- Digital input unit
- Analog input unit (A/D conversion unit, thermocouple unit)
- FP∑ communication cassette (such as PLC, eco-power meter, wireless sensor)



Those data are logged, and files in CSV format can be generated.

Note:

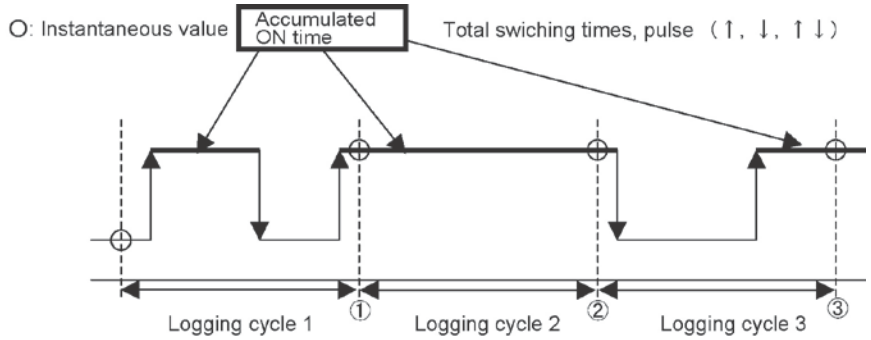
The operations that collect data by a communication cassette and save the collected data are performed asynchronously. Therefore, if many devices have been registered, the operation to collect data may take longer than the operation to save the data.

6.2.1 Logging Data

Data that DLU can log

Target	Data can be logged
DLU input	- Instantaneous value (On/Off) - Accumulated ON time - Total switching times - Pulse value (Max. 30 Hz)
Expansion (Digital)	- Instantaneous value (On/Off) - Accumulated ON time - Total switching times - Pulse value (Max. 1 Hz)
Expansion (Analog) - A/D conversion unit - Thermocouple unit etc.	- Instantaneous value - Average value - Minimum value - Maximum value - Addition value
Via communication cassette - PLC - Eco-power meter - Wireless sensor etc.	[Contact] - Instantaneous value (On/Off) - Accumulated ON time - Total switching times [Register] - Instantaneous value - Average value - Minimum value - Maximum value - Difference value

Details of data to be logged
[DLU input/Expansion (Digital)]



- Instantaneous value: The on/off status of contacts are recorded for every logging cycle.
Data recorded in files is "1" in the on-state, and "0" in the off-state.

- Accumulated ON time: The time that contacts turn on is recorded for every logging cycle.

[Example] When
ON time of logging cycle 1: 3 seconds
ON time of logging cycle 2: 6 seconds
ON time of logging cycle 3: 2 seconds

Data recorded at the point of ①: 3
Data recorded at the point of ②: 9
Data recorded at the point of ③: 11

- Total switching times: Number of switching times of contacts are recorded for every logging cycle.
The counting condition can be selected from "Off => On", "On => Off" or "On <=> Off".

[Example] When the counting condition is set to "Off => On", as
No. of switching times of logging cycle 1: Twice
No. of switching times of logging cycle 2: Zero
No. of switching times of logging cycle 3: Once

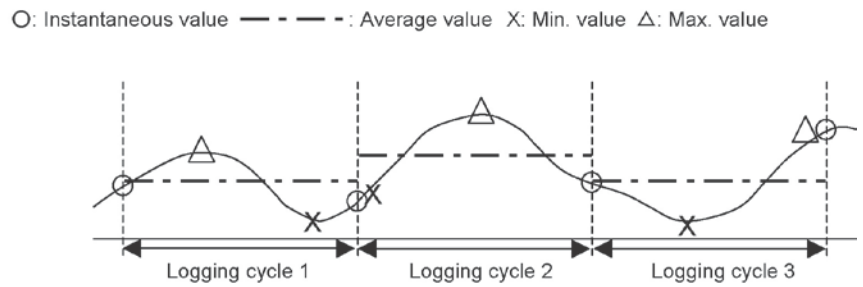
Data recorded at the point of ①: 2
Data recorded at the point of ②: 2
Data recorded at the point of ③: 3

- Pulse: Pulse number by turning contacts on/off is recorded for every logging cycle.
The pulse counting condition can be selected from "Off => On", "On => Off" or "On <=> Off".
Unlike the accumulated ON time, data is cleared for every logging cycle.
It is used to accumulate electric energy at regular time interval using pulse output of a device such as a power meter.
[Example] When the counting condition is set to "On <=> Off", as
Pulse number of logging cycle 1: 3
Pulse number of logging cycle 2: 0
Pulse number of logging cycle 3: 2

Data recorded at the point of ①: 3
Data recorded at the point of ②: 0
Data recorded at the point of ③: 2

Note:
Regardless of a specified logging cycle, when DLU is in the operation mode, sampling is performed for the internal input and expansion units at 200 ms.
Therefore, the interval between On and Off-state of contact should be 300 ms or more.
(If a contact is switched within 300 ms, data record is not guaranteed.)

[Analog]



- Instantaneous value: Analog values for every logging cycle are recorded.

- Average value: Average values are calculated from all sampling data in logging cycles and they are recorded for every logging cycle.

- Minimum value: Minimum values are calculated from all sampling data in logging cycles and they are recorded for every logging cycle.

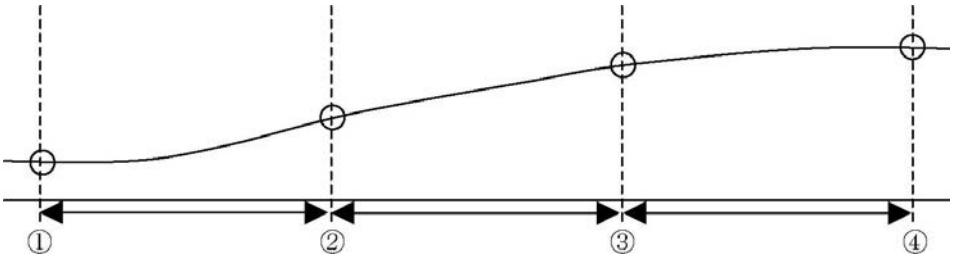
- Maximum value: Maximum values are calculated from all sampling data in logging cycles and they are recorded for every logging cycle.

- Addition value: Addition values are calculated from all sampling data in logging cycles and they are recorded for every logging cycle.

Note:

Regardless of a specified logging cycle, when DLU is in the operation mode, the internal input and expansion units perform sampling at 200 ms.
Therefore, if the logging cycle is 1 minute, sampling is actually performed for 300 times.
The average value/minimum value/maximum value/addition value is calculated from these 300 data.

[Via communication cassette]



Difference value: Values after deduction of the previous values are recorded for every logging cycle.

It can be used for applications such that collect the integral power consumption of eco-power meter and record the power consumption at regular time intervals.

Example) When

Instantaneous value at the point of ①: 100
Instantaneous value at the point of ②: 150
Instantaneous value at the point of ③: 180
Instantaneous value at the point of ④: 190

Data recorded at the point of ①: (The value that deducts the previous instantaneous value from 100)
Data recorded at the point of ②: 50
Data recorded at the point of ③: 30
Data recorded at the point of ④: 10

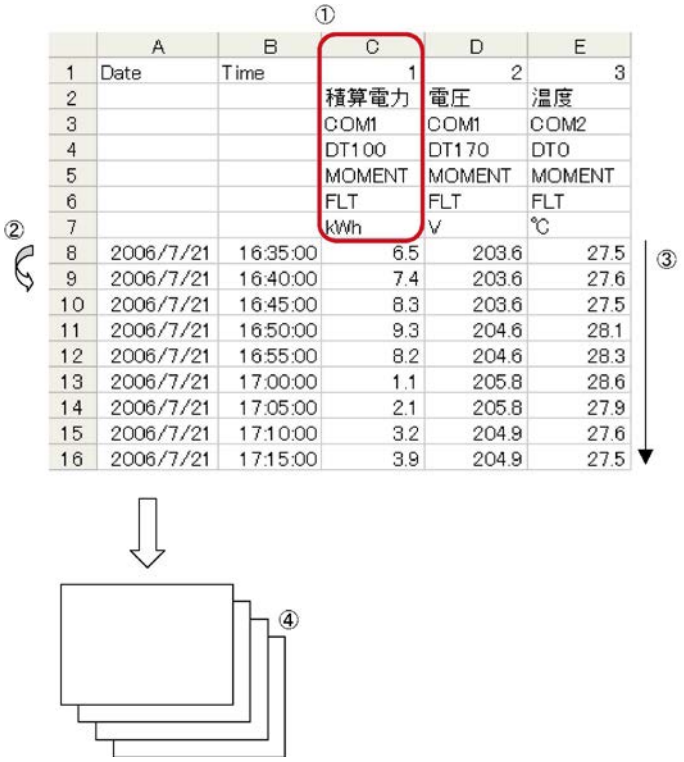
- The concepts other than "Difference value" are the same as the concepts of "Contact" and "Analog".

Note:

- When data is collected via the communication cassette, the sampling at 200 ms cannot be guaranteed unlike the main unit and expansion unit.
  As communication is performed via RS232C/485, data is collected by best-effort connection.
  The communication interval varies according to the amount of collected data.
- Normally, when using difference values, digit numbers are specified.
  Example) If the digit number is set to 3, the maximum value of the logging device is 999 for the DLU.
  Therefore, when the value ① is "100" and value ② is "50", the DLU decides the value ② as "1050", and the value that deducts ① from ② is "950".
  If a digit number is not specified, although the value that deducts ① from ② is "-50", it becomes "0xFFFFFFCE=4294967246" when the data type is "unsigned 32-bit integer", and "0xFFCE=65486" when the data type is "unsigned 16-bit integer".
- If collecting data is failed at the point of ②, the data to be recorded at ③ will be 80.

6.2.2 Logging Files

CSV files that various data is logged are like the following image.
Some settings are required to create files with logging data by DLU.



	A	B	C	D	E
1	Date	Time	1	2	3
2			積算電力	電圧	温度
3			COM1	COM1	COM2
4			DT100	DT170	DT0
5			MOMENT	MOMENT	MOMENT
6			FLT	FLT	FLT
7			kWh	V	℃
8	2006/7/21	16:35:00	6.5	203.6	27.5
9	2006/7/21	16:40:00	7.4	203.6	27.6
10	2006/7/21	16:45:00	8.3	203.6	27.5
11	2006/7/21	16:50:00	9.3	204.6	28.1
12	2006/7/21	16:55:00	8.2	204.6	28.3
13	2006/7/21	17:00:00	1.1	205.8	28.6
14	2006/7/21	17:05:00	2.1	205.8	27.9
15	2006/7/21	17:10:00	3.2	204.9	27.6
16	2006/7/21	17:15:00	3.9	204.9	27.5

Setting name	Description
①Logging device 1 積算電力 COM1 DT100 MOMENT FLT kWh	- Integral power: Name (Can be set arbitrarily.) - COM1: Target - DT100: Registration data - MOMENT: Logging content (Refer to the supplement below.) - FLT: Data format (Refer to the supplement below.) - kWh: Unit (Can be set arbitrarily.)
②Logging trigger	Timing for logging data [Example] - At a constant frequency
③No. of records (1~60000)	- Number of records to be stored in a file [Example] In case of 10 records: When 10 data is logged, a file can be created.(Further data cannot be added.)
④No. of generations (1~60)	No. of files to be created [Example] In case of 4: In this example, 4 files which 10 records are recorded can be generated. The oldest file will be deleted to save a new file when 5th file is generated.

[Supplement] Descriptions of Logging contents and data formats

Characters recorded in files	Logging contents
STATUS	Instantaneous value (State of contact)
TOTAL ON TIME	Accumulated ON time
TOTAL SW TIMES	Total switching times
PULSE	Pulse value
MOMENT	Instantaneous value
AVERAGE	Average value
MINIMUM	Minimum value
MAXIMUM	Maximum value
DIFFERENCE	Difference value
INTEGRATION	Addition value

Characters recorded in files	Data format
S16	Signed 16-bit integer
US16	Unsigned 16-bit integer
HEX4	HEX4 digits
BIN16	16-bit binary numbers
ASCxxx	Characters
S32	Signed 32-bit integer
US32	Unsigned 32-bit integer
HEX8	HEX8 digits
BIN32	32-bit binary numbers
FLT	Real numbers

(No. of characters is inserted in "xxx".)

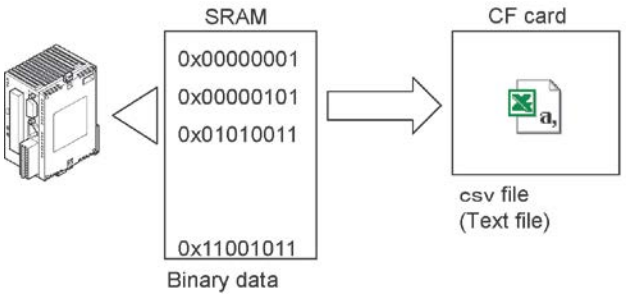
 **Note:**

- When a logging device is converted, the data format is displayed like "US16→FLT".
  (Format before conversion → Format after conversion)
- When real numbers are 10 to the 6th power or more, or 10 to the -4th power or less, they are recorded by E notation.

 **Reference:** For information on triggers, <6.3.2 Trigger Settings>
For information on configuration setting menu, <9.2.1 Logging File Setup>

6.2.3 Until Filing Logging Data

Data that collected by DLU is temporarily stored in the internal SRAM (448 kbytes for data storage). When the data stored in the SRAM meets certain conditions (such as specified number of records), it is stored in CF (or internal memory) in a csv format file.



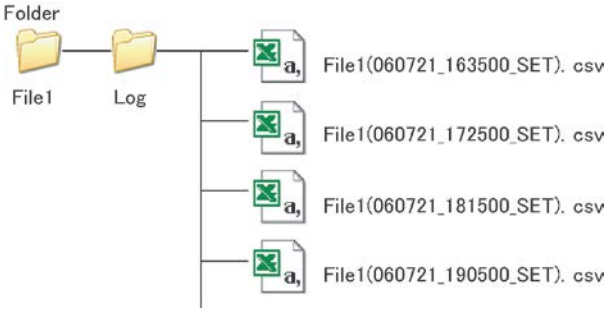
Note:

- Regardless of 16 bits or 32 bits for the logging data type, SRAM uses 32-bit area per one data.
- To protect data when the power is turned off while it is being logged, It is recommended to backup the SRAM with a battery sold separately.
- Regardless of the specified number of records, the SRAM data is written in a csv file every 64 records. (as it takes a long time if large quantities of data is written at a time)

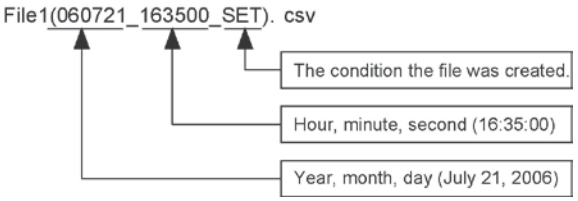
6.2.4 Name of Logging Files

Logging files are saved in a CF card inserted in DLU (or internal memory) in the following configuration.

[Example] When a logging file that is named "File1" is created in the CF.



[Detail of file name]



[Condition that creates files]

Conditions that creates files	Recorded characters
Logged data reaches the specified No. of records in operation.	SET
A "Update trigger" occurred in operation. (Even if the logging data is less than the specified No. of records, the data at this point is filed.)	TRG
The operation mode changed to the stop mode. (Even if the logging data is less than the specified No. of records, the data at this point is filed.)	MOD
When the power supply of DLU turned on, it is renamed if a CURRENT file remains.	POW
All the data that should be filed were not filed due to run out of free space of the CF (or internal memory) while data is being stored.	ERR

Note:

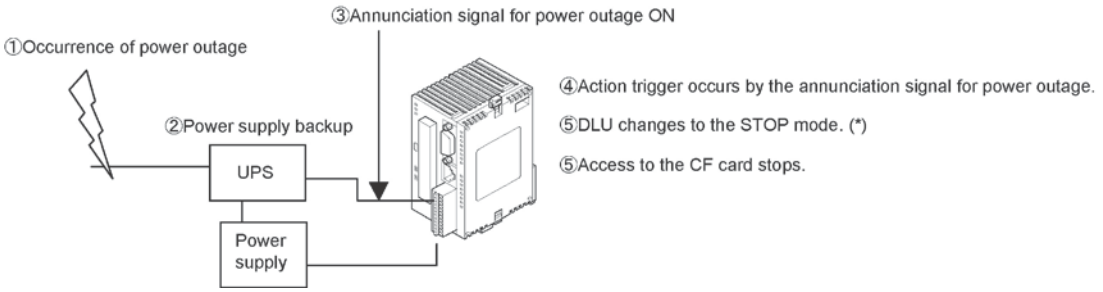
- The date and time of the first record of the data stored in the file is recorded.
- If any problem such as power outage occurs in operation, data that has not been filed may be left in the SRAM.
  If any data has been left in the SRAM when the power of DLU was turned on, firstly the DLU files those data, and then execute other processes (This file is a CURRENT file).
- A file that does not meet the condition for file generating is named "File1 (- - - - - CURRENT - - - - -).csv.
  This file can be confirmed on the "Logging File Operation" screen under the setting menu.

6.2.5 Precautions for Data Storage

The csv files generated by DLU can be saved in a CF card or internal memory.
(The destination to save should be predefined.)
The precautions for each destination to save are described below.

When saving in a CF card

If the power supply of the unit is turned off due to problems such as power outage when DLU is writing data in the CF card in the RUN mode, the CF card may be damaged and the data may not be read. Therefore, when using the CF card, use a UPS (uninterruptible power supply system) as much as possible.
Also, with the UPS, the DLU can be changed to the stop mode in case of power outage by inputting the annunciation signal for power outage of the UPS into the DLU and using this signal as the trigger, so that the data can be protected by stopping the access the CF card.



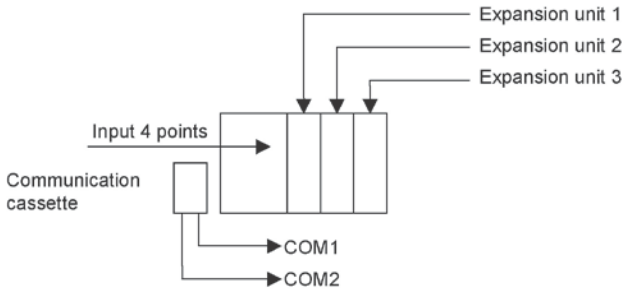
When saving in the internal memory

The internal memory means the SDRAM (2 M bytes) mounted in the DLU.
As the SDRAM cannot backed up with the battery, all the data will be cleared when the power turns off. (However, if data is left in the SRAM, it will be filed again when the power supply turns on.)
Therefore, when using the "Internal memory", make sure to save the data in different locations by transmitting the generated files by E-mail or downloading via FTP.
(The internal memory is a working area that is temporarily used to make the data in the SRAM to csv files.)

6.3 Data Logging Setup

DLU supports the following interface for collecting data.

- Internal digital input (4 points)
- FP0 expansion unit (A maximum of 3 units can be installed.)
  - Digital input unit
  - Analog input unit (A/D conversion unit, thermocouple unit)
- FPΣ communication cassette (connects devices such as PLC, eco-power meter, wireless sensor)



Follow the procedures below to carry out the settings of DLU.

6.3.1 Main Unit Configuration Settings

⇩

6.3.2 Trigger Settings for Data Logging

⇩

6.3.3 Logging File Setup

⇩

6.3.4 Device Registration to a Logging File

⇩

6.3.6 Save Setting Data to DLU

Note:

- The usable web browser for the settings is Internet Explorer6.0 or later.

- The settings cannot be changed when DLU is in the run mode.
Confirm that the DLU is in the stop mode (i.e. the front-mounted RUN/STOP switch is at the stop side) before setting. At this time, the "MODE" LED on the DLU is flashing.

- If the following events occur before executing "6.3.6 Save Setting Data to DLU", the setting data will be deleted.

- The power supply of DLU was turned off.
- The Web browser was closed.
- As a specified time has passed without performing the setting operation, timeout occurred.(Default: 10 min.) (Time-out period can be changed.)(10 min. to 60 min.)

Reference: <9.2.3 Login Effective Time>

6.3.1 Main Unit Configuration Settings

The items such as the type of expansion units to be used, the application and communication conditions of the communication cassette are specified.

[Procedure]

1. Click "Data Logging Setup" on the main menu.

2. The "Main Unit Configuration Settings" screen is displayed on the right. Set each item, and then click "Apply".

Main Unit Configuration Settings

Apply

UNIT	
Name	
Expansion Unit	
Expansion Unit1	Not use
Expansion Unit2	Not use
Expansion Unit3	Not use
Logging File	
Storage Place	Internal Memory
COM1 Settings	
Connection Unit Selection	Not use
Connection Type	1:1
Unit No.	00
Baud Rate	19200bps
Data Length	8 Bit
Parity	Odd
Stop Bit	1 Bit
Timeout	3sec.
MEWTOCOL Header	%
Command Wait	0
Interval of Data Gathering	0 X 10ms
COM2 Settings	

Item	Description
Name	Within 32 characters
Expansion units 1 to 3	- Not use - Digital unit - Analog unit
Storage place Note1)	- Internal memory (2 MB of SDRAM) - CF (Compact flash card)
Connection unit selection Note2)	- Not connected - Computer link - FP series PLC (MEWTOCOL) - Mitsubishi MELSEC-FX series - Mitsubishi MELSEC-FX2N series - Mitsubishi FX-series computer link - Omron SYSMAC-C series
Connection type	- 1:1 - 1:N
Unit No.	It can be set when "Computer link" has been selected for the connection unit.
Baud rate, data length, parity, stop bit	Also set the communication conditions to communicate with the connected devices.
Timeout	Sets the timeout when collecting data.
MEWTOCOL header Note3)	- % - <
Command wait	It can be set when "Mitsubishi FX-series computer link" has been selected for the connection unit.
Interval of data gathering Note5)	Setting range: 0 to 1000

Note1) Up to 1 GB of CF can be used.

Reference: For information on the storage place, <6.2.5 Precautions for Data Storage>

Note2) - When devices such as "Eco-power meter" and "Wireless sensor" are connected, "FP-series PLC (MEWTOCOL" should be selected.
- For monitoring the inside of DLU by connection a device such as an indicator without using the COM port for data logging, "Computer link" should be selected.

Note3) - If the connection PLC supports the METWTOCOL header "<", the time taken for one data sampling can be shorten by selecting "<".(This is useful for collecting a large amount of data.)
- As for a eco-power meter or wireless sensor, select "%".

Note4) The COM2 settings are made as well as the COM1 settings.

Note5) When the setting is 0, the data gathering command is transmitted via Best effort.

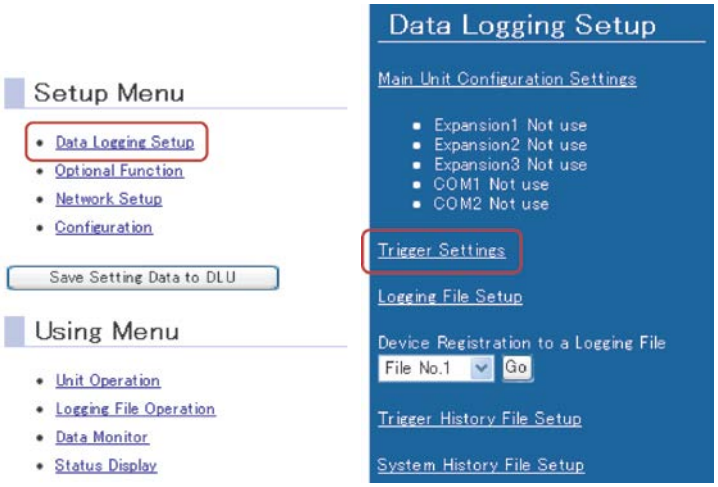
6.3.2 Trigger Settings for Data Logging

"Triggers" for executing operations should be predefined to enable the DLU to store data or send e-mails. Followings are the triggers that can be used for timing of data logging by DLU.

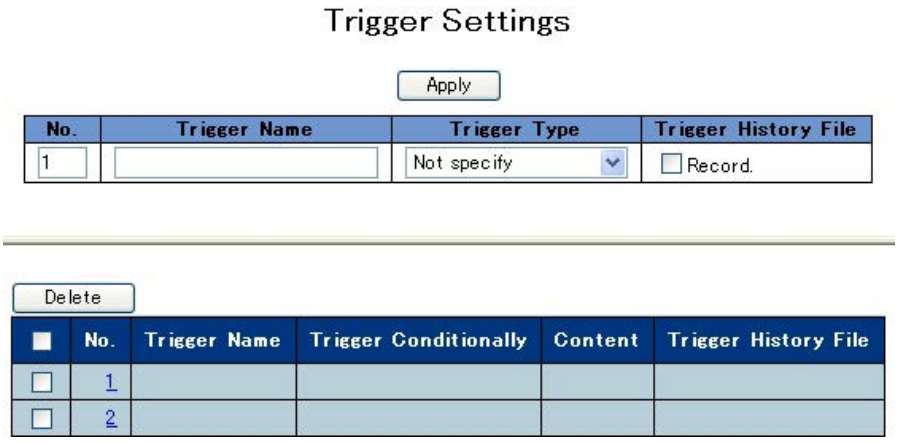
Trigger type	Description
Fixed cycle	1 second to 24 hours (Selected from 23 patterns)
Appointed time	- Specify a date and time. - Specify the date and time for every year. - Specify the date and time for every month. - Specify the date and time for every day. - Specify the date and time for every week. (Day of the week can be selected.) - Specify the minutes and seconds per hour. - Specify the seconds per minute.
Relay	- Leading edge differential (DF) - Trailing edge differential (DF/) - Both edge differential - Accumulated ON time (Specified in seconds.) - Total switching times
Register	- = (Equivalent to the condition value) - > (Larger than the condition value) - < (Smaller than the condition value) - ≠ (Different from the condition value)
Combination	Two triggering conditions can be used on "AND" or "OR" condition.

[Procedure]

1. Click "Data Logging Setup" on the main menu, and then click "Trigger Settings" from the list on the left.



2. Select a type from "Trigger Type", and set each items.
The registered settings are shown in the list at the bottom.



Setting items common to various triggers

- Specify a "Trigger name" up to 32 characters.

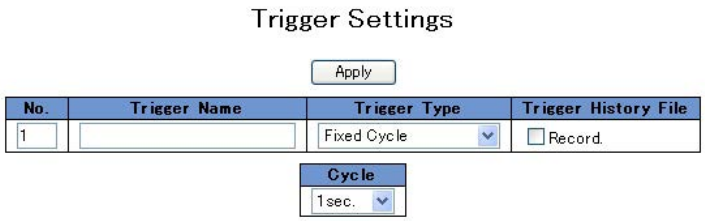
- If the check box "Record" of "Trigger History File" is on, the time that the trigger occurred is recorded in "Trigger History File".

- 128 types of triggers can be specified.

Reference: <6.3.8 Trigger History File>

Fixed cycle

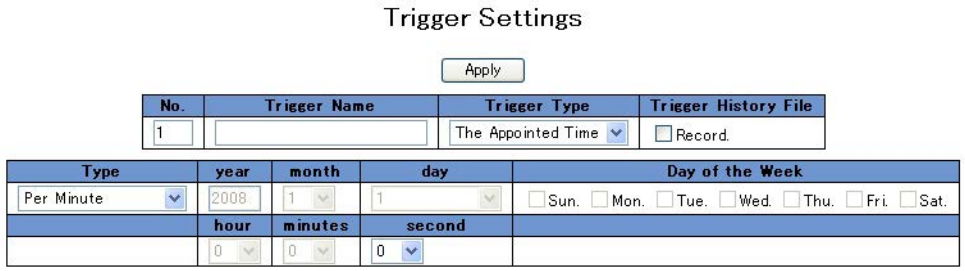
When selecting "Fixed Cycle" for the trigger type, the following setting screen is displayed.
The trigger occurs on the selected cycle.



The fixed cycle trigger is adjusted to occur at 0 min. 0 sec. of each hour. regardless of the time that the DLU changes to the operation mode.
Example)
- The cycle of trigger has been set to 30 minutes, and the DLU changed to the run mode at 12:10.
→ The first trigger occurs at 12:30.(After that, at 13:00, 13:30, 14:00 ...)
However, the specified logging data type is "Difference value", the value that deducts the data collected at 12:10 from the data collected at 12:30 is recorded at the first trigger.

Appointed time

When selecting "Appointed Time" for the trigger type, the following setting screen is displayed.



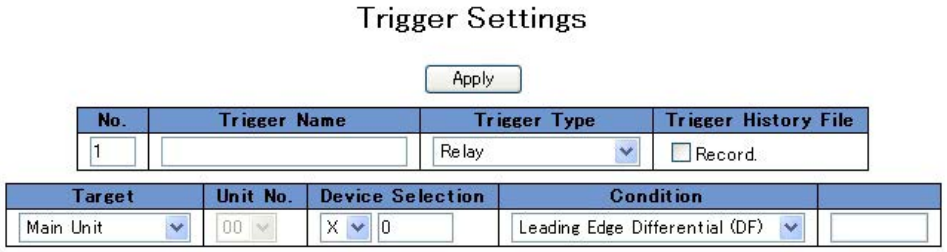
The following settings are available.
- Specify a date and time.
- Specify the date and time for every year.
- Specify the date and time for every month.
- Specify the date and time for every day.
- Specify the date and time for every week. (Day of the week can be selected.)
- Specify the minutes and seconds per hour.
- Specify the seconds per minute.

[Example] The trigger occurs at 8:50 am every day.

[Example] The trigger occurs at 5:15 pm every day from Monday to Friday.

Relay

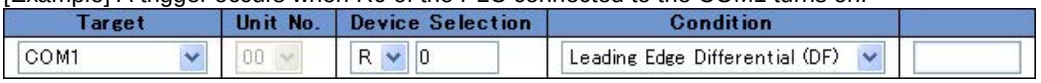
When selecting "Relay" for the trigger type, the following setting screen is displayed.



- The type of devices that can be specified by "Device Selection" varies according to the setting selected for "Target".
- If the selected "Target" has been set to "Not use" in the main unit configuration settings, this trigger cannot be used.
- "Unit No." is specified when the connection type of COM has been set to "1:N".
- Selectable items for "Condition"

Condition	Description
Leading edge differential (DF)	A trigger occurs when detecting the change from OFF to ON.
Trailing edge differential (DF/)	A trigger occurs when detecting the change from ON to OFF.
Both edge differential	A trigger occurs when detecting the change from OFF to ON, or from ON to OFF.
Accumulated ON time (Specified in seconds.)	A trigger occurs if the total time that detected the on-state exceeded the setting time.
Total switching times	A trigger occurs if the number of times that detected the change from OFF to ON exceeded the setting value.

[Example] A trigger occurs when R0 of the PLC connected to the COM1 turns on.



Register

When selecting "Register" for the trigger type, the following setting screen is displayed.

Trigger Settings

Apply

No.	Trigger Name	Trigger Type	Trigger History File
1		Register	Record.

Target	Unit No.	Device Selection	Data Format	Condition	Normality Value
Main Unit	00	WX 0	DEC1W	= 0	0

- The following four devices are used for "Register".
- Registers of the main unit (WX, WR, DT)
- Register of the digital expansion unit (WX)
- Register of the analog expansion unit (AD)
- Register value (DT, etc) of the device connected to the COM port such as PLC
- "Unit No." is specified when the connection type of COM has been set to "1:N".

[Example1] The trigger occurs when the analog value of channel 0 of expansion unit 2 becomes 5.

Target	Unit No.	Device Selection	Condition	Normality Value
Expansion Unit2	00	AD 20	= 5	0

Conversion	Conversion Parameter
Convert	A/D Conversion Value : -2000 – 2000 , Conversion Value : -10 – 10

Note1) For converting analog values, conversion parameters are also needed to be set.

Reference: For information on parameters, <A/D Conversion Unit Manual>

Note2) The trigger occurs once AD20 is equivalent to 5, and it will be reset when a value other than 5 is detected. The trigger occurs when AD is equivalent to 5 again.

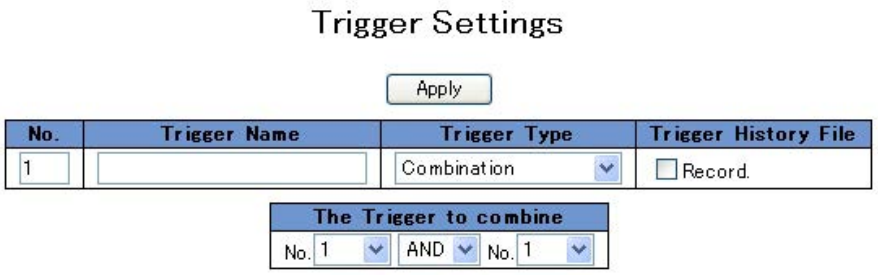
[Example 2] The trigger occurs when the value of DT0 of the PLC connected to the COM1 exceeded 1000.

Target	Unit No.	Device Selection	Data Format	Condition	Normality Value
COM1	00	DT 0	DEC1W	> 1000	800

Note) The trigger occurs once DT0 exceeded 1000, and it will be reset when DT0 is less than 800. The trigger occurs when DT0 exceeded 1000 again.

Combination

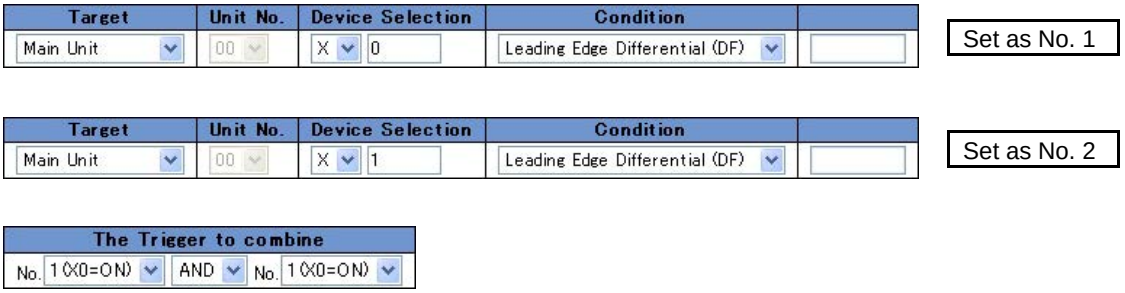
When selecting "Combination" for the trigger type, the following setting screen is displayed.



Two triggers can be used under the following conditions.

- AND: The trigger occurs when 2 triggers selected were detected.
- OR: The trigger occurs when any one of 2 triggers selected was detected.

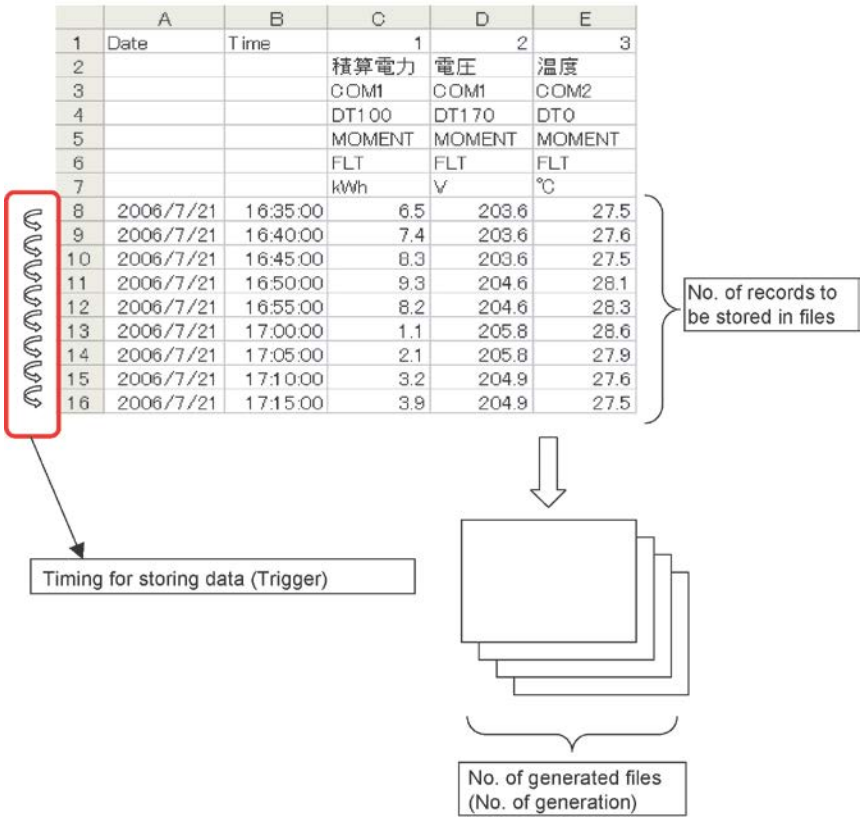
[Example] The trigger that occurs when X0 was changed from OFF→ON and the trigger that occurs when X1 was changed from OFF→ON has been set. Set a trigger that combines these two triggers with AND.



Note) If the change in X0 (or X1) from OFF→ON is detected, and then the change in X1 (or X0) from OFF→ON is detected without detecting the change from ON→OFF, the trigger will occur.

6.3.3 Logging File Setup

The data stored by DLU is filed in csv format as below.



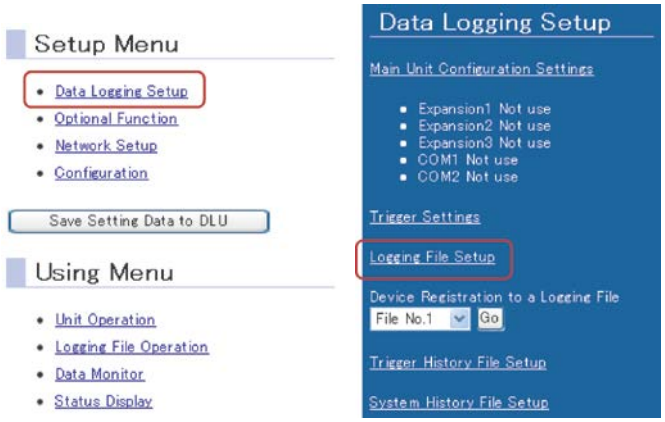
	A	B	C	D	E
1	Date	Time	1	2	3
2			積算電力	電圧	温度
3			COM1	COM1	COM2
4			DT100	DT170	DT0
5			MOMENT	MOMENT	MOMENT
6			FLT	FLT	FLT
7			kWh	V	℃
8	2006/7/21	16:35:00	6.5	203.6	27.5
9	2006/7/21	16:40:00	7.4	203.6	27.6
10	2006/7/21	16:45:00	8.3	203.6	27.5
11	2006/7/21	16:50:00	9.3	204.6	28.1
12	2006/7/21	16:55:00	8.2	204.6	28.3
13	2006/7/21	17:00:00	1.1	205.8	28.6
14	2006/7/21	17:05:00	2.1	205.8	27.9
15	2006/7/21	17:10:00	3.2	204.9	27.6
16	2006/7/21	17:15:00	3.9	204.9	27.5

Note) If it fails to log data due to a reason such as a communication error, “-“ (hyphen) will be recorded.

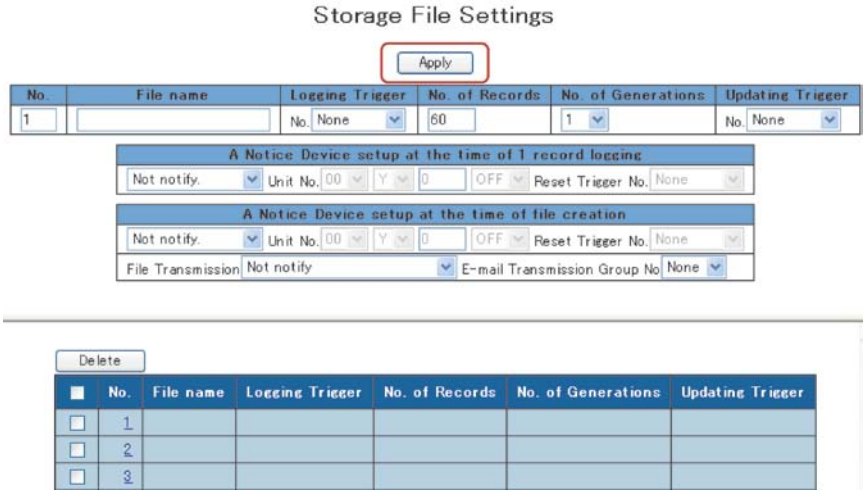
Reference: For information on logging files, <6.2.2 Logging Files>

[Procedure]

1. Click "Data Logging Setup" on the main menu, and then click "Logging File Setup" from the list on the left.



2. Set each items and then click "Apply".
The registered settings are shown in the list at the bottom.



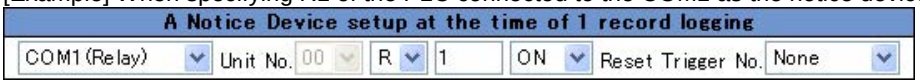
Each setting items

Item	Description
File name	Within 32 characters
Logging trigger No.	Specify the timing for storing the device registered in the file.
No. of records	Allowable range: 1 to 60000
No. of generations	Allowable range: 1 to 60
Updating trigger No.	Specify to forcibly update the file.

Notice device setup at the time of one record logging

It is used to notify that the logging of one record has completed.

[Example] When specifying R1 of the PLC connected to the COM1 as the notice device



Set the reset trigger if the specified notice device is needed to be reset.

Notice device setup at the time of file creation

It is used to notify that the specified No. of records has stored and the csv file has been generated.
It is also used to send e-mails with generated csv files as attachments.

[Example] When specifying R2 of the PLC connected to the COM1 as the notice device

Set the reset trigger if the specified notice device is needed to be reset.
Also, in this case, e-mail is transmitted to the users registered in the group No. 1 via the SMTP server specified by "Mail Transmission Settings1".

Note1) Up to 16 files with difference conditions (such as logging trigger and No. of records) can be defined.

Note2) If the size of a generated logging file exceeds 1 M bytes, this file cannot be sent by e-mail as an attachment.(Only the standard mail text is transmitted.)

Note3) **Reference:** For information on the mail transmission settings,
<6.5 Mail Transmission Function>

6.3.4 Logging Device Registration

After completing the file definitions, register the device to be actually stored.
For the device registration, understand the following concept and note the various restrictions.

The allowable number of registered blocks is 250 for 16 files in total.
- Logging devices are registered in units of "block".
- The "Initial address" and "No. of continuation" of the device to be stored is mainly specified for the block.
- Logging devices are all expressed as "1 point" regardless of types.
- Even if the information to be stored is the on/off operation of contact (1 bit) or a register (16 bits), it is counted as "1 point".

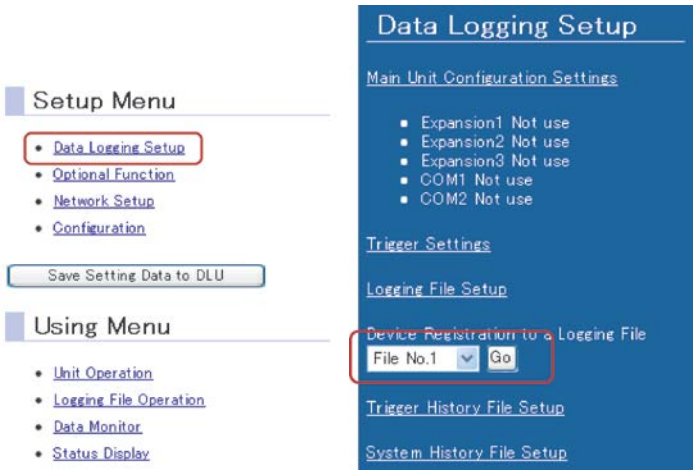
[Example] When registering the 100 points from DT0 to DT99, the initial address is "DT0" and the number of continuation is "100".
[Example] When registering the 4 points from X0 to X3, the initial address is "X0" and the number of continuation is "4".

 **Note:**
- The number of continuation that can be specified in one block is a maximum of 250 points.
- The logging conditions (such as data format) of the devices continuously registered are all the same.
- If you want to change the logging conditions of continuous devices, register them in the separate blocks.

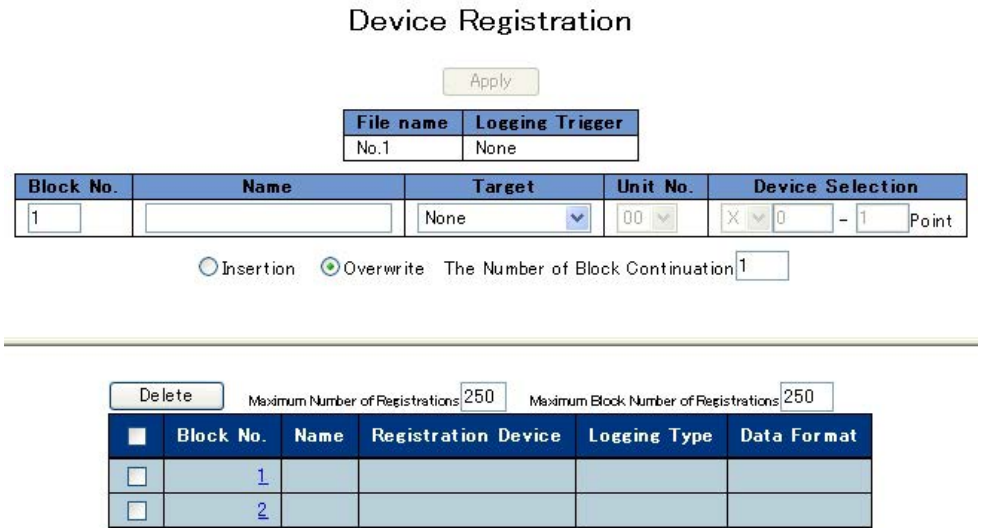
Registrable logging devices are 4000 points in total.
Although the allowable number of logging blocks is 250 and a maximum of 250 continuous devices can be registered in one block, the maximum registrable number is 4000.
Therefore, up to 16 blocks can be registered when 250 points have been registered in each block.

[Procedure]

1. Click "Data Logging Setup" on the main menu. Select a logging file No. from the list on the left, and then click "GO".



2. Select the I/F to be stored from "Target", and register a device at "Device Selection".

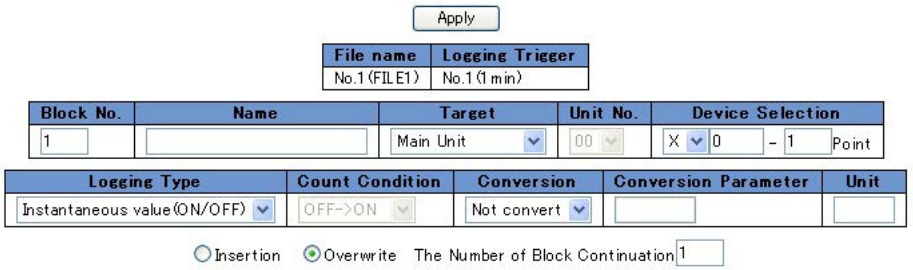


The following is the explanation when the main unit configuration settings and the file No. 1 has been set as below.

[Main unit configuration settings]
- Expansion unit 1: Digital unit
- Expansion unit 2: Analog unit
- Expansion unit 3: Not use
- COM1 settings: FPseries PLC (MEWTOCOL)
- COM2 settings: Not use

[File No.1 setting]
- File name of file No. 1: FILE1
- Logging trigger: 1-minite cycle trigger specified for No. 1

Main unit
When selecting "Main Unit" for the target, the part for registering the logging device is displayed.



Setting items	Description
Name	Within 16 characters
Unit No.	(Invalid)
Device selection	X0 to X3
Logging type	Select from "Instantaneous value (ON/OFF)", "Accumulated ON time", "Total switching times" and "Pulse value".
Count condition	When selecting "Total switching times" or "Pulse value", it is valid.
Conversion	Select "Not convert" or "Convert".
Conversion parameter	Specify the parameter value for conversion.
Unit	Within 4 characters

Enter each items, and then click "Apply".
The specified setting is displayed in the field of a corresponding block No. in the registration list.

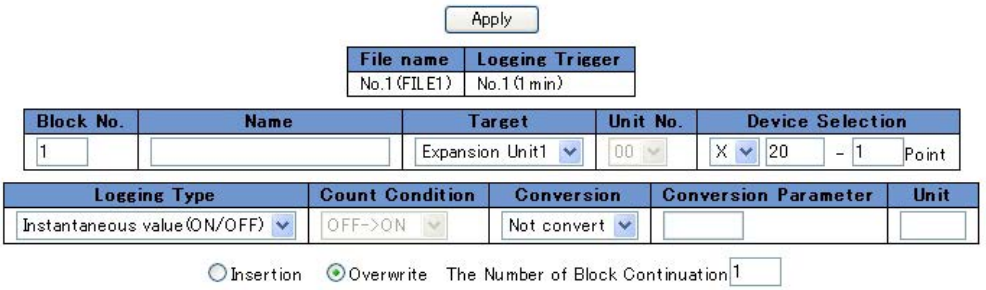
Note1) When specifying the setting at the device selection as above, only 1 point of X0 is registered in this block.

Reference: For information on logging types <6.2.1 Logging Data>

Expansion unit (Digital)

The setting screens for expansion units differ depending on the types specified in the main unit configuration settings.

The following is the setting screen when "Expansion Unit 1" is selected for the target.
(When the expansion unit 1 has been set to "Digital".)



Setting items	Description
Name	Within 16 characters
Unit No.	(Invalid)
Device selection	For expansion unit 1: X20 to X3F For expansion unit 2: X40 to X5F For expansion unit 3: X60 to X7F
Logging type	Select from "Instantaneous value (ON/OFF)", "Accumulated ON time", "Total switching times" and "Pulse value".
Count condition	When selecting "Total switching times" or "Pulse value", it is valid.
Conversion	Select "Not convert" or "Convert".
Conversion parameter	Specify the parameter value for conversion.
Unit	Within 4 characters

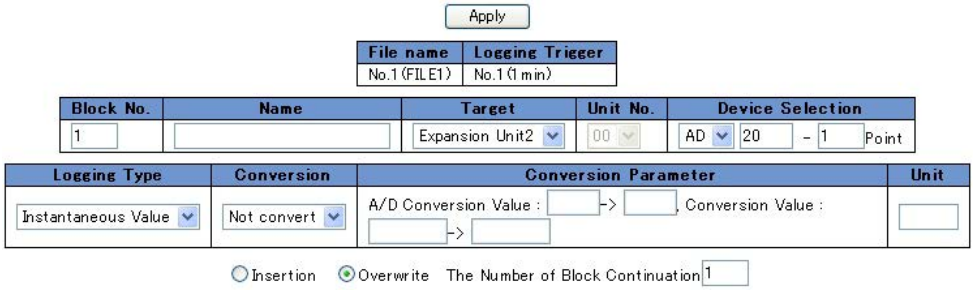
Enter each items, and then click "Apply".
The specified setting is displayed in the field of a corresponding block No. in the registration list.

Reference: For information on logging types <6.2.1 Logging Data>

Expansion unit (Analog)

The setting screens for expansion units differ depending on the types specified in the main unit configuration settings.

The following is the setting screen when "Expansion Unit 1" is selected for the target.
(When the expansion unit 1 has been set to "Analog".)



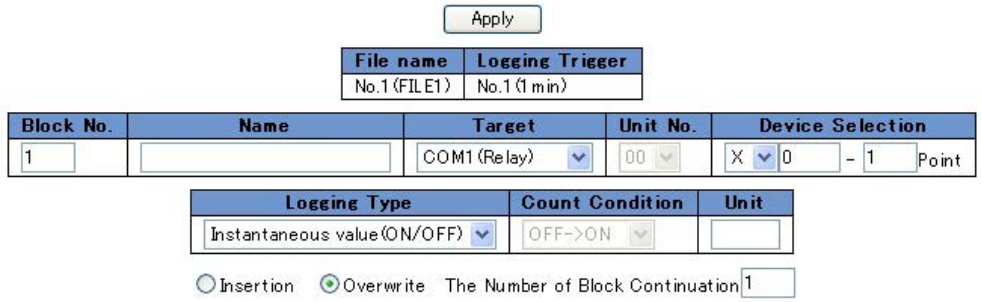
Setting items	Description
Name	Within 16 characters
Unit No.	(Invalid)
Device selection	For expansion unit 1: AD10 to AD17 For expansion unit 2: AD20 to AD27 For expansion unit 3: AD30 to AD37
Logging type	Instantaneous value, average value, minimum value, maximum value, addition value
Conversion	For A/D conversion unit: Select "Convert". For thermocouple unit: Select any one from "K, J, R, and T".
Conversion parameter	Specify the parameter value for conversion. (When using a thermocouple unit, this setting is not required.)
Unit	Within 4 characters

Enter each items, and then click "Apply".
The specified setting is displayed in the field of a corresponding block No. in the registration list.

Reference: For information on logging types <6.2.1 Logging Data>
For information on conversion parameters, <A/C Conversion Unit Manual "A/C Conversion Value Table">

COM1 (Relay)

When selecting "COM1 (Relay)" for the target, the setting screen is displayed.
(When the COM1 has been set to "FP series PLC (MEWTOCOL)".)



Setting items	Description
Name	Within 16 characters
Unit No.	When the connection type is 1:1: (Invalid) When the connection type is 1:N: 1 to 99
Device selection	Select any one from X, Y, R, L, T and C.
Logging type	"Instantaneous value (ON/OFF)", "Accumulated ON time", "Total switching times"
Count condition	When selecting "Total switching times", it is valid.
Unit	Within 4 characters

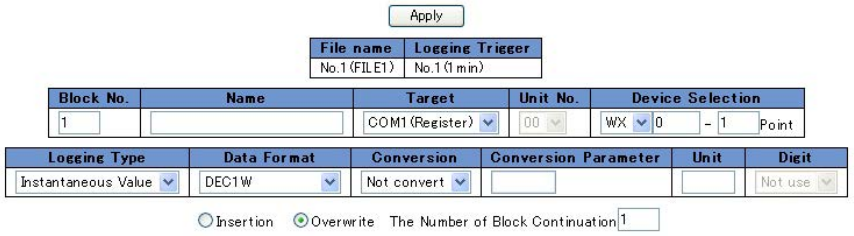
Enter each items, and then click "Apply".
The specified setting is displayed in the field of a corresponding block No. in the registration list.

Note1) If the connection unit has been set to Mitsubishi or Omron PLC in the main unit configuration settings, only the devices that support each manufacturer can be selected.
Note2) The COM2 settings are made as well as the COM1 settings.

Reference: For information on logging types <6.2.1 Logging Data>

COM1 (Register)

When selecting "COM1 (Register)" for the target, the setting screen is displayed.
(When the COM1 has been set to "FP series PLC (MEWTOCOL)".)



Setting items	Description
Name	Within 16 characters
Unit No.	When the connection type is 1:1: (Invalid) When the connection type is 1:N: 1 to 99
Device selection	WX, WY, WR, WL, DT, LD, SV, EV, FL
Logging type	Instantaneous value, average value, minimum value, maximum value, difference value
Data format	- DEC1W - DEC1W (No code) - HEX4 digits - BIN1W - Character - DEC2W - DEC2W (No code) - HEX8 digits - BIN2W - Real Number
Conversion	Not convert/Convert
Conversion parameter	When selecting "Convert", it is valid.
Unit	Within 4 characters
Digit	When selecting "Difference value", it is valid. - When selecting "DEC1W(No code)" for the data format: 1 to 4 digits - When selecting "DEC2W(No code)" for the data format: 1 to 9 digits

Enter each items, and then click "Apply".
The specified setting is displayed in the field of a corresponding block No. in the registration list.

Note1) If the connection unit has been set to Mitsubishi or Omron PLC in the main unit configuration settings, only the devices that support each manufacturer can be selected.

Note2) The selection of data format varies according to the specified logging type.

Data format	Instantaneous value	Average value	Minimum value	Maximum value	Difference value
Signed 16-bit integer	A	A	A	A	N/A
Unsigned 16-bit integer	A	N/A	N/A	N/A	A
HEX4 digits	A	N/A	N/A	N/A	N/A
16-bit binary numbers	A	N/A	N/A	N/A	N/A
Characters	A	N/A	N/A	N/A	N/A
Signed 32-bit integer	A	A	A	A	N/A
Unsigned 32-bit integer	A	N/A	N/A	N/A	A
HEX8 digits	A	N/A	N/A	N/A	N/A
32-bit binary numbers	A	N/A	N/A	N/A	N/A
Real numbers	A	A	A	A	N/A

A: Available N/A: Not available

Note3) The COM2 settings are made as well as the COM1 settings.

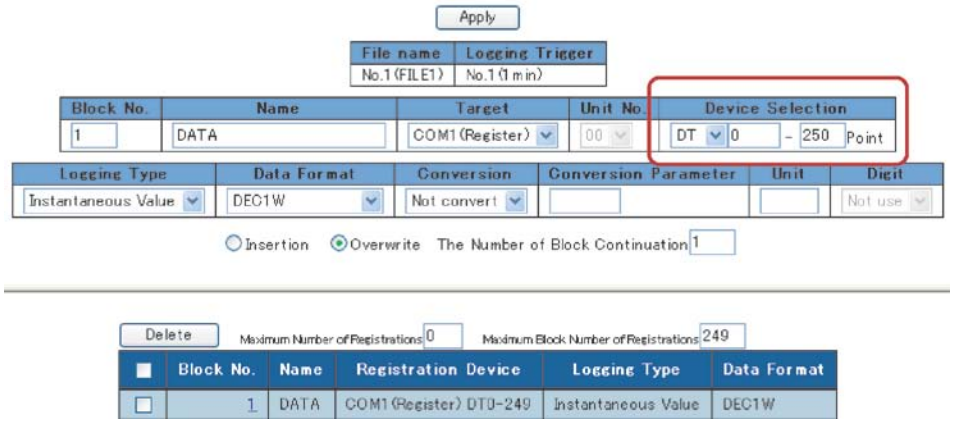
Reference: For information on logging types <6.2.1 Logging Data>

6.3.5 Common Operations for Device Registration

Once "Apply" is clicked after setting each item of "Device Registration", the specified settings are displayed in the "Registration list" at the lower part. However, the result varies depending on the selected method, that is "Insertion", "Overwrite" or "The number of Block Continuation".

[Example] When setting "COM1 (Register)"

Example 1) When registering continuous 250 points in 1 block



- 250 points "DT0 to DT249" are registered in the block No. 1.
- No more device can be registered in this file.
- The remaining number of registrable blocks is 249, and the total number of registrable points is 3750 (4000-250=3750) points.

- Header image when data is filed

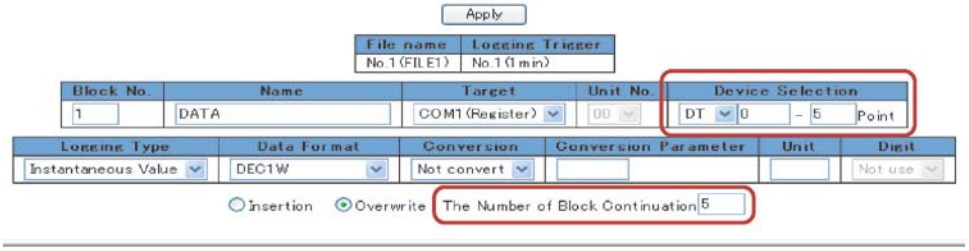
1	2	3	4	5
DATA_0	DATA_1	DATA_2	DATA_3	DATA_4
COM1	COM1	COM1	COM1	COM1
DT0	DT1	DT2	DT3	DT4
MOMENT	MOMENT	MOMENT	MOMENT	MOMENT
S16	S16	S16	S16	S16
-	-	-	-	-

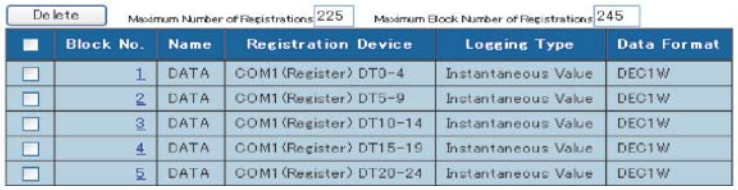
[6 to 245 exist between these blocks.]

246	247	248	249	250
DATA_245	DATA_246	DATA_247	DATA_248	DATA_249
COM1	COM1	COM1	COM1	COM1
DT245	DT246	DT247	DT248	DT249
MOMENT	MOMENT	MOMENT	MOMENT	MOMENT
S16	S16	S16	S16	S16
-	-	-	-	-

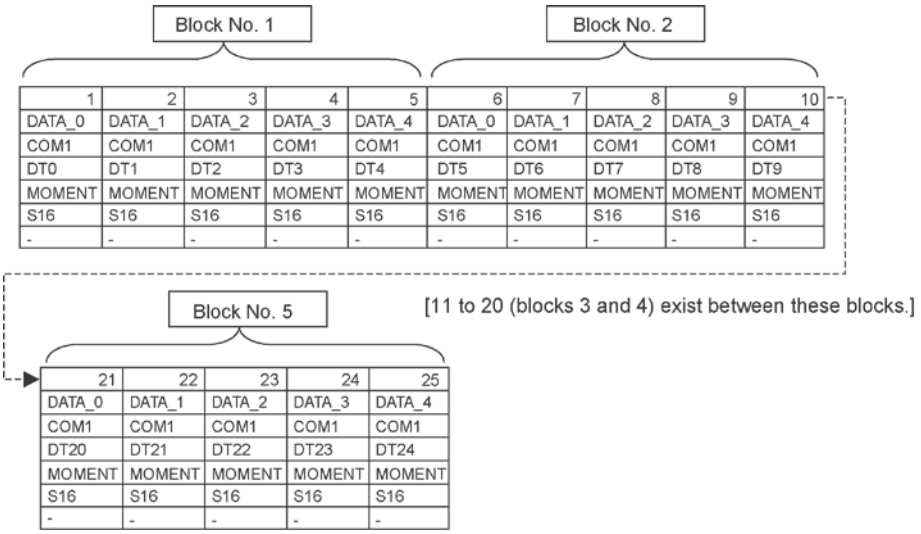
- Numbers starting with 0 are consecutively added to the "DATA" specified for names.

Example 2) When registering 5 blocks of the blocks registering continuous 5 points





- Five points of DT are registered in the blocks No. 1 to 5 respectively, i.e. totally 25 points are registered.
- The remaining number of registrable points in this file is 225 points.
- The remaining number of registrable blocks is 245, and the total number of registrable points is 3975 (4000-25=3975) points.
- Header image when data is filed



- Numbers starting with 0 are consecutively added to the "DATA" specified for names.
- "_" (underscore) is added before numbers.
- Separating data into blocks enables different settings to be specified for each block, for example, "Set the data format to HEX4 digits only for the block No. 3".

Example 3) When deleting the blocks 2 to 4 with the settings of the example 2
To delete a block, check the box next to the block number to be deleted, and click "Delete".

Delete Maximum Number of Registrations 225 Maximum Block Number of Registrations 245

	Block No.	Name	Registration Device	Logging Type	Data Format
☐	1	DATA	COM1 (Register) DT0-4	Instantaneous Value	DEC1W
☑	2	DATA	COM1 (Register) DT5-9	Instantaneous Value	DEC1W
☑	3	DATA	COM1 (Register) DT10-14	Instantaneous Value	DEC1W
☑	4	DATA	COM1 (Register) DT15-19	Instantaneous Value	DEC1W
☐	5	DATA	COM1 (Register) DT20-24	Instantaneous Value	DEC1W

The alert message for confirmation is displayed. Click "OK".

Delete Maximum Number of Registrations 240 Maximum Block Number of Registrations 248

	Block No.	Name	Registration Device	Logging Type	Data Format
☐	1	DATA	COM1 (Register) DT0-4	Instantaneous Value	DEC1W
☐	2				
☐	3				
☐	4				
☐	5	DATA	COM1 (Register) DT20-24	Instantaneous Value	DEC1W

- The remaining number of registrable blocks is 248, and the total number of registrable points is 3990 (4000-10=3990) points.
- The header image when data is actually filed is as below.

1	2	3	4	5	6	7	8	9	10
DATA_0	DATA_1	DATA_2	DATA_3	DATA_4	DATA_0	DATA_1	DATA_2	DATA_3	DATA_4
COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM1	COM1
DT0	DT1	DT2	DT3	DT4	DT20	DT21	DT22	DT23	DT24
MOMENT	MOMENT	MOMENT	MOMENT	MOMENT	MOMENT	MOMENT	MOMENT	MOMENT	MOMENT
S16	S16	S16	S16	S16	S16	S16	S16	S16	S16
-	-	-	-	-	-	-	-	-	-

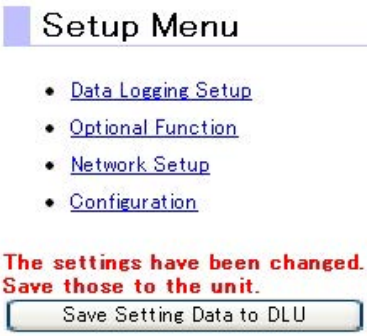
- The blank for the missing blocks is closed up when the data has been filed.

6.3.6 Transferring Setting Data to DLU

The specified settings become effective by saving them to the DLU unit.
When you set items on each setting screens, those settings are not completed.

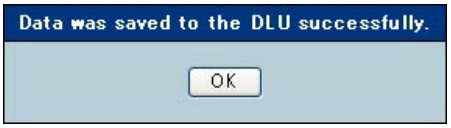
[Procedure to save setting data to DLU]

1. If you open the main menu after defining various settings on the DLU, the message "The settings have been changed" is blinking.
Click "Save Setting Data to DLU".



2. Click "OK".
The setting data is recorded in the DLU.

3.When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



6.3.7 System History File

DLU saves the history such as the dates of power-on, login, and when errors occurred in files.
These files are called system history files.
The system history is saved in the location where logging files are stored with the name "System.csv".

The system history files are saved in the following format.

Date	Time	Record	Data1	Data2

The details of each item are as below.
Date: Date: Occurrence date
Time: Occurrence time

Record	Data1	Data2	Remarks
Power ON	(Cause of reset) -: Normal Power failure: Instantaneous power failure WDT time up: Runaway	-	Records power-on.
Power OFF	-	-	Records power-off.
Log IN	(User name)	-	Records login
Log OUT	(User name)	-	Records log-out.
Firmware has been updated	(User name)	-	Records firmware update.
Setting data has been updated	(User name)	-	Records changes in settings.
Hard error	(Hardware error) - Main unit - Right expansion unit [1 to 3]	(Error code)	Records hardware errors.
File error	(Error file name)	(Error code)	Records file errors.
Network error	(Port No.)	(Error code)	Records higher level communication errors. (such as HTTP and SMTP)
Communication error	(Port No.)	(Error code)	Records lower level communication errors. (such as MEWTOCOL)
Run mode	-	-	Records the change to RUN mode.
Stop mode	-	-	Records the change to STOP mode.
Output	(Data name. Device name if no data name is registered.)	(Data)	Records control output.
CF card cover has been removed	-	-	Records the CF cover has been removed.
CF card cover has been installed.	-	-	Records the CF cover has been installed.
Time has been adjusted	(Destination port No. and register No.)	- OK - NG ・-	Records the time has been adjusted.

6.3.8 Trigger History File

DLU saves the history when registered triggers occur.
These files are called trigger history files.
The trigger history is saved in the location where logging files are stored with the name "Trigger.csv".

The trigger history files are saved in the following format.

Date	Time	No.	Name	Phenomenon

The details of each item are as below.
Date: Occurrence date
Time: Occurrence time

Display item	Description
No.	(Occurred trigger No.)
Name	(Occurred trigger name)
Phenomenon	(Occurred phenomenon) - Occurrence (Occurrence of trigger) - Restoration (Restoration of trigger)

6.3.9 Storing Data of Mitsubishi PLC

To collect data with a PLC manufactured by Mitsubishi Electric Corporation connected to the communication cassette, select Mitsubishi FX series (or FX2N series) for the connection unit.1:1 communication using the TOOL port of FX series or RS232C adapter is available. Also, FX computer link using RS485 adapter is available.

Communication condition settings
Communication condition settings for DLU
Set the communication condition settings for the COM port as below.
However, the following settings should be changed depending on the setting of the PLC to be connected.

Item	Set value
Baud rate	9600 bps
Data length	7 bits
Parity check	Even
Stop bit	1 bit

Communication condition settings for PLC

Connection unit selection	Port	Communication mode	Contents of D8120
FX	Tool or RS232C adapter	1:1	0
FX2N	Tool or RS232C adapter	1:1	0
FX computer	RS485 adapter	1:N	E086

 **Note:**
The "Computer link" in the communication format "D8120" is the communication procedure for Mitsubishi A-series computer link unit.
Note that it is different from the communication procedure for FX-series tool port.

Usable devices

Device type		FX1N range No.	FX2N range No.	Remarks
Bit device	Input relay (X)	X0000 to X0337	X0000 to X0337	
	Output relay (Y)	Y0000 to Y0337	Y0000 to Y0337	
	Internal relay (M)	M0000 to M1535	M0000 to M1535	
	State (S)	S0000 to S0999	S0000 to S0999	
	Timer (Contact) (TS)	TS0000 to TS0255	TS0000 to TS0255	
	Counter (Contact) (CS)	CS0000 to CS0255	CS0000 to CS0255	
Word device	Input relay (X)	X0000 to X0320	X0000 to X0320	Specify address by the 20.
	Output relay (Y)	Y0000 to Y0320	Y0000 to Y0320	Specify address by the 20.
	Internal relay (M)	M0000 to M1520	M0000 to M1520	Specify address in multiples of 16.
	State (S)	S0000 to S0976	S0000 to S0976	Specify address in multiples of 16.
	Timer (Current value) (TN)	TN0000 to TN0255	TN0000 to TN0255	
	Counter (Current value) (CN)	CN0000 to CN0255	CN0000 to CN0255	
	Data register (D)	D0000 to D0999	D0000 to D0999	

Note1) Depending on the type being used, the usable address range varies. Refer to the instruction manual of the PLC being used for detailed information.
Note2) If input relays, output relays and auxiliary relays are being used in word units, addresses should be specified in 16-point units, starting from 000. (X000, X020, X040..., M000, M016, M032)
Note3) For the control procedure, use the type 4.
Note4) Set the sum check code to "Available".

6.3.10 Storing Data of Omron PLC

To collect data with a PLC manufactured by OMRON Corporation connected to the communication cassette, select Omron SYSMAC-C series for the connection unit.1:1 communication using the RS232C port, communication port or peripheral port of SYSMAC-C series is available.

Communication condition settings

Communication condition settings for DLU

Set the communication condition settings for the COM port as below.

Item	Set value
Baud rate	19200 bps
Data length	7 bits
Parity check	Even
Stop bit	1 bit

Communication condition settings for PLC

The settings for PLC are as below. Some items cannot be set depending on the used model. There is no need to set the items that are not available.

Item	Set value
PLC mode	Monitor mode
Mode designation	High link
Procedure	1:N
Baud rate	19200 bps
Data length	7 bits
Parity check	Even
Stop bit	1 bit
Unit No.	No. 0
CTS designation	Always ON
5 V supply	None
Communication method	RS232C

Note) The PLC mode should be always the monitor mode.

For almost all models the PLC communication setting method is as follows. However, differences may arise depending on the model. For details, please consult the manual for the PLC you will use when making the settings.

To communicate using the RS232C port of the CPU unit

Set the system area as follows.

Address	Set value	Setting
DM6600	0201 (HEX)	PLC mode setting (Monitor mode)
DM6645	0001 (HEX)	Mode setting of RS232C port (High link)
DM6646	0004 (HEX)	Communication condition settings (19200 bps, 7 bits, even, 1 bit)
DM6648	0000 (HEX)	Device No. setting (Device No. 0)

To communicate using the communication port

Set the system area as follows.

To communicate with port A

Address	Set value	Setting
DM6600	0201 (HEX)	PLC mode setting (Monitor mode)
DM6550	0001 (HEX)	Mode setting of RS232C port (High link)
DM6551	0004 (HEX)	Communication condition settings (19200 bps, 7 bits, even, 1 bit)

To communicate with port B

Address	Set value	Setting
DM6600	0201 (HEX)	PLC mode setting (Monitor mode)
DM6555	0001 (HEX)	Mode setting of RS232C port (High link)
DM6556	0004 (HEX)	Communication condition settings (19200 bps, 7 bits, even, 1 bit)

To communicate using the high link I/F unit

Make sure to set the CPU mode to monitor mode.

Use the DIP switch or rotary switch on the link I/F unit to make settings such as the baud rate.

For details, refer to the manual for the unit you are using.

To communicate using the peripheral port

Set the system area as follows.

Address	Set value	Setting
DM6600	0201 (HEX)	PLC mode setting (Monitor mode)
DM6550	0001 (HEX)	Mode setting of RS232C port (High link)
DM6551	0004 (HEX)	Communication condition settings (19200 bps, 7 bits, even, 1 bit)

Usable devices

Device type	
Bit device	I/O relay Internal auxiliary relay
	Analog setting value storage area
	Special auxiliary relay
	Data link relay (LR)
	Auxiliary storage relay (AR)
	Hold relay (HR)
	Timer (Contact) (TIM)
	Counter (Contact) (CNT)
Word device	I/O relay Internal auxiliary relay
	Analog setting value storage area
	Special auxiliary relay
	Data link relay (LR)
	Auxiliary storage relay (AR)
	Hold relay (HR)
	Timer (Contact) (TIM)
	Counter (Current value) (CNT)
	Data memory (DM/D)

Note1) Depending on the type being used, the usable address range varies. For details, refer to the manual for the unit you are using.

Note2) Data cannot be written to relay areas 253 to 255CH.

Note3) The data link relay (LR), hold relay (HR), timer (TIM) and counter (CNT) are not available for J1 series.

6.4 Sample Setting

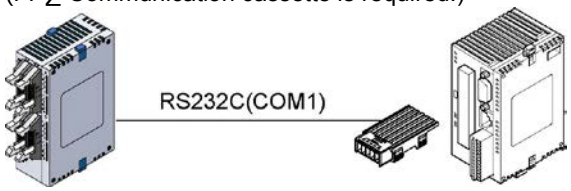
Specify the necessary settings for data logging.

Basic procedure

1. Make the main unit configuration settings.	- Use/Not use Expansion unit - Data storage place (CF/Internal memory) - Application and communication conditions of communication cassette
2. Set the trigger to be used for data logging.	- Fixed cycle (such as 5 minute interval) - Relay (The contact of PLC turns on.) etc.
3. Set a logging file.	- File name - Timing of storing data (Trigger) - No. of records, No. of generations, etc.
4. Register a logging device.	- Register data to be actually stored in the set file.
5. Save the Setting Data to DLU.	- Transfer the setting data to DLU, and finish the setting.
6. Set the DLU to the RUN mode.	- After completing the setting, set the DLU to the RUN mode, and generate the logging file. Refer to <7.1.1 Using DLU in Run Mode>

6.4.1 Storing Data of PLC

Connect the DLU to a PLC as shown in the figure below, and store data under the following conditions. (FP∑ Communication cassette is required.)



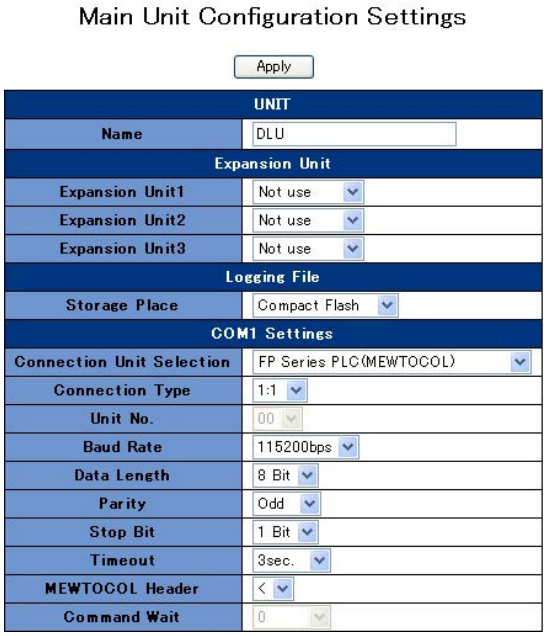
Main conditions for storing data	Description
Logging trigger	R0 of PLC is ON.
Registration No. 1	
Logging device	100 points starting from DT0 of PLC
Logging type	Instantaneous value
Data format	Signed 16-bit integer
Conversion	Not convert
Notice device setup at the time of 1 record logging	R1 of PLC is ON.

[Procedure]

1. Make the main unit configuration settings.

1. Click "Data Logging Setup" on the main menu.

2. The main unit configuration setting screen is displayed. Select a PLC to be connected to the COM1, and click "Apply".

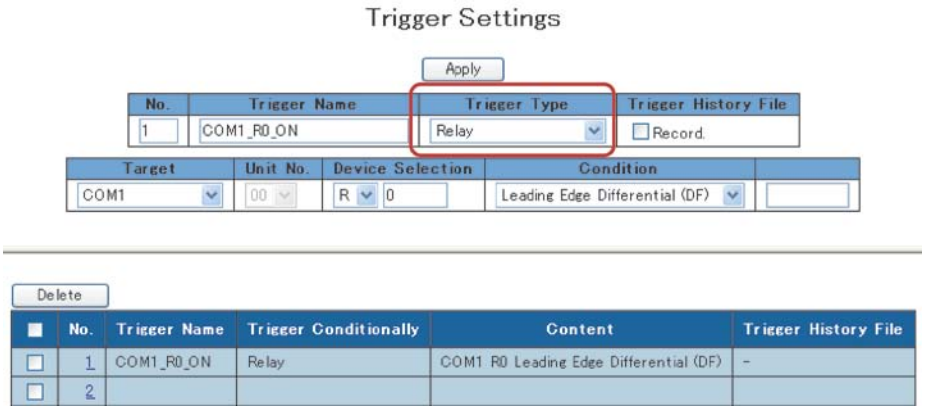


Note:

- The storage place of the logging file has been changed to "CF card".
- If the PLC is connected to the COM2, specify the "COM2 settings".
- When connecting via RS485, select "1:N" for "Connection Type".
- As for "baud rate, data length, parity, stop bit", set the same communication conditions as the conditions of the connected PLC.
- If the connection PLC supports the METWTOCOL header "<", the time taken for one data sampling can be shorten by selecting "<".

2. Set the trigger to be used for data logging.

Click "Trigger Settings" from the menu on the left, and then set the trigger conditions on the right screen.
Firstly, set "Trigger Type" to "Relay".
The layout of the screen changes to the one for setting a relay.
Clicking "Apply" after setting each items shows the registered setting in the list at the bottom.



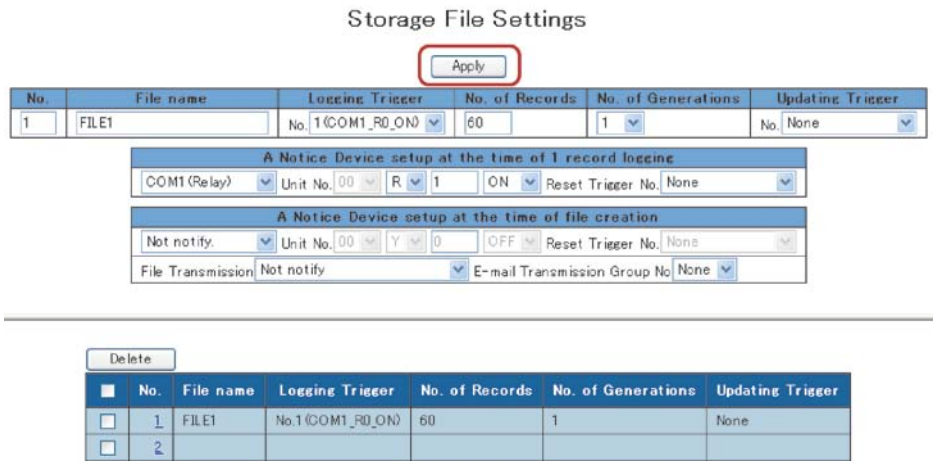
Note:

- Specify a trigger name within 32 characters.
- If the connection type has been set to "1:N" in the main unit configuration settings, "Unit No." is available.
  Specify the unit number of the PLC to be used for the trigger.
- Check the bock next to "Record" of the item "Trigger History File" to record the history that this trigger occurs in "Trigger History File".

Reference: <6.3.8 Trigger History File>

3. Set a logging file.

Click "Logging File Setup" from the menu on the left, and then make the setting for logging files on the right screen.
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.

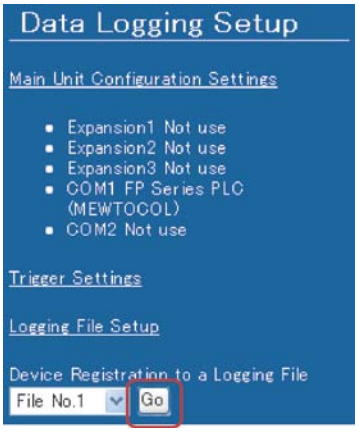


Note:
- Specify "File name" within 32 characters.
- "No. of records" should be set in the range of 1 to 60000.
- "Updating trigger" is specified when creating a file with any condition other than "No. of specified records".

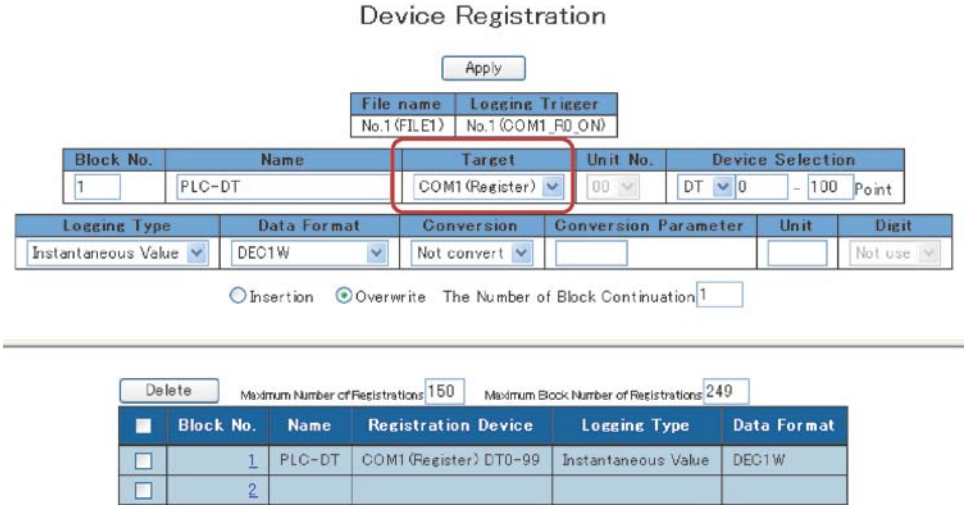
Reference: - <6.2.2 Layout of Logging Files>
- <6.3.4 Notice at the Time of File Creation>

4. Register a logging device.

Select the "File No. 1" of "Device Registration to a Logging File" from the menu on the left, and click "Go".



The following screen is displayed. Firstly, select "COM1(Register)" for "Target".
The layout of the screen changes to the one for setting the register of COM1.
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.

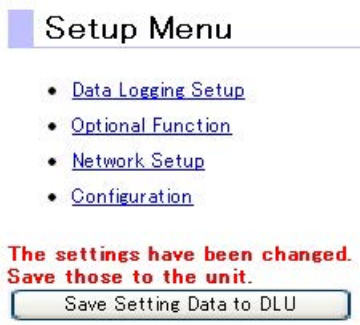


Note: Specify "Name" within 16 characters.

Reference: - <6.2.1 Logging Data>
- <6.3.5 Common Operations for Device Registration>

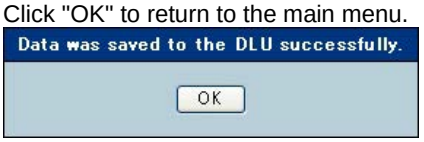
5. Transfer the setting data to DLU

Click "Back to Main Menu" to return to the main menu.
A message "The settings have been changed. Save those to the unit." blinks. Click "Save Setting Data to DLU".



Click "OK".
The setting data is recorded in the DLU.

When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.

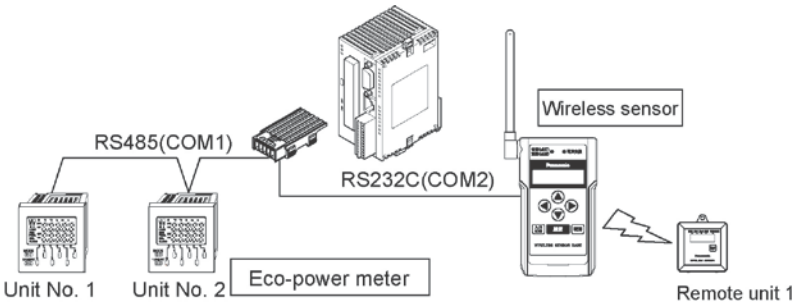


After the completion of setting, change the DLU to the run mode, and confirm if a logging file is created.

Reference: <7.1 Using DLU in Run Mode>

6.4.2 Storing Data of Eco-power Meter or Wireless Sensor

Connect the DLU to an eco-power meter or wireless sensor as shown in the figure below, and store data under the following conditions.
(FPΣ Communication cassette is required.)



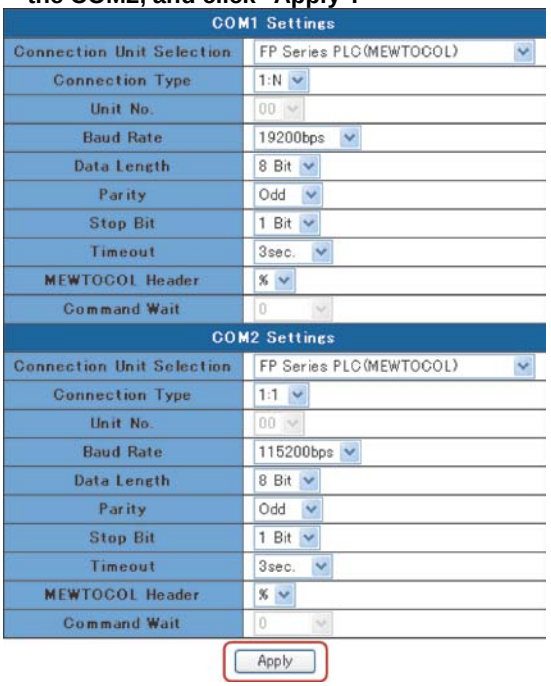
Main conditions for storing data	Description
Logging trigger	10 minute interval
Registration No. 1	
Logging device	Integral power consumption of unit No. 1 (DT100)
Logging type	Difference value
Data format	Unsigned 32-bit integer
Conversion	Convert (X 0.01)
Registration No. 2	
Logging device	Integral power consumption of unit No. 2 (DT100)
Logging type	Difference value
Data format	Unsigned 32-bit integer
Conversion	Convert (X 0.01)
Registration No. 3	
Logging device	Temperature of wireless sensor (DT0)
Logging type	Instantaneous value
Data format	Signed 16-bit integer
Conversion	Convert (X 0.1)
Registration No. 4	
Logging device	Humidity of wireless sensor (DT1)
Logging type	Instantaneous value
Data format	Unsigned 16-bit integer
Conversion	Not convert

[Procedure]

1. Make the main unit configuration settings.

1. Click "Data Logging Setup" on the main menu.

2. Make the settings for connecting an eco-power meter to the COM1, and a wireless-sensor to the COM2, and click "Apply".

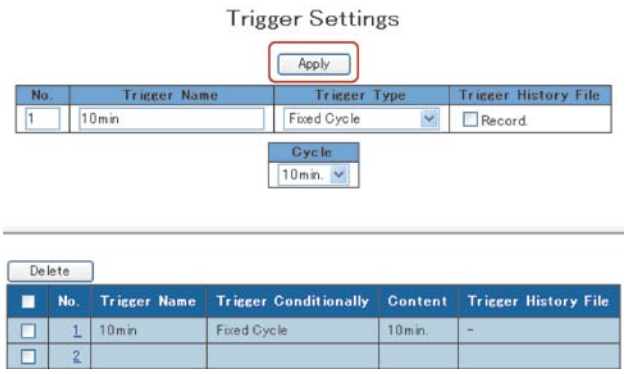


Note:

- For connecting the eco-power meter via RS485, select "1:N" for "Connection Type".
- For connecting the wireless sensor, select "1:1" for "Connection Type".
- As for "baud rate, data length, parity, stop bit", set the same communication conditions as the conditions of the connected eco-power meter and wireless sensor.
- For the eco-power meter and wireless sensor, always set "%" for the MEWTOCOL header.

2. Set the trigger to be used for data logging.

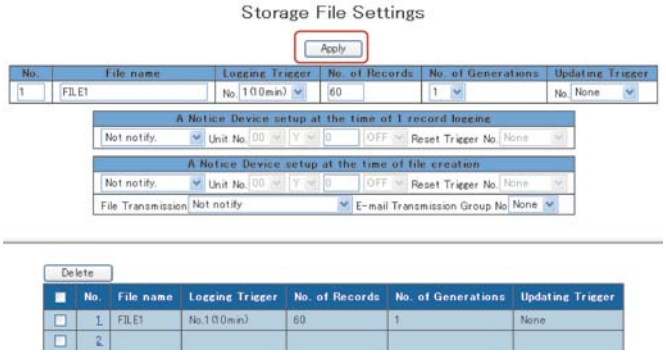
Click "Trigger Settings" from the menu on the left, and then set the trigger conditions on the right screen.
Firstly, set "Trigger Type" to "Fixed Cycle".
The layout of the screen changes to the one for setting the cycle.
Clicking "Apply" after setting each items shows the specified setting in the list at the bottom.



Note: Specify a "Trigger name" up to 32 characters.

3. Set a logging file.

Click "Logging File Setup" from the menu on the left, and then make the setting for logging files on the right screen.
Clicking "Apply" after setting each items shows the specified setting in the list at the bottom.



Note:
- Specify "File name" within 32 alphanumeric characters.
- "No. of records" should be set in the range of 1 to 60000.
- "Updating trigger" is specified when creating a file with any condition other than "No. of specified records".

Reference: <6.2.2 Layout of Logging Files>
<6.3.4 Notice at the Time of File Creation>

4. Register a logging device.

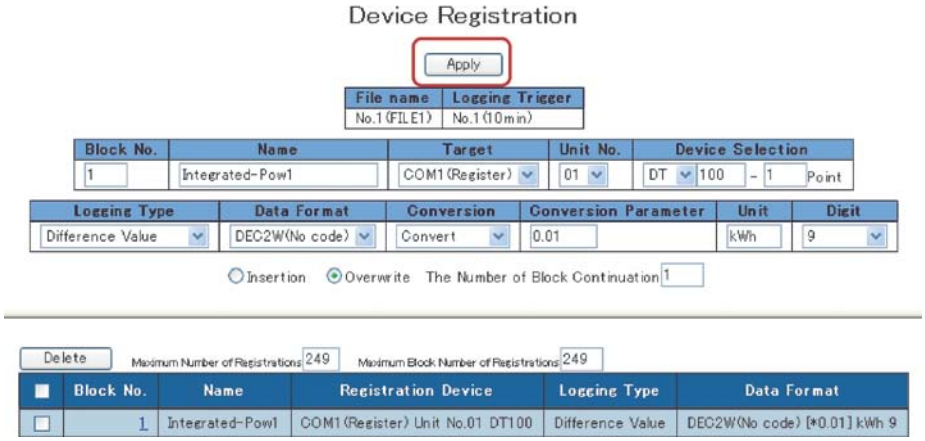
Select the "File No. 1" of "Device Registration to a Logging File" from the menu on the left, and click "Go".

1. Register the integral power consumption of eco-power meter (unit No. 1).

Select "COM1(Register)" for "Target".

The layout of the screen changes to the one for setting the register of COM1.

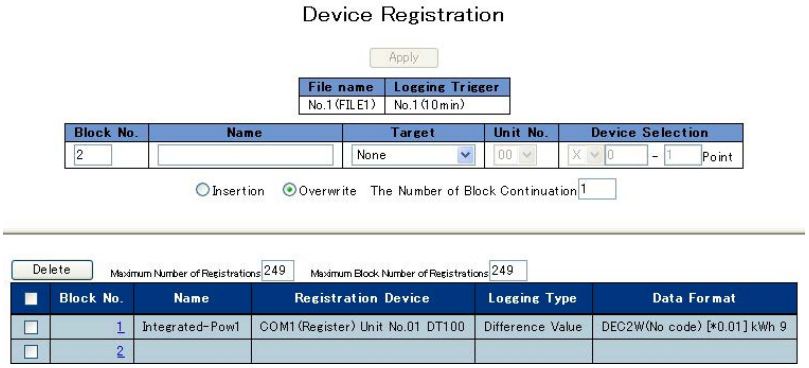
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



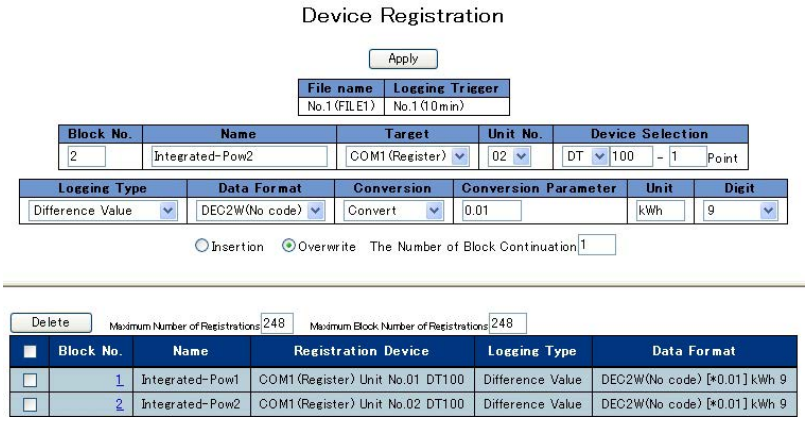
2. Register the integral power consumption of eco-power meter (unit No. 2).

Click No. 2 in the list below.

The upper screen changes to the one for registering the unit No. 2.



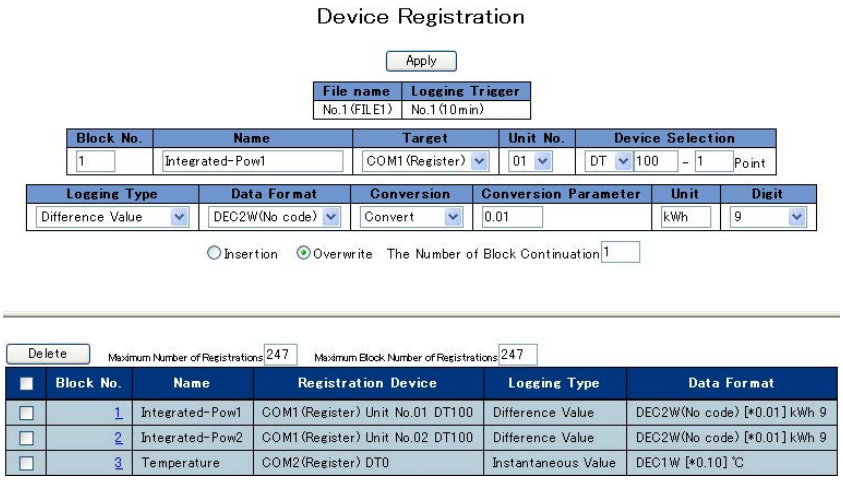
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



3. Register the temperature data of wireless sensor.

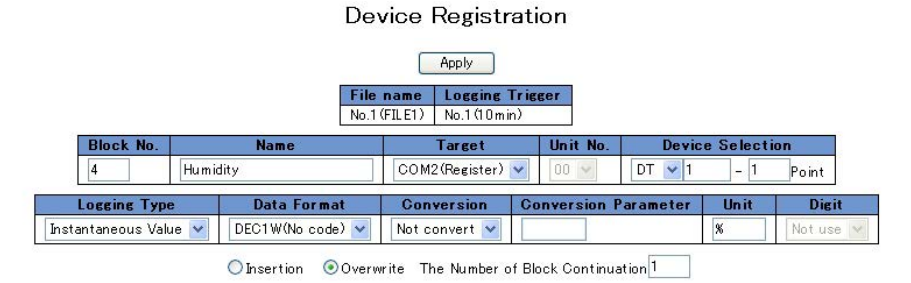
Click No. 3 in the list below, and select "COM2(Register)" for "Target" on the upper setting screen.

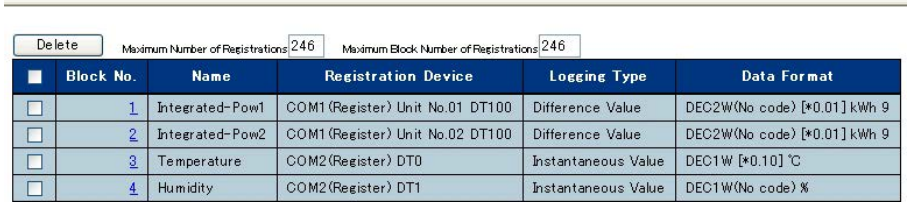
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



4. Register the humidity data of wireless sensor.

Click No. 4 in the list below, and select "COM2(Register)" for "Target" on the upper setting screen. Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



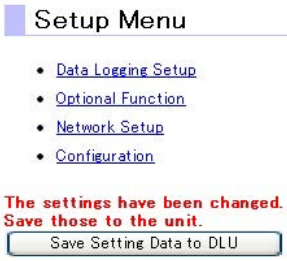


Note: Specify "Name" within 16 characters.

Reference: - <6.2.1 Logging Data>
- <6.3.5 Common Operations for Device Registration>

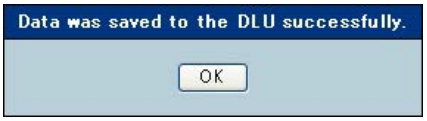
5. Transfer the setting data to DLU

Click "Back to Main Menu" from the menu on the left.
The message "The settings have been changed" is blinking on the main menu.
Click "Save Setting Data to DLU".



Click "OK".
The setting data is recorded in the DLU.

When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.

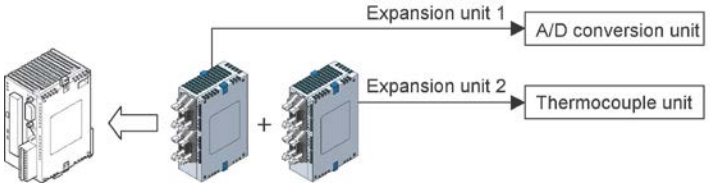


After the completion of setting, change the DLU to the run mode, and confirm if a logging file is created.

Reference: <7.1 Using DLU in Run Mode>

6.4.3 Storing Analog Data with Expansion Units

Add an A/D conversion unit and a thermocouple unit to the DLU as shown in the figure below, and store data under the following conditions.



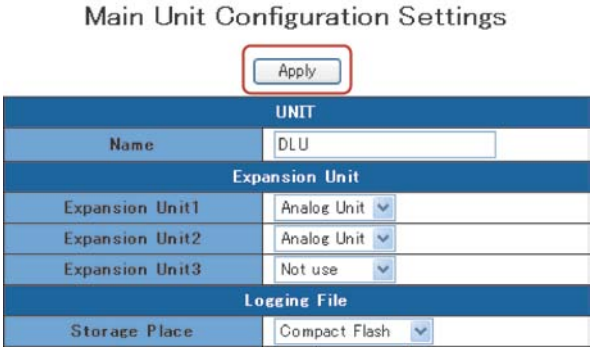
Main conditions for storing data	Description
Logging trigger	10 minute interval
Registration No. 1	
Logging device	CH0 of expansion unit 1
Logging type	Average value
Conversion characteristics	-10 V to +10 V
Registration No. 2	
Logging device	CH0 of expansion unit 2
Logging type	Instantaneous value
Type	Thermocouple K type

[Procedure]

1. Make the main unit configuration settings.

1. Click "Data Logging Setup" on the main menu.

2. Select "Analog Unit" for the expansion unit 1 and 2, and click "Apply".

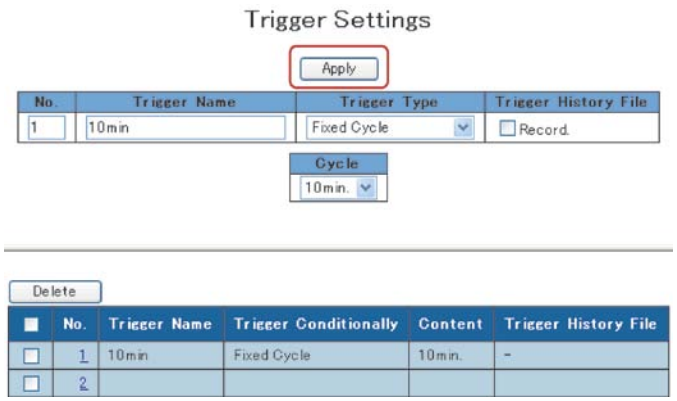


Note:

- For both the A/D conversion unit and thermocouple unit, set "Analog Unit".
- Expansion units should be set from the one installed in the position closer to the DLU first.
  For example, if "Not use" has been selected for the expansion unit 1, the setting for the expansion unit 2 cannot be made.

2. Set the trigger to be used for data logging.

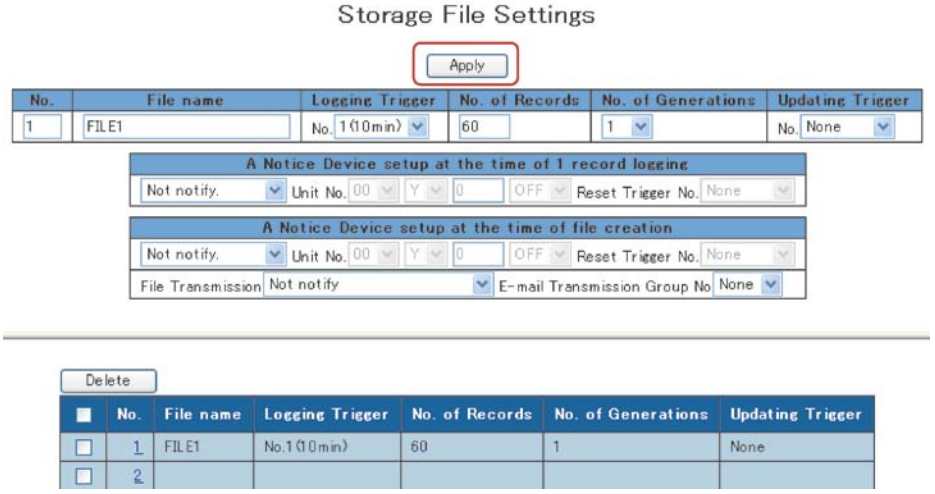
Click "Trigger Settings" from the menu on the left, and then set the trigger conditions on the right screen.
Firstly, set "Trigger Type" to "Fixed Cycle".
The layout of the screen changes to the one for setting the cycle.
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



Note: Specify a "Trigger name" up to 32 characters.

3. Set a logging file.

Click "Logging File Setup" from the menu on the left, and then make the setting for logging files on the right screen.
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.

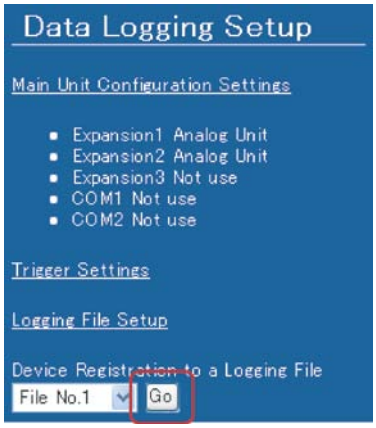


Note:
- Specify "File name" within 32 alphanumeric characters.
- "No. of records" should be set in the range of 1 to 60000.
- "Updating trigger" is specified when creating a file with any condition other than "No. of specified records".

Reference: <6.2.2 Layout of Logging Files>
<6.3.4 Notice at the Time of File Creation>

4. Register a logging device.

Select the "File No. 1" of "Device Registration to a Logging File" from the menu on the left, and click "Go".

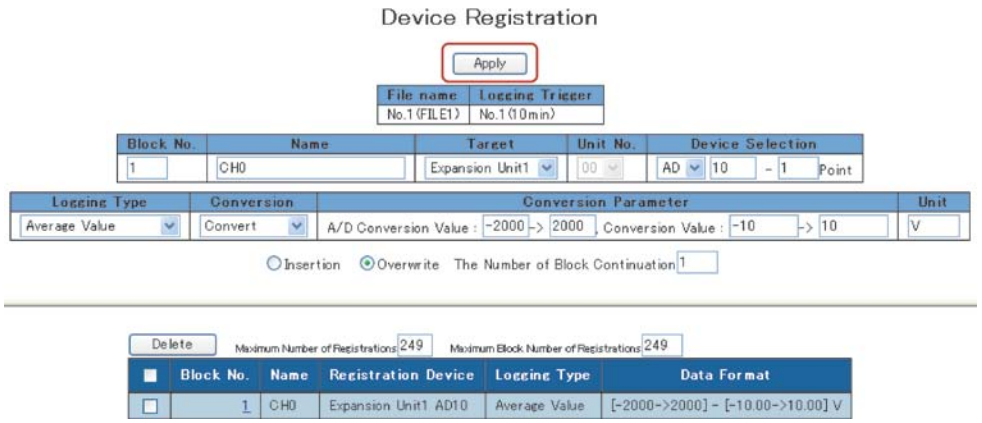


1. Register CH0 of the expansion unit 1.

Select "Expansion Unit 1" for "Target".

The layout of the screen changes to the one for setting the expansion unit 1.

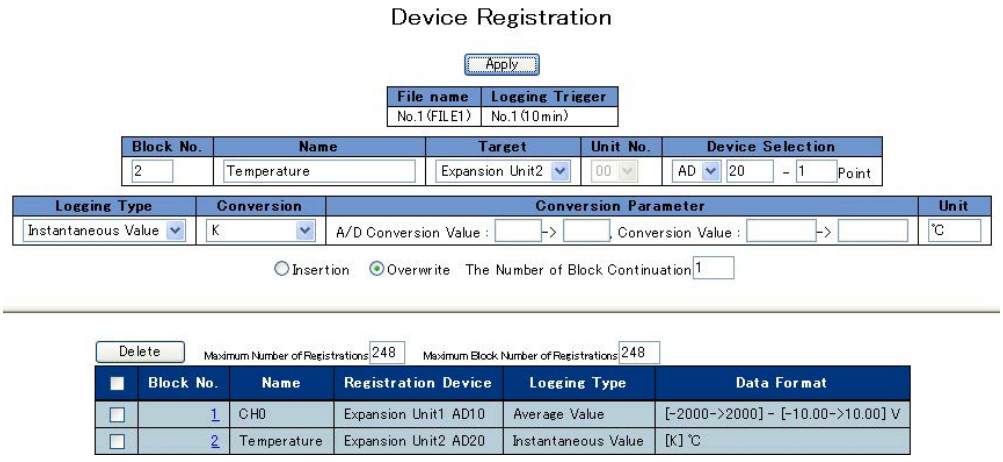
Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.



2. Register CH0 of the expansion unit 2.

Select "Expansion Unit 2" for "Target".

Clicking "Apply" after setting each item shows the specified setting in the list at the bottom.

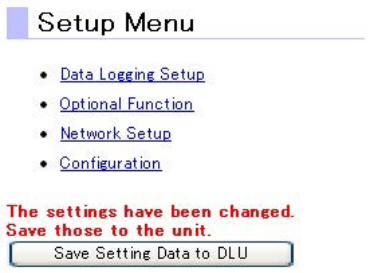


Note: Specify "Name" within 16 characters.

Reference: <6.2.1 Logging Data>
<6.3.5 Common Operations for Device Registration>

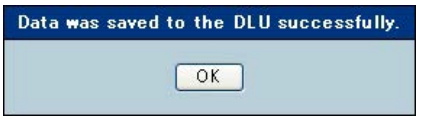
5. Transfer the setting data to DLU

Click "Back to Main Menu" from the menu on the left.
The message "The settings have been changed" is blinking on the main menu.
Click "Save Setting Data to DLU".



Click "OK".
The setting data is recorded in the DLU.

When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



After the completion of setting, change the DLU to the run mode, and confirm if a logging file is created.

Reference: <7.1 Using DLU in Run Mode>

6.5 Mail Transmission Settings

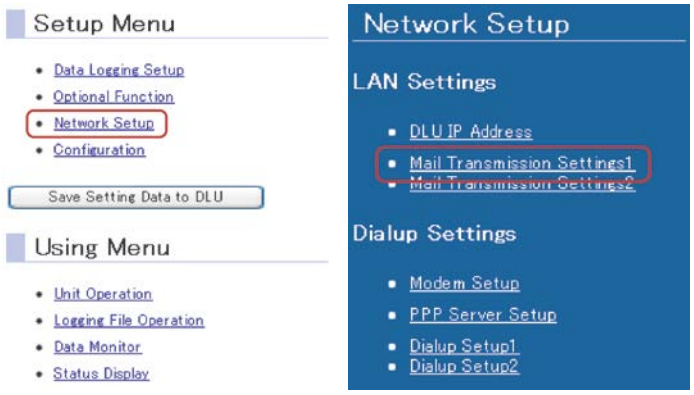
DLU can send e-mails via LAN or dial-up access.
For the dial-up access, a commercial modem or WP10 can be used.

This chapter describes the necessary settings for DLU to transmit e-mails.

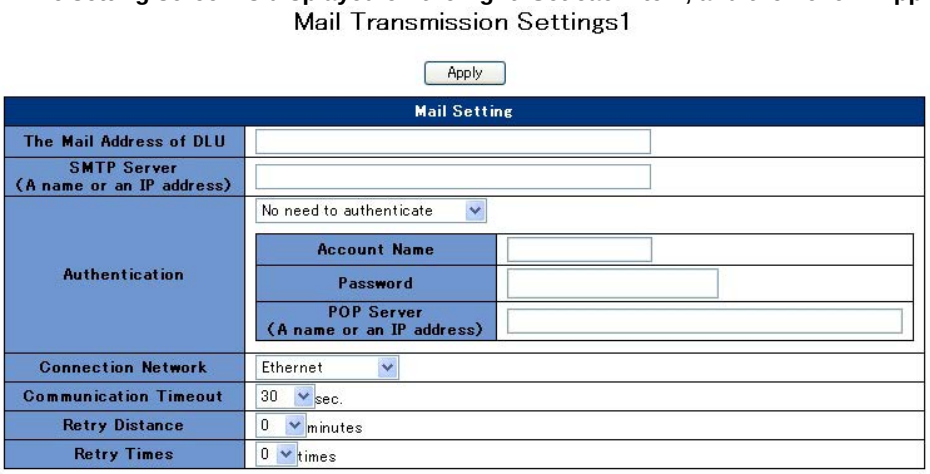
6.5.1 Mail Transmission Settings

1. Set the server for mail transmission.

[Procedure]
1. Click "Network Setup" on the main menu, and then click "Mail Transmission Settings1" from the list on the left.



2. The setting screen is displayed on the right. Set each item, and then click "Apply".



Item	Description
Mail address of DLU	Within 48 characters
SMTP server	Within 48 characters
Authentication	- Not need to authenticate - POP before SMTP (standard) - POP before SMTP (APOP)
Account name	Within 48 characters
Password	Within 16 characters
POP server	Within 48 characters
Connection network	- LAN - Dial-up access 1 - Dial-up access 2
Communication timeout	30, 60, 90, 120 seconds
Retry distance	0, 1, 2, 3, 4, 5, 10, 15 minutes
Retry times	0, 1, 2, 3, 4, 5

Note:

- For the information on the settings of mail address, SMTP server and authentication, ask your network administrator.
- When specifying the SMTP server with a name, the setting of DNS server is necessary.
- For using a modem such as WP10 to transmit e-mails, set "dial-up access" for "Connection Network".
- Up to 2 kinds of mail transmission settings are available.

Reference:

- For the information on the DNS server setting, <6.1.7 DLU IP Address Setting>
- For the information on the dial-up setup, <6.5.2 Modem Setup Such As WP10>
  <6.5.3 Dial-up Setup>

2. Set the destination to send mails.

Mail transmission is performed for groups.
Users must be registered before setting a mail address here.
Then, make the group registration settings.

Reference:
- For the information on the user registration, <6.1.5 User Registration Settings>
- For the information on the group registration, <6.1.6 Group Registration Settings>

3. Set a transmission trigger.

The timing of transmission is selected from the predesignated "Triggers".

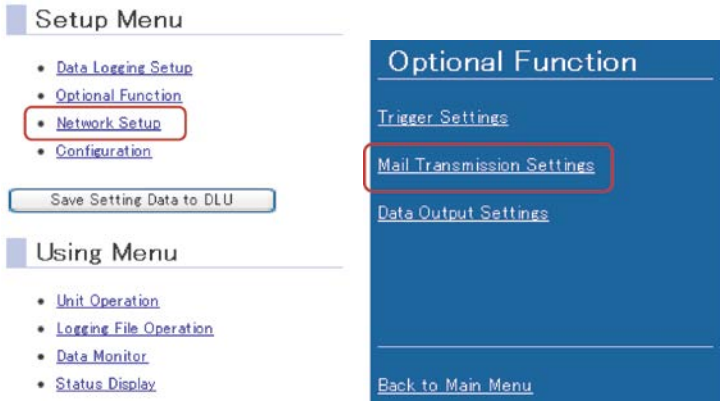
Reference: <6.3.2 Trigger Settings>

Note: To use "Fixed Cycle" for the trigger of mail transmission, set the cycle to at least 5 minutes.

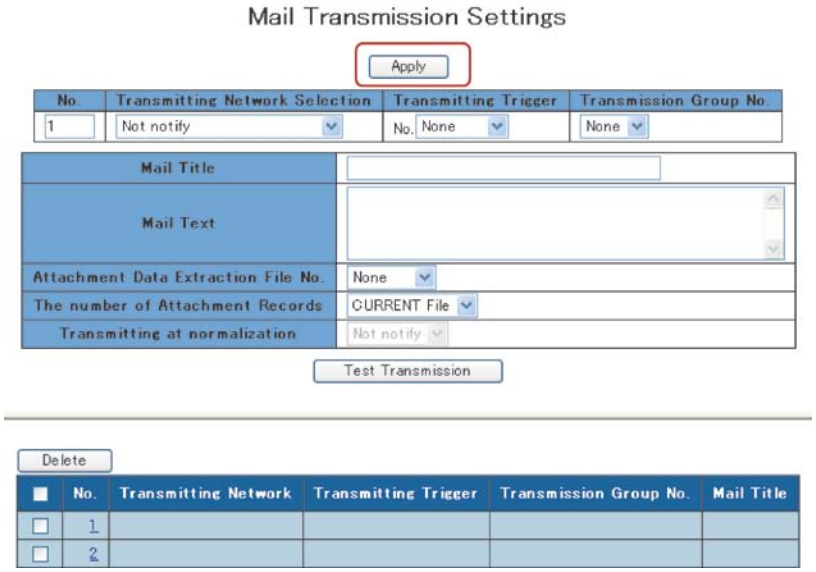
4. Edit the title and text of mail.

Follow the procedure below to set mail contents.

[Procedure]
1. Click "Optional Function" on the main menu, and then click "Mail Transmission Settings" from the list on the left.



2. The setting screen is displayed on the right. Set each item, and then click "Apply". The registered settings are shown in the list at the bottom.



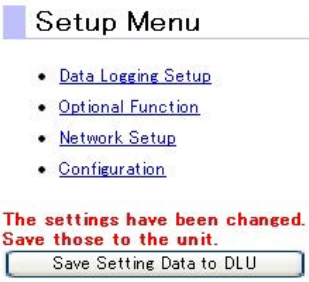
Item	Description
Mail title	Within 16 characters
Mail text	Within 254 characters
Attachment data extraction file No.	1 to 16
No. of attachment records	CURRENT file, 1 to 24
Transmitting at normalization	Not notify/Notify

Note:

- As for the transmitting network, transmitting trigger and transmitting group number, select from the defined choices.
- The time that transmission trigger occurred and the information to distinguish whether the mail was transmitted when the trigger occurred or transmitted when the trigger was restored is added to the specified title.
- [Example] When the title is "Error occurred" and the transmitting trigger occurred at "10:15:00 on Oct. 13, 2006", the title becomes "Error occurred [061013_1015090] [Occurrence]. When the trigger was restored, the title becomes "Error occurred [061013_101500] [Restoration].
- When an e-mail is transmitted, up to 24 records of latest data can be attached to the e-mail from the files currently stored.
  When specifying "CURRENT File", the CURRENT file that is created at that time is attached.
- When setting "Transmitting at normalization" to "Notify", an e-mail is also transmitted when the trigger that has been specified for "Transmitting trigger" was restored.
- Clicking the "Test Transmission" button send an e-mail according to the specified setting.

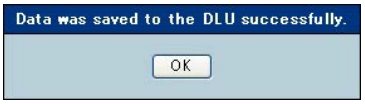
5. Transfer the setting data to DLU

Click "Back to Main Menu" from the menu on the left.
The message "The settings have been changed" is blinking on the main menu.
Click "Save Setting Data to DLU".



Click "OK".
The setting data is recorded in the DLU.

When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



After the completion of setting, change the DLU to the run mode and occur the transmitting trigger. Then, confirm if an e-mail is transmitted.

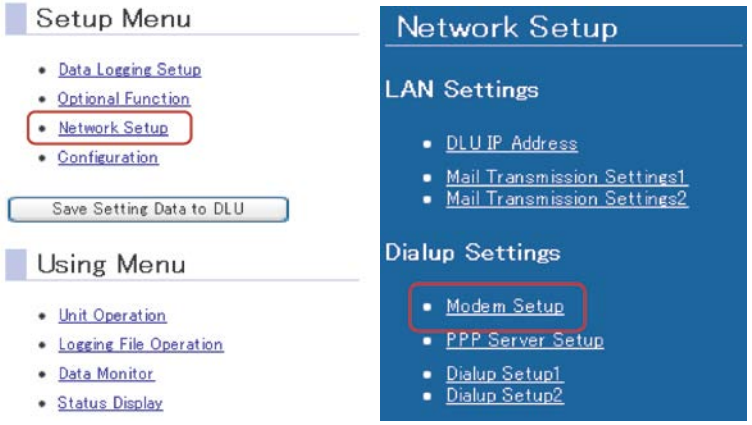
Reference: <7.1 Using DLU in Run Mode>

6.5.2 Modem Setup Such As WP10

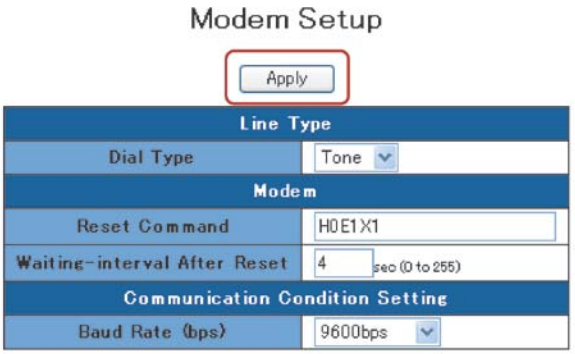
When transmitting e-mails via a dial-up access using a modem such as WP10 connected to DLU, the setup for the modem and dial-up account is necessary.
Follow the procedure below for the modem setup.

[Procedure]

1. Click "Network Setup" on the main menu, and then click "Modem Setup" from the list on the left.



2. The setting screen is displayed on the right. Set each item, and then click "Apply".



Item	Description
Dial type	Tone or Pulse
Reset command	Within 14 characters
Waiting-interval after reset	0 to 255 seconds
Baud rate	4800, 9600, 19200, 38400, 57600, 115200 bps

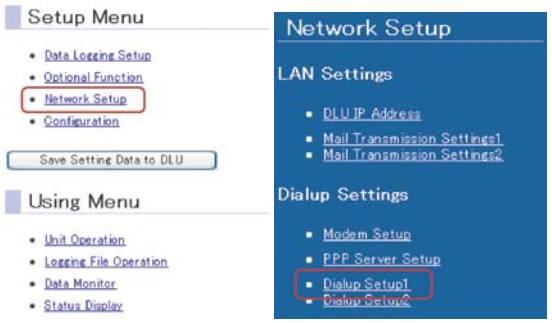
Note:

- Set each item according to the modem to be used.
- When using WP10, the communication can be performed with the setting as it is.
  If the setting such as baud rate has been changed on WP10, change the setting of DLU as well.

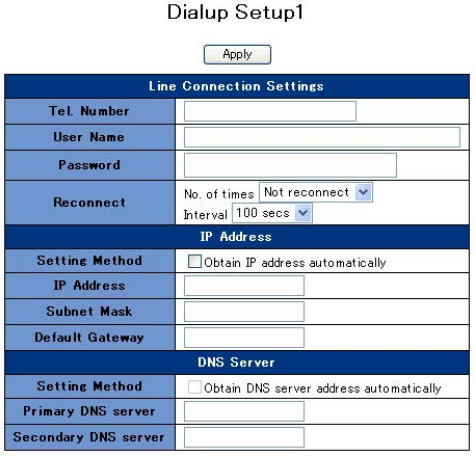
6.5.3 Dial-up Setup

[Procedure]

1. Click "Network Setup" on the main menu, and then click "Dialup Setup 1" from the list on the left.



2. The setting screen is displayed on the right. Set each item, and then click "Apply".



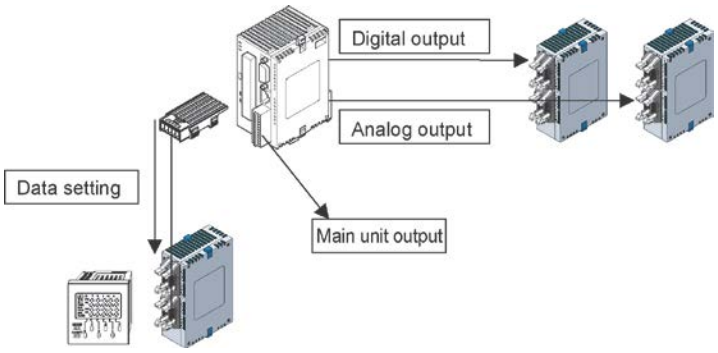
Item	Description
Tel. number	Within 32 characters
User name	Within 48 characters
Password	Within 16 characters
Reconnect	Not reconnect/1 to 15 times
Interval	Select from 100, 150, 200 or 250 seconds.
IP address - Setting method	Obtain IP address automatically or set it arbitrarily.
P address	Specify with dotted-decimal characters.
Subnet mask	Specify with dotted-decimal characters.
Default gateway	Specify with dotted-decimal characters.
DNS server - Setting method	Obtain DNS server address automatically or set it arbitrarily.
Primary DNS server	Specify with dotted-decimal characters.
Secondary DNS server	Specify with dotted-decimal characters.

Note:

- It makes no difference whether the telephone number is hyphenated or not.
- When setting an IP address arbitrarily, a DNS server cannot be obtained automatically.
- When obtaining an IP address automatically, a DNS server can be set arbitrarily.
- Up to 2 kinds of mail transmission settings are available.

6.6 Data Output Settings

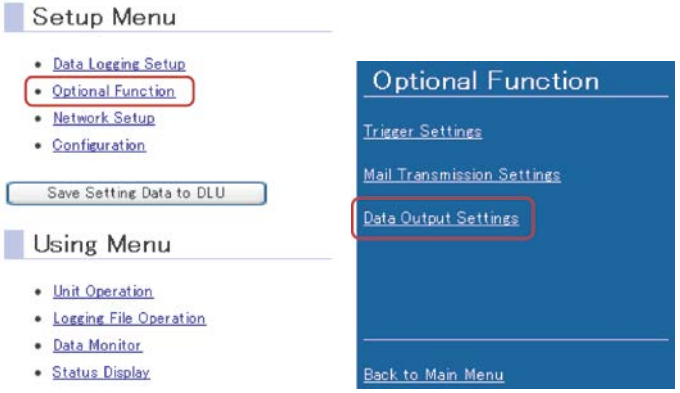
DLU can set data for the output of the main unit, expansion units (digital output, analog output) and COM1/2 using triggers.
This section describes the setting method required for DLU to set data.



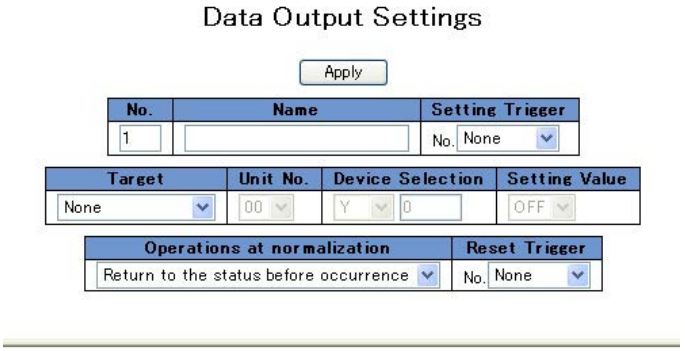
6.6.1 Data Output Settings

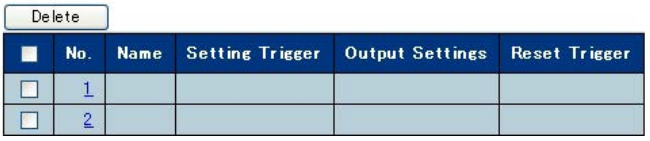
[Procedure]

1. Click "Optional Function" on the main menu, and then click "Data Output Settings" from the list on the left.



2. The setting screen is displayed on the right. Set each item, and then click "Apply".





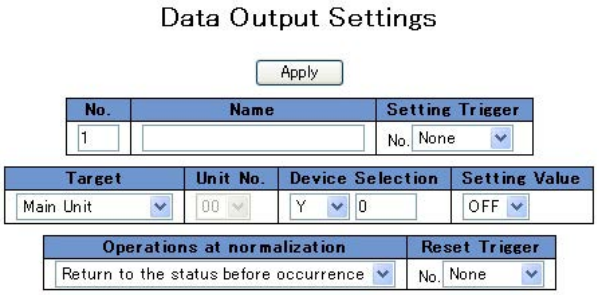
The setting items vary according to the selected "Target".

Common setting items

- Name: Within 16 characters
- Setting trigger: Specify the trigger to execute the data output setting.

Reference: For information on triggers, <6.3.2 Trigger Settings>

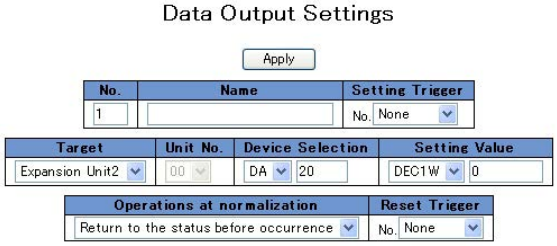
When the target is "Main Unit" or "Digital Expansion Unit"



Item	Description
Unit No.	Invalid
Device selection	When selecting Main unit: Select from Y, R, WY, WR or DT. When selecting Digital expansion unit: Select from Y or WY
Setting value	For COM(Relay), select ON or OFF For COM(Register), input data type and value.
Operations at normalization	Return to the status before occurrence: Returns data to the previous value. Output hold: Changes nothing when the trigger is restored.
Reset trigger	None/No. 1 to 128

Note:
- When a trigger occurs, DLU reads the current value of the target first.
  When "Operations at normalization" is set to "Return to the status before occurrence", the current value that was read first is set again when a trigger is restored.
- Even if "Output hold" is selected, the current value that was read first is set again when the trigger specified for "Reset Trigger" occurs.

When the target is "Analog Expansion Unit"

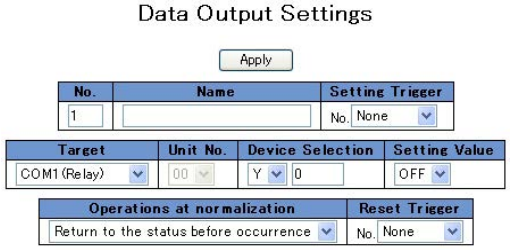


Item	Description
Unit No.	Invalid
Device selection	Set device No. of DA
Setting value	Specify with signed 16-bit integer
Operations at normalization	Return to the status before occurrence: Returns data to the previous value. Output hold: Changes nothing when the trigger is restored.
Reset trigger	None/No. 1 to 128

Note:

- When a trigger occurs, DLU reads the current value of the target first.
  When "Operations at normalization" is set to "Return to the status before occurrence", the current value that was read first is set again when a trigger is restored.
- Even if "Output hold" is selected, the current value that was read first is set again when the trigger specified for "Reset Trigger" occurs.

When the target is "COM (Relay)"

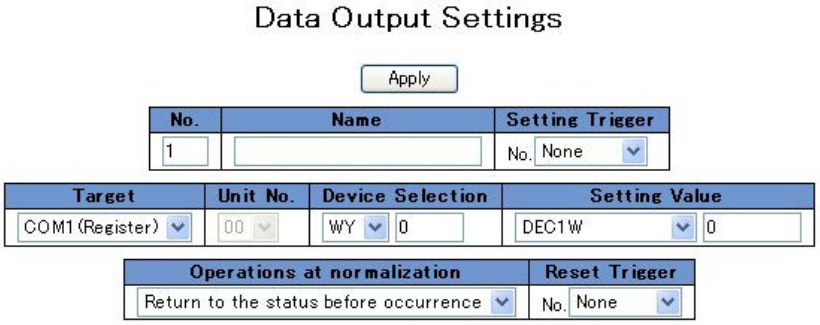


Item	Description
Unit No.	When the connection type has been set to "1:1" in the main unit configuration settings: Invalid When the connection type has been set to "1:N" in the main unit configuration settings: 1 to 99
Device selection	Select from Y, R or L.
Setting value	ON or OFF
Operations at normalization	Return to the status before occurrence: Returns data to the previous value. Output hold: Changes nothing when the trigger is restored.
Reset trigger	None/No. 1 to 128

Note:

- When a trigger occurs, DLU reads the current value of the target first.
  When "Operations at normalization" is set to "Return to the status before occurrence", the current value that was read first is set again when a trigger is restored.
- Even if "Output hold" is selected, the current value that was read first is set again when the trigger specified for "Reset Trigger" occurs.

When the target is "COM (Register)"

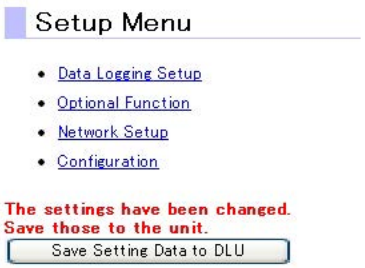


Item	Description
Unit No.	When the connection type has been set to "1:1" in the main unit configuration settings: Invalid When the connection type has been set to "1:N" in the main unit configuration settings: 1 to 99
Device selection	Select from WY, WR, WL, DT, LD, SV, EV or FL.
Setting value	Input the data type and value.
Operations at normalization	Return to the status before occurrence: Returns data to the previous value. Output hold: Changes nothing when the trigger is restored.
Reset trigger	None/No. 1 to 128

Note:

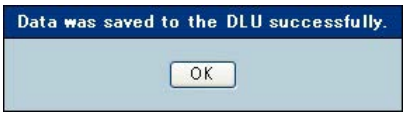
- When a trigger occurs, DLU reads the current value of the target first.
  When "Operations at normalization" is set to "Return to the status before occurrence", the current value that was read first is set again when a trigger is restored.
- Even if "Output hold" is selected, the current value that was read first is set again when the trigger specified for "Reset Trigger" occurs.

3. Transfer the setting data to DLU.
Click "Back to Main Menu" from the menu on the left.
The message "The settings have been changed" is blinking on the main menu.
Click "Save Setting Data to DLU".



Click "OK".
The setting data is recorded in the DLU.

When recording data completes successfully, the following message is displayed.
Click "OK" to return to the main menu.



After the completion of setting, change the DLU to the run mode and occur the transmitting trigger. Then, confirm if the data is set.

Reference: <7.1 Using DLU in Run Mode>

Chapter 7

Operating and Monitoring the Unit

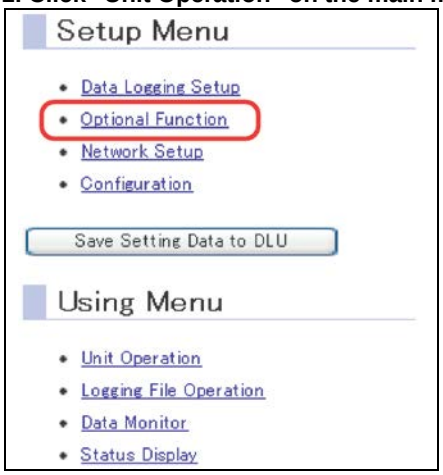
7.1 Using DLU in Run Mode

Various functions supported by DLU (data logging, mail transmission, data setting, etc) are executed when the DLU is in the operation mode.

7.1.1 Changing to the Operation Mode

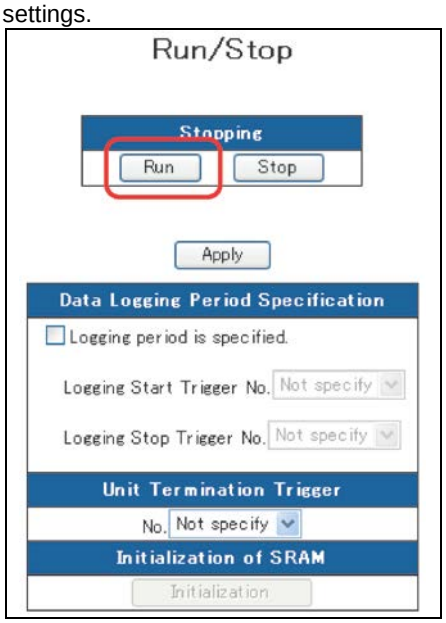
[Procedure]

1. Click "Unit Operation" on the main menu.



2. Click "Run".

The DLU changes to the operation mode, and executes data logging or mail transmission according the settings.

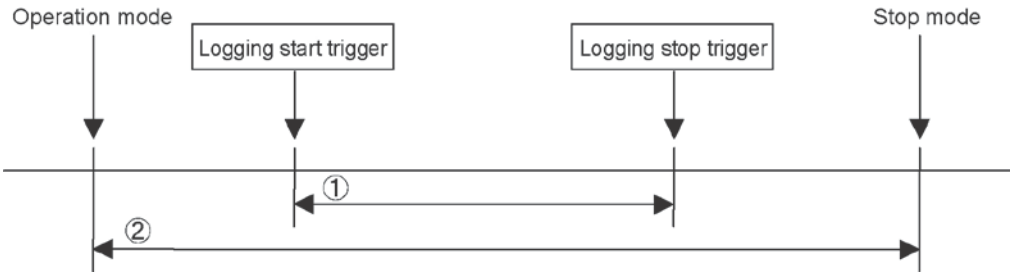


Data logging period specification

A data logging period can be specified on the DLU.

In the operation mode, data is being logged from the time that the logging start trigger occurs until the logging stop trigger occurs. The DLU does not perform data logging in the periods other than the specified period.

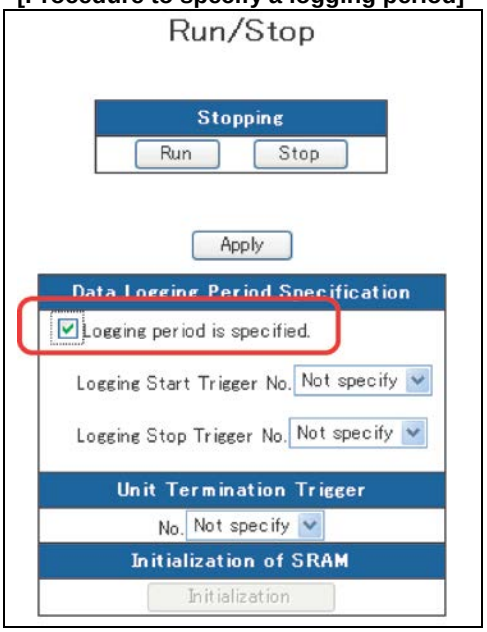
(The operations such as mail transmission and data setting are executed.)



Period of (1): Data logging, mail transmission, data setting is executed.

Period of (2): Mail transmission, data setting is executed.

[Procedure to specify a logging period]



(1) Set the triggers to be used for starting and stopping logging.

Reference:
For information on the method of trigger settings,
<6.3.2 Trigger Settings for Data Logging>

(2) Check the box of "Logging period is specified".
"Logging start trigger No." and "Logging start trigger No." will be selectable.

(3) Select triggers and click "Apply".

(4) Back to the main menu, and click "Save Setting Data to DLU" to save the setting in the DLU.

Note:

- If "Logging Start Trigger No." is not specified in the state that "Logging period is specified" has been checked, data will not be logged in the operation mode.。
- Even if the logging start trigger occurs when the DLU is in the stop mode, data logging will not be executed.
- If the DLU changes to the stop mode before the logging stop trigger occurs, the data logging will be stopped at that point.

Unit termination trigger
When the unit termination trigger is specified, the DLU can be changed to the stop mode from the operation mode by the trigger.

Initialization of SRAM
The logging data is temporarily stored in the internal SRAM.
Click "Initialization" to clear the data being stored.
The data stored in the SRAM will be cleared.

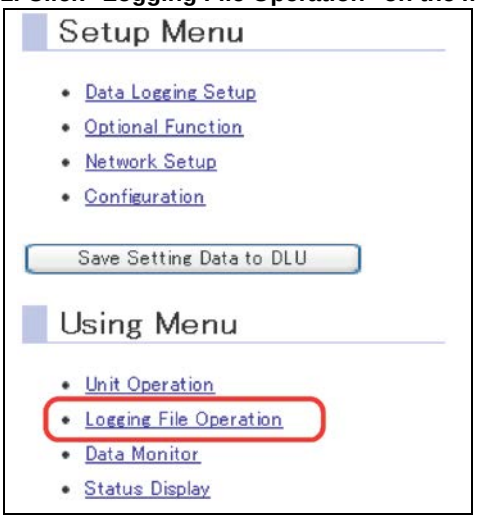
 **Reference:** <6.2.3 Until Filing Logging Data>

7.1.2 Checking Logging Files

When the DLU performs data logging in the operation mode, a CSV file is created in a specified memory (CF or internal memory).
The CSV file can be checked/downloaded/deleted on the setting screen.

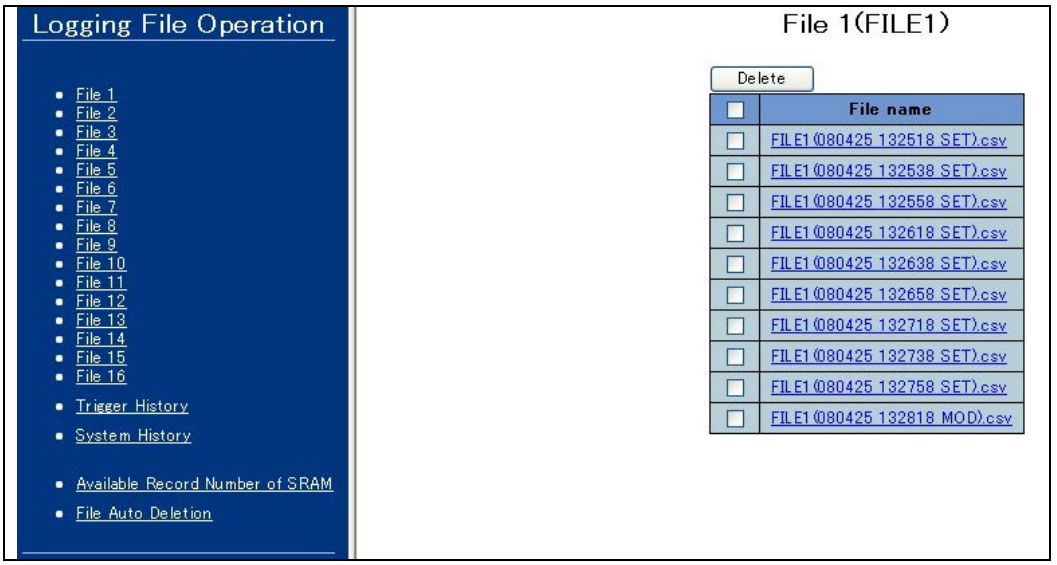
[Procedure for checking]

1. Click "Logging File Operation" on the main menu.

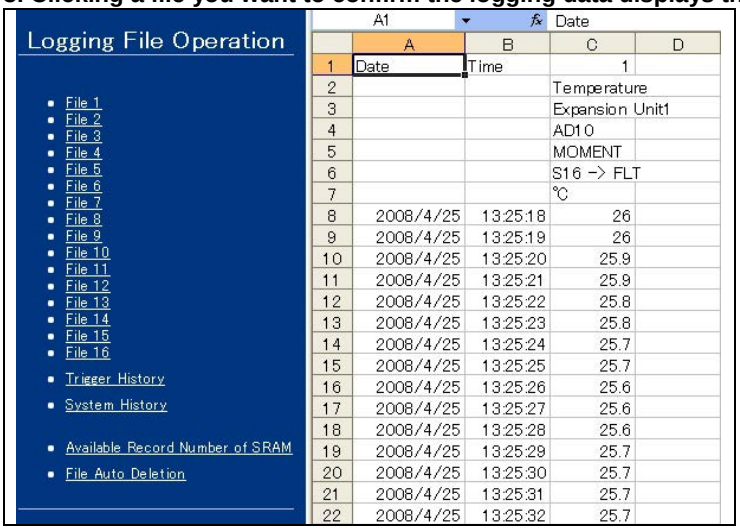


2. Select a file you want check the content from the list on the left.

[Example] A list of logging files that are named "FILE1" is displayed in the file No. 1.



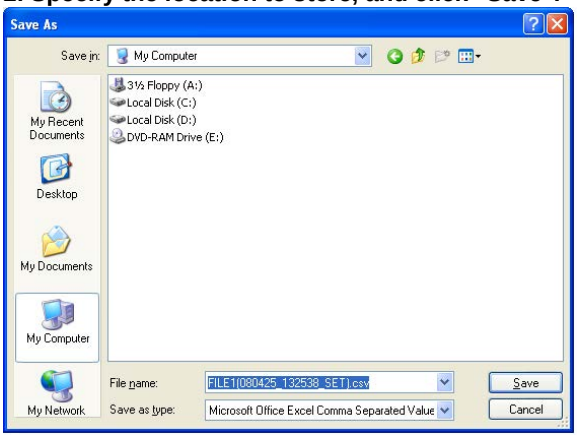
3. Clicking a file you want to confirm the logging data displays the logging data.



	A	B	C	D
1	Date	Time	1	
2			Temperature	
3			Expansion Unit1	
4			AD10	
5			MOMENT	
6			S16 -> FLT	
7			℃	
8	2008/4/25	13:25:18	26	
9	2008/4/25	13:25:19	26	
10	2008/4/25	13:25:20	25.9	
11	2008/4/25	13:25:21	25.9	
12	2008/4/25	13:25:22	25.8	
13	2008/4/25	13:25:23	25.8	
14	2008/4/25	13:25:24	25.7	
15	2008/4/25	13:25:25	25.7	
16	2008/4/25	13:25:26	25.6	
17	2008/4/25	13:25:27	25.6	
18	2008/4/25	13:25:28	25.6	
19	2008/4/25	13:25:29	25.7	
20	2008/4/25	13:25:30	25.7	
21	2008/4/25	13:25:31	25.7	
22	2008/4/25	13:25:32	25.7	

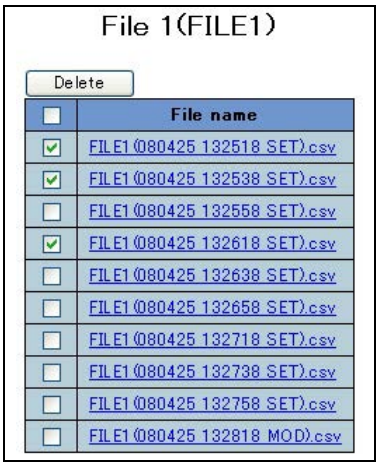
[Procedure for downloading]
Execute the procedure 2 described previously, and select "Save Target As" from the list to be displayed on the right by right-clicking the file to download.

2. Specify the location to store, and click "Save".



[Procedure for deleting]

1. Execute the procedure 2 described previously, check the box of the file to be deleted and click "Delete".

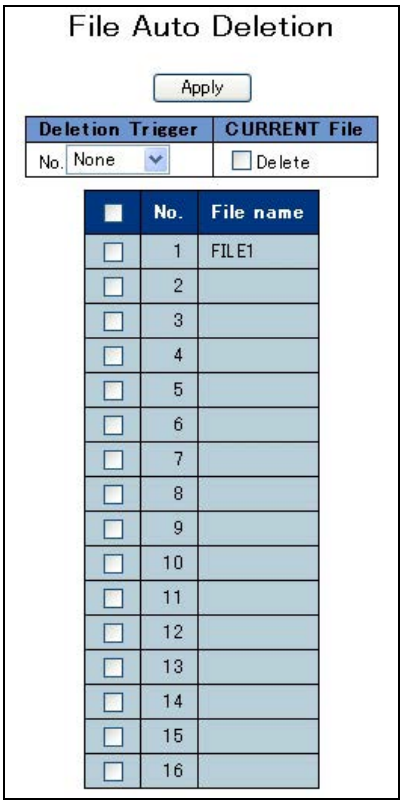


2. The alert message is displayed. Click "OK" to delete the file.
The checked file is deleted from the DLU.

Deleting logging files can be automatically executed using triggers.

[Procedure for deleting files automatically]

1. Clicking "File Auto Deletion" displays the following screen. To delete a file, check the box next to the file number to be automatically deleted, and specify the trigger for deletion.



When this setting is transferred to the DLU, and the DLU changes to the operation mode, all the selected files will be deleted at the time the trigger occurs.
Without checking the box of "Delete" for CURRENT file, the CURRENT file that has not been determined is not deleted.

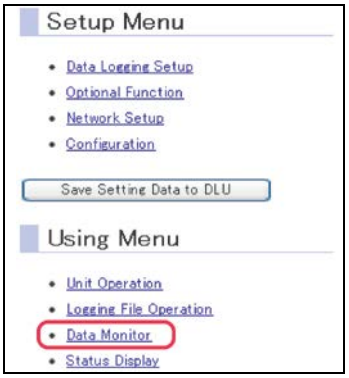
7.2 Monitor Screen

The current value that the DLU stores can be checked with a monitor screen.
Also, various information such as version information can be checked on the status display screen.

7.2.1 Data Monitor

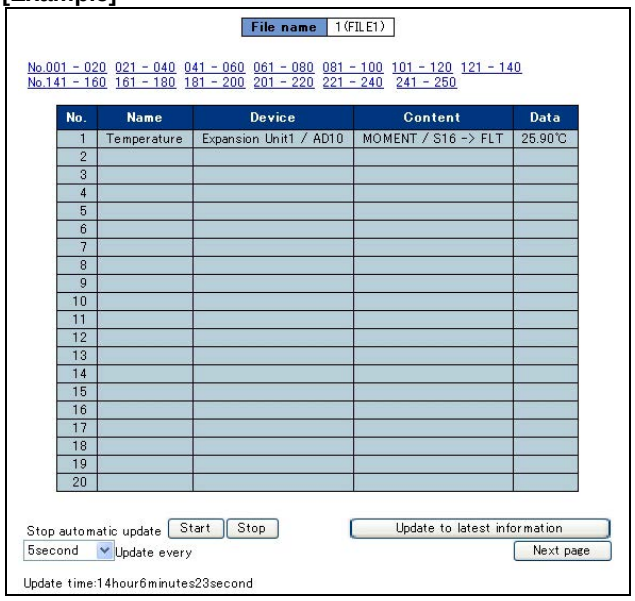
[Procedure]

1. Click "Data Monitor" on the main menu.



2. Click a file number you want check the current value from the list on the left.

[Example]



Note:

- A maximum of 250-point data can be registered for each file, however, these information is displayed every 20 points.
- Clicking the "Update to latest information" button reloads the screen and updates the data.
- Clicking the "Start" button for automatic update reloads the screen automatically every specified time.

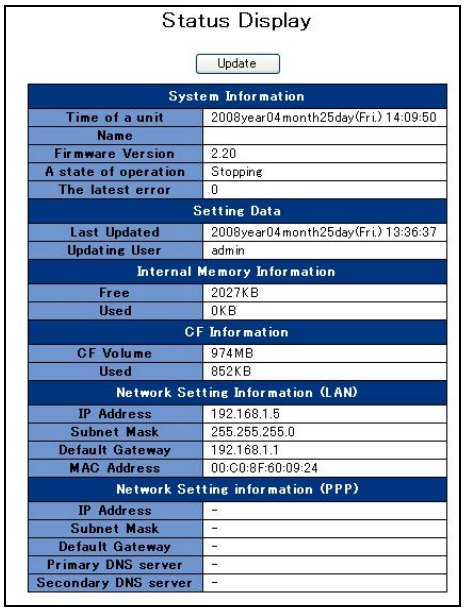
7.2.2 Status Display

On the "Status Display" screen, various status information on the DLU such as the firmware version, latest error and last update date can be monitored.

[Procedure]

1. Click "Status Display" on the main menu.

2. Confirm each status.



System Information	
Time of a unit	2008year04month25day(Fri.) 14:09:50
Name	
Firmware Version	2.20
A state of operation	Stopping
The latest error	0
Setting Data	
Last Updated	2008year04month25day(Fri.) 13:36:37
Updating User	admin
Internal Memory Information	
Free	2027KB
Used	0KB
CF Information	
CF Volume	974MB
Used	852KB
Network Setting Information (LAN)	
IP Address	192.168.1.5
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
MAC Address	00:C0:8F:60:09:24
Network Setting information (PPP)	
IP Address	-
Subnet Mask	-
Default Gateway	-
Primary DNS server	-
Secondary DNS server	-

Note:

- "Network setting information (PPP)" is displayed when the DLU is operating as a PPP server (or PPP client).
- When an error occurs in the DLU, and the ERROR LED on the unit lights up, an error code is displayed in the "Latest error".

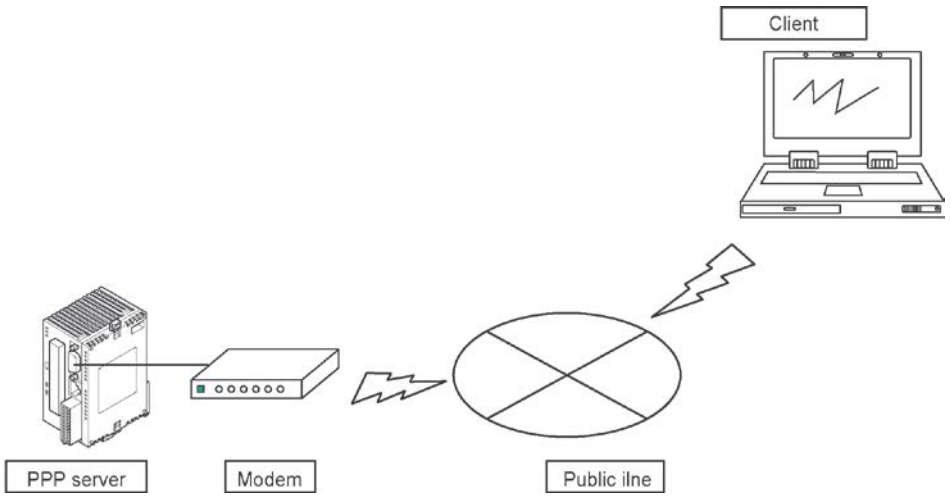
Reference: For information on error codes, <12.3 Table of Error Codes>

Chapter 8

Other Uses

8.1 Connection via PPP

The DLU can be used as a PPP server by connecting a modem and to a public line.
This enables the setting and monitoring the DLU to be carried out from a PC with a built-in (or external) modem using a public line.
Also, using a WP10 modem enables wireless access.

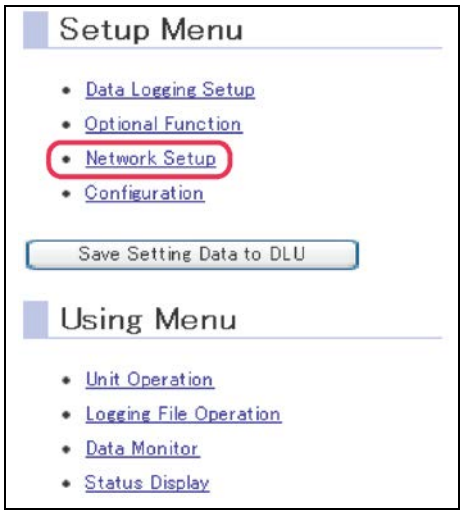


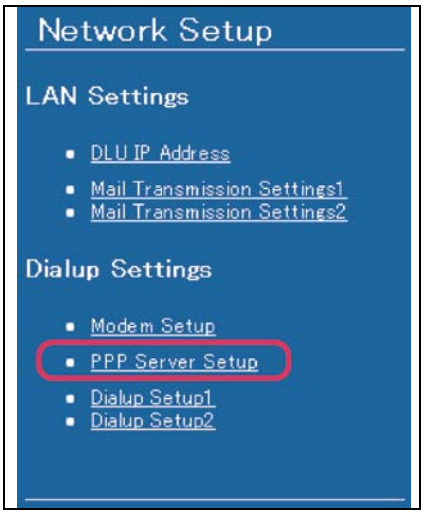
Make the modem setup first to use the DLU as a PPP server.

Reference: For information on the mode setup, <6.5.2 Modem Setup Such As WP10>

[Procedure]

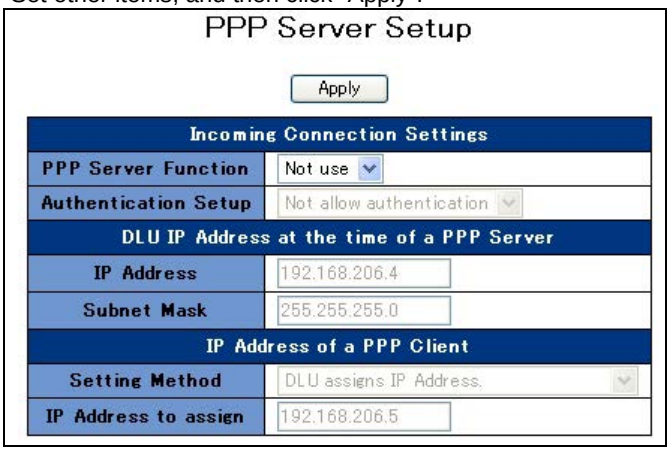
1. Click "Network Setup" on the main menu, and then click "PPP Server Setup" from the list on the left.





2. Set "PPP Server Function" to "Use".

Set other items, and then click "Apply".

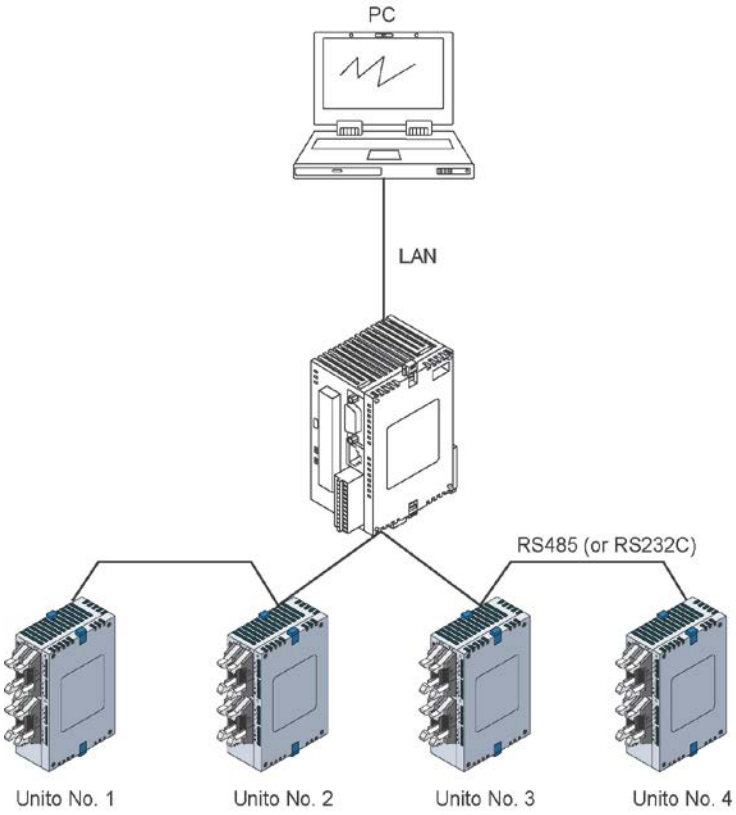


Note:

- Use "DLU IP Address at the time of a PPP Server" as it is unless otherwise specified.
  Also, do not set the same network address as the IP address for a LAN.
  [Example] When the IP address of DLU is "192.168.1.5", do not set the IP address of PPP server to "192.168.1.*".
- Use "IP Address of a PPP Client" as it is unless otherwise specified.
- For the authentication setup, the user name and password registered in the DLU is valid.
- Before using this function, the DLU must be connected to a modem and the modem must be powered up.

8.2 Access to PLC via Web Datalogger Unit

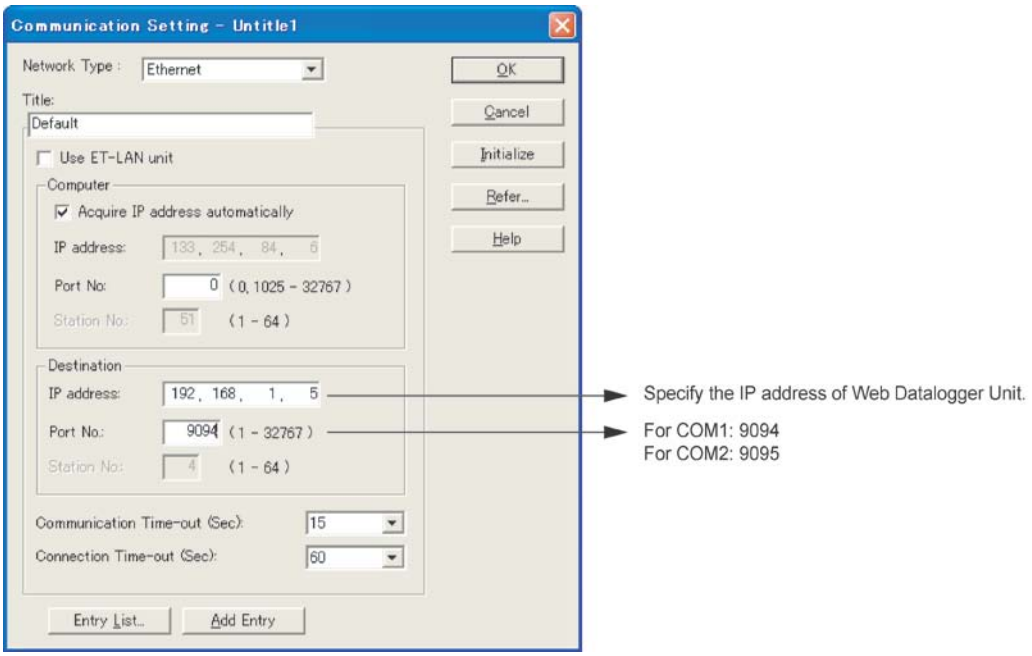
On the system as below, monitoring each PLC or changing programs can be performed by FPWIN GR via the Web Datalogger Unit.



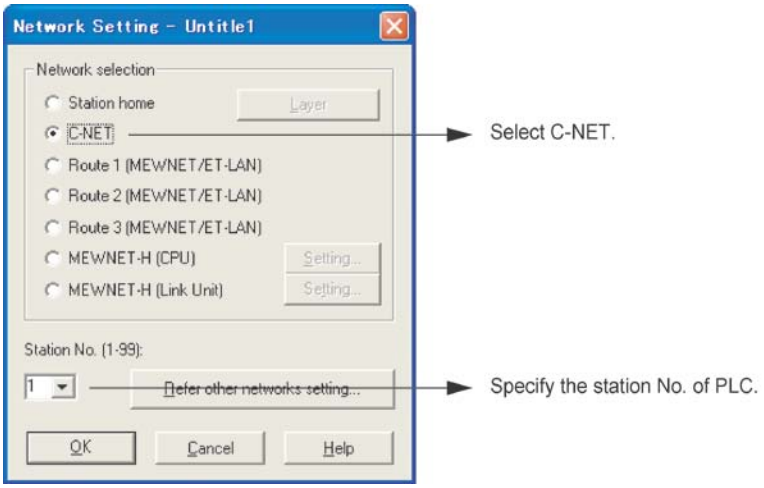
Note) A FPΣ Communication cassette is required for the Web Datalogger Unit.

Example) When accessing the PLC with unit number 1 by FPWIN GR
The setting of FPWIN GR is as follows.

1. Open "Communication Setting" under "Option" menu, and set the items as below. Then, click "OK".



2. Open "Specify Station No." under "Online" menu, and set the items as below. Then, click "OK".



Reference: For the details of FPWIN GR, <FPWIN GR Guide or Help>

8.3 Connection with a Programmable Display

By connecting the Web Datalogger Unit with a programmable display (GT series), the data (current value) that the Web Datalogger Unit stores is displayed on the programmable display.
The current value of the data logged by Web Datalogger Unit is saved in the DLU data registers (DT0 to 7999).

Reference: For information on data registers (DT), <4.4.1 Data Registers>

- Set the port (COM1 or COM2) of a FPΣ communication cassette to be connected to the programmable display, to "Computer link", and specify various conditions such as a baud rate.

Reference: For information on the setting of baud rate, <6.3.1 Main Unit Configuration Settings>

Note:

- When setting the programmable display and DLU via RS485, Set "Transmission delay" for the programmable display using the GTWIN. Choose "File" -> "Configuration" -> "GT Configuration" from the menu. Click "Communication Parameters" tab, and set "Transmission Delay".

Reference: <GTWIN Operational Guide Book ARCT1F357, GTWIN Help>

Chapter 9

Configuration Settings

9.1 Setting Data

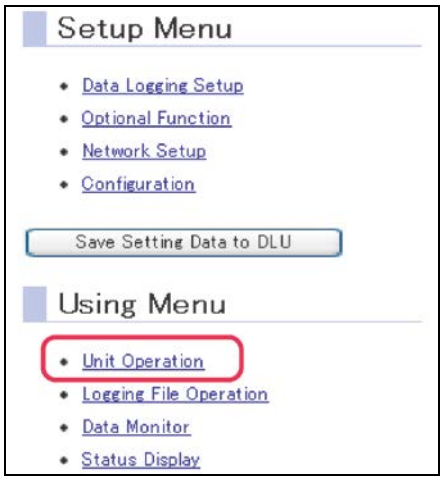
The contents set in the DLU can be filed and saved in a PC.
Also, the setting file can be loaded with a browser and transferred to the DLU.
The procedures are as follows.

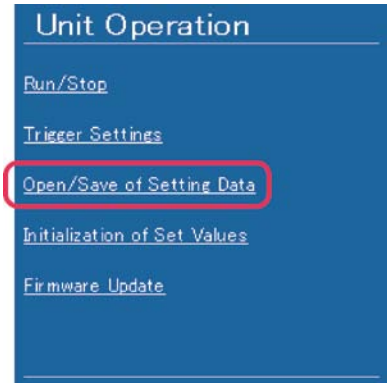
9.1.1 Open/Save of Setting Data

Follow the procedure below for saving setting data.

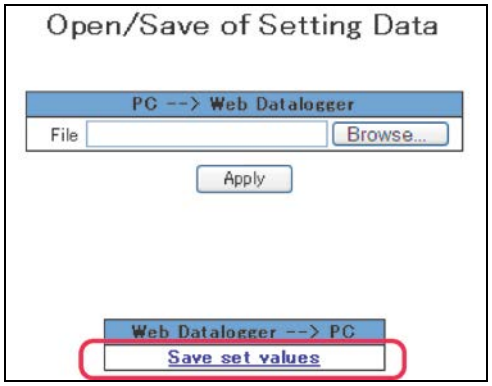
[Procedure for saving setting data]

1. Click "Unit Operation" on the main menu, and then click "Open/Save of Setting Data" from the list on the left.

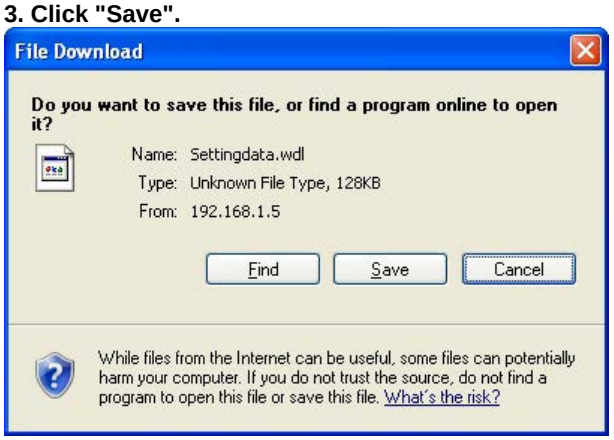




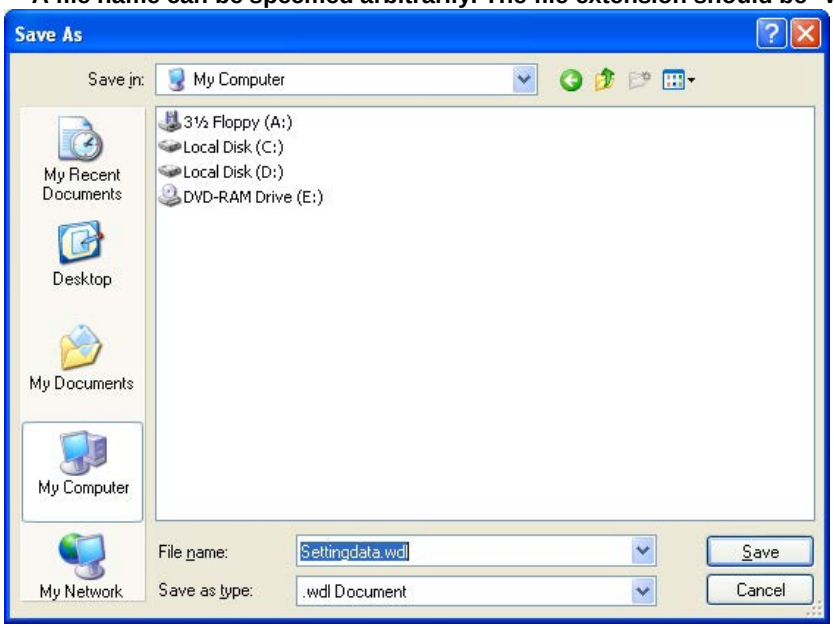
2. Click "Save set values".



3. Click "Save".



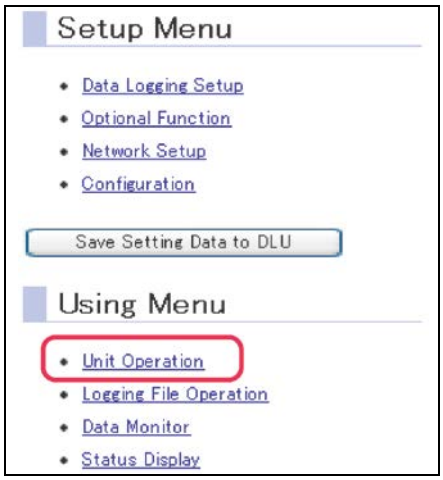
4. Specify the location to save, and click "Save".
A file name can be specified arbitrarily. The file extension should be "wdl".

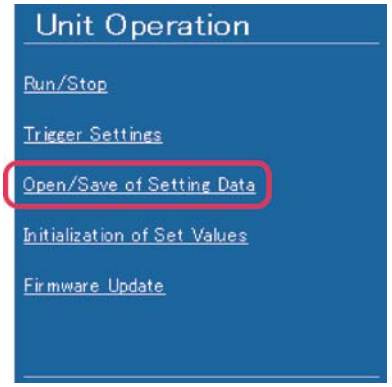


Note:
The process of saving setting data should be completed within one minute.
If the file size saved is less than 128kB, this file cannot be read by the DLU. In this case, save the file again.

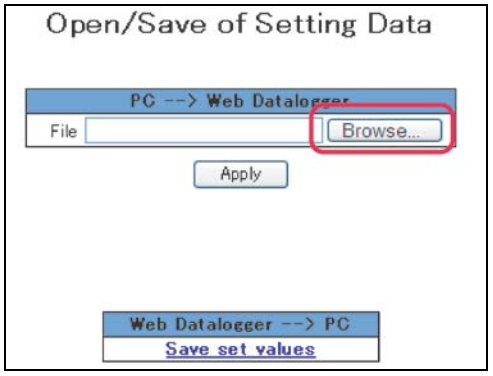
[Procedure for reading setting data]

1. Click "Unit Operation" on the main menu, and then click "Open/Save of Setting Data" from the list on the left.

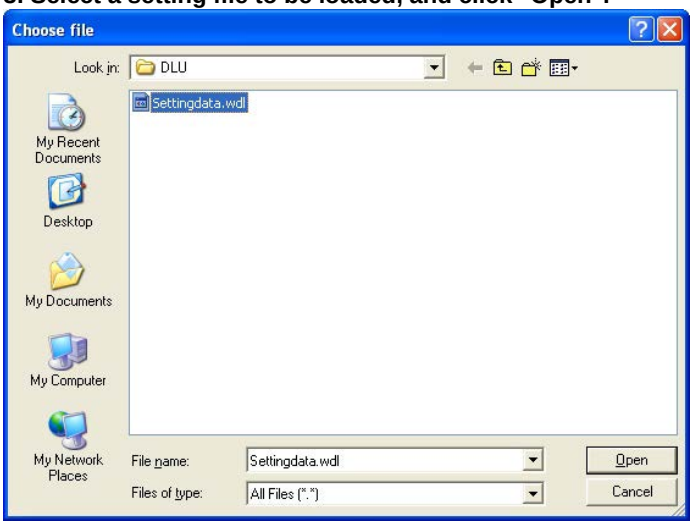




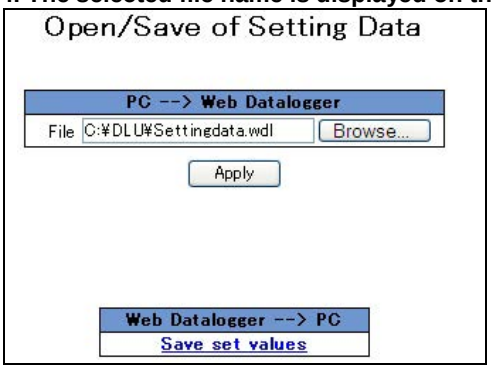
2. Click "Browse".



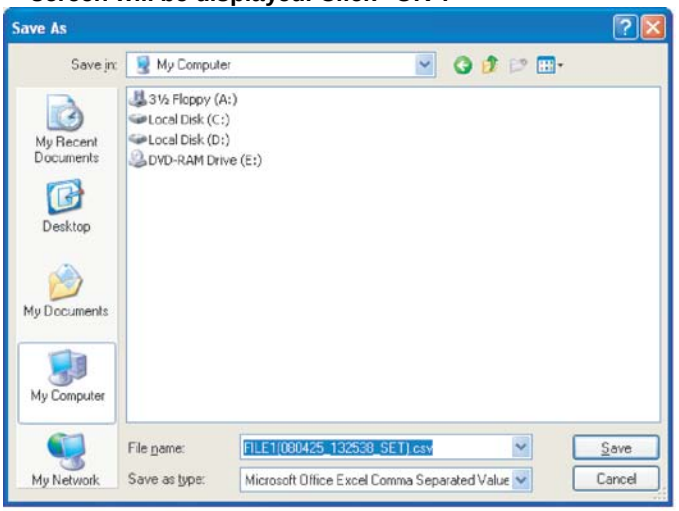
3. Select a setting file to be loaded, and click "Open".



4. The selected file name is displayed on the screen, and click "Apply".



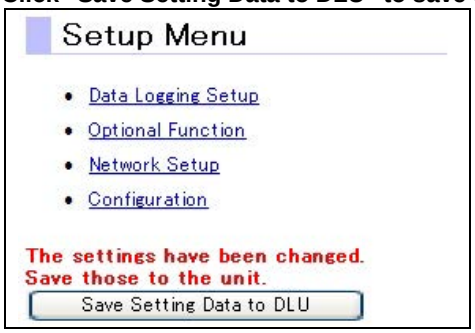
5. The setting data is transferred to the DLU. If the operation ends successfully, the following screen will be displayed. Click "OK".



6. Click "Back to Main Menu" to return to the main menu. A message "The settings have been changed. Save those to the unit." blinks.

Note: At this point, the setting data has not been saved in the DLU yet.

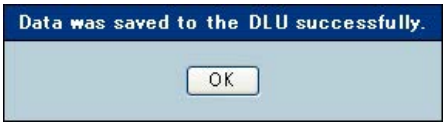
Click "Save Setting Data to DLU" to save the setting data.



7. Click "OK".

The setting data is recorded in the DLU.

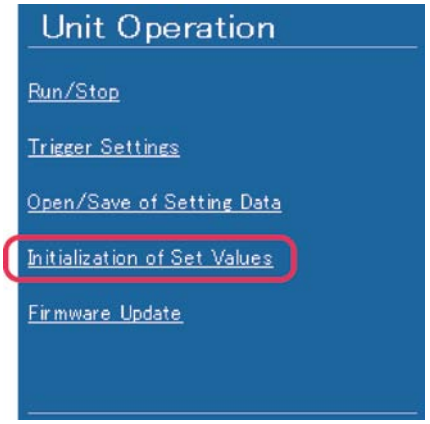
8. When recording data completes successfully, the following message is displayed. Click "OK" to return to the main menu.



9.1.2 Initialization of Setting Data

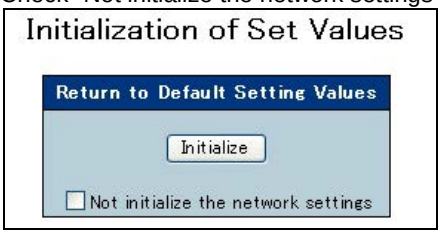
[Procedure]

1. Click "Unit Operation" on the main menu, and then click "Initialization of Set Values" from the list on the left.



2. Click "Initialize".

Check "Not initialize the network settings" to initialize without changing the IP address of DLU.



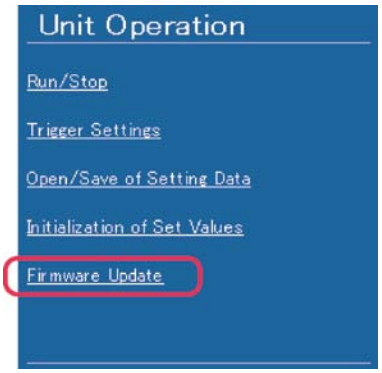
3. Click "OK" to execute initializing.

4. When completing the initialization successfully, the following screen is displayed. Log in again.

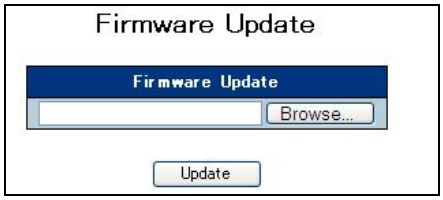
9.1.3 Firmware Update

[Procedure]

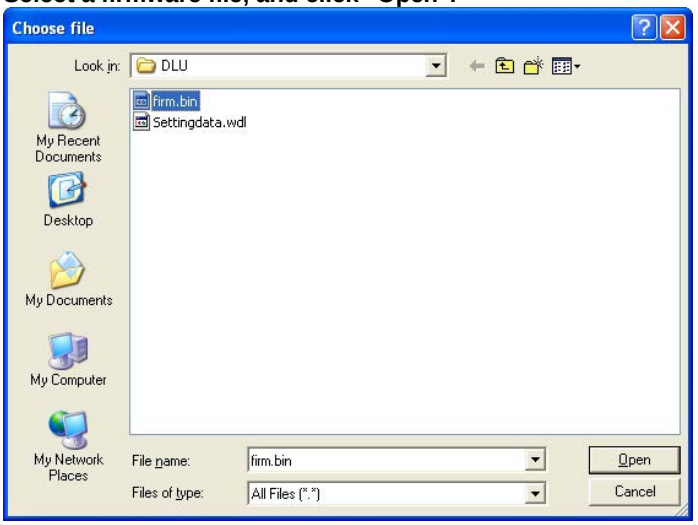
1. Click "Unit Operation" on the main menu, and then click "Firmware Update" from the list on the left.



2. Click "Reference".



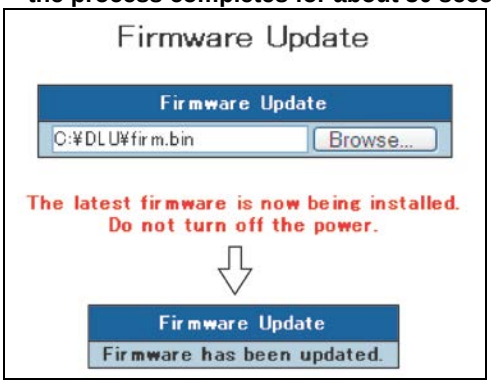
Select a firmware file, and click "Open".



Key Point:

- The extension for firmware files should be ".bin".
- Although the firmware file in the above example is "firm.bin", the file provided by us is "Dluver2_**verup.bin".

4. The file name of the selected firmware is displayed on the screen, and click "Update".
A message "The latest firmware is now being installed. Do no turn off the power." flashes, and the process completes for about 30 seconds.



9.2 Various Operation Settings

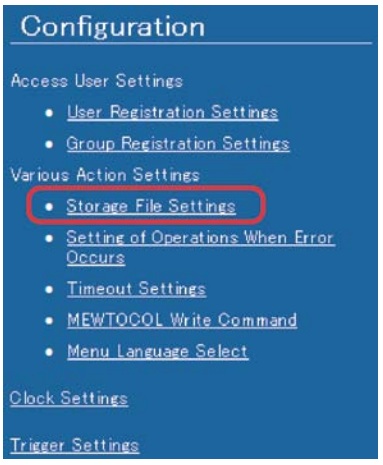
In this chapter, settings such as the setting of operation when an error occurs and the layout setting of storage file are described.

9.2.1 Storage File Settings

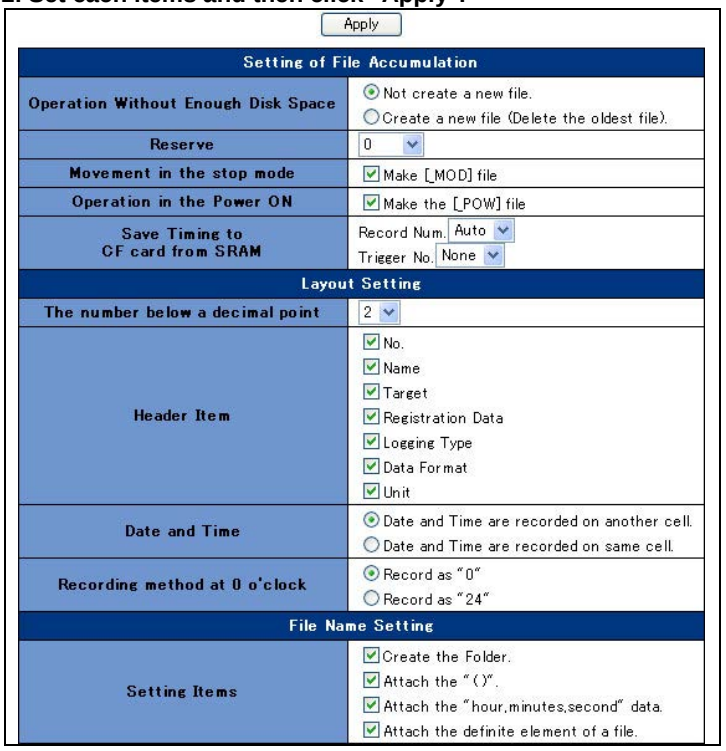
Settings such as the layout setting for logging files are specified.

[Procedure]

1. Click "Configuration" on the main menu, and then click "Storage File Settings" from the list on the left.



2. Set each items and then click "Apply".



Operation without enough disk space
When no free space is available in a CF (or internal memory), select either "Not create a new file" or "Create a new file (Delete the oldest file)".

Reserve
Use this setting as it is.

Operation in stop mode
If the operation mode of DLU changes to the STOP from the RUN mode, the file that is being logged will be as follows.
Checked: The file is determined as "_MOD". Next time the mode is changed to the RUN mode, the logging data will be recorded in a new file.

Unchecked: The file is determined as "_MOD". Next time the mode is changed to the RUN mode, the logging data will be recorded in a new file.
(For the details of file names, refer to <6.2.4 Name of Logging Files>.)

Operation when power is ON
If a CURRENT file exists in the CF when turning on the power supply of DLU.
Checked: The CURRENT file is renamed "_POW". If data exists in the SRAM, it is filed as a CURRENT file.

Unchecked: The "CURRENT" file remains as it is, and logging data is recorded in the same file continuously. If data exists in the SRAM, it is added in the CURRENT file.
(For the details of file names, refer to <6.2.4 Name of Logging Files>.)

Timing of writing to CF from SRAM
Use this setting as it is.

The number below a decimal point
Specify the number of decimals to be recorded for recording data in real number type in storage files. (0~6)

Header item
In the default condition, the following information is recorded in the headers of storage files.
Select whether to record this information or not.
[Example]

1	No.
Integral power consumption	Name
COM1	Target
DT100	Registration data
MOMENT	Logging type
FLT	Data format
kWh	Unit

Date and time
- Date and Time are recorded on another cell.

2006/10/20	15:30:00

- Date and Time are recorded on same cell.

2006/10/20 15:30:00

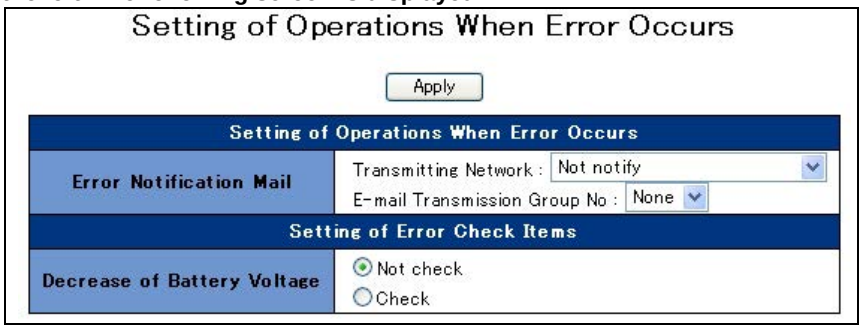
Recording method at 0 o'clock
Records as "0 o'clock": For example, the time after an hour of "23 o'clock on 1st" is recorded as "0 o'clock on 2nd".
Records as "24 o'clock": For example, the time after an hour of "23 o'clock on 1st" is recorded as "24 o'clock on 1st".

File name setting
Use this setting as it is.

9.2.2 Setting of Operations When Error Occurs

[Procedure]

Click "Configuration" on the main menu, and then click "Storage File Settings" from the list on the left. The following screen is displayed.



Error notification mail

When an error occurs in the DLU, a mail can be sent to specified destinations.
The mail is sent in the following format.
Select whether to send a mail through a LAN or through a dial-up at "Transmitting Network", and specify the destination at "E-mail Transmission Group No".

System mail [Occurrence date] [Cause]

Occurrence date	(Example) At 15:30 on October 11, 2006 [061011_153000]
Cause	When an error occurs: [Occurrence] When an error is restored: [Restoration]
Mail text	Error code

Decrease of battery voltage

Select whether to consider the state that a backup battery is not installed as an error or not.

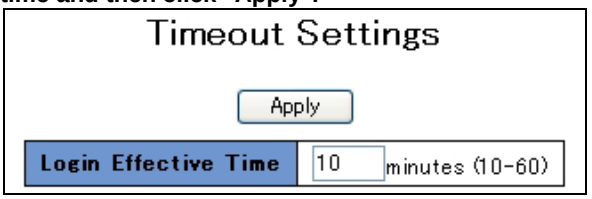
Unchecked	An error does not occur even if a battery is not installed or the voltage decreases.
Checked	If a battery is not installed or the voltage decreases, it will be detected as an error. (The ERROR LED on the unit lights up.)

9.2.3 Login Effective Time

If the setting operation is not performed in a certain period of time after logging into the DLU, the login will be invalid.
The default time is 10 minutes, however, this value can be changed.

Note: The settings that has not been saved in the DLU will be discarded.

[Procedure]
Clicking "Timeout Settings" under "Configuration" displays the following screen. Change the time and then click "Apply".



9.2.4 MEWTOCOL Write Command

Relays and register values within the DLU can be externally written with MEWTOCOL.
The default is set to "Not allow" the write command. Change the setting to enable the write command.

[Procedure]
Clicking "MEWTOCOL Write Command" under "Configuration" displays the following screen. Select "Allow" to enable the MEWTOCOL write command, and click "Apply".

Chapter 10

Self-diagnostic and Troubleshooting

10.1 Self-diagnostic Function

10.1.1 LED Display for Status Condition

Status Indicator LED1

	LED			Description	Status
	MODE	TRIGGER	ERROR		
Normal	ON	OFF	OFF	RUN mode	Run
	ON	ON	OFF	RUN mode (Trigger occurs)	Run
	Flashes	ON	OFF	STOP mode	Halt
Error	ON	OFF	ON	RUN mode (Self-diagnostic error occurs)	Run
	ON	ON	ON	RUN mode (Trigger and self-diagnostic errors occur)	Run
	Flashes	OFF	ON	STOP mode (Self-diagnostic error occurs)	Halt
Special	ON	ON	ON	System initialization Note1)	Halt
	OFF	OFF	OFF	Filing Note2)	Halt
	OFF	OFF	Flashes	Waiting for firmware update Note3)	Halt
	ON	Flashes	ON	Firmware updating	Halt

Note1) It is the operation to initialize the system when turning on the power supply.
Note2) It is the operation to file the data that has not been filed when changing the mode.
Note3) The waiting state for update as firmware is abnormal when turning on the power supply.

- Web Datalogger Unit has a self-diagnostic function which identifies errors and stops operation if necessary. When an error occurs, the status of the status indicator LED1 vary, as shown in the above table.

If ERROR LED is ON

Procedure
Log into the Web Datalogger Unit from the web browser, and check the contents of error.

The latest error code can be confirmed by selecting the "Status Display" menu.
Also, the history of errors occurred can be confirmed by referring the system history file.

 **Reference:** <12.3 Table of Error Codes>

10.2 Troubleshooting

FP0/FP0R Expansion Unit

Condition	Cause	Action to take
Data cannot be input or output from the FP0/FP0R expansion unit properly.	"Not use" has been selected for the expansion unit under "Main Unit Configuration Settings".	Select the appropriate type for the expansion unit to be used.
	More than 4 FP0/FP0R expansion units are connected.	A maximum of 3 FP0/FP0R expansion units can be connected to the Web Datalogger Unit. The connected units should be up to 3 units.
	The I/O allocation for the FP0/FP0R expansion is not correct.	The I/O numbers of the FP0/FP0R expansion unit are automatically allocated from the unit closest to the Web Datalogger Unit. Check the number of occupied I/O for the expansion unit.
	The FP0/FP0R expansion unit is not installed correctly.	Install the FP0/FP0R expansion unit correctly.
	A power supply is not connected to the FP0/FP0R expansion unit.	Some FP0/FP0R expansion units need electric supply. Check whether a power supply connector is provided or not, and then supply electricity if necessary.
	There are the relay that can input/output correctly and the relay that cannot be input/output.	Reexamine the wiring to the I/O device.
	Data cannot be output correctly.	For the FP0/FP0R expansion I/O unit, the power supply is required for each connector. Reexamine the power supplies.

CF card

Condition	Cause	Action to take
When inserting a CF card, the access LED on the CF card does not light on.	The CF card is not installed correctly. Or, the CF card protection cover is not installed correctly.	Remove the CF card and insert the CF card securely again, and install the CF card cover. Then, check whether the access LED on the CF card lights on or not.
	The CF card is not formatted. Or, the format is not correct.	Remove the CF card and connect it to a PC. Then, check the format. If it is not formatted or it is formatted in a format other than FAT16 or FAT32, form the CF card in FAT16 or FAT32 format. * If the CF card is formatted, note that the data in it will be all erased.
	The CF card is damaged.	Remove the CF card and connect it to a PC. Then, check if the CF card is recognized (mounted).If it is not recognized, please contact the manufacturer of the CF card.
Data cannot be saved in the CF card.	The CF card is not recognized.	Check whether the access LED on the CF card is ON or OFF. If it is OFF, refer to the description of "When inserting a CF card, the access LED on the CF card does not light on".
	The destination to save data is the internal memory.	Select "Main menu → Data Logging Setup → Main Unit Configuration Settings → Logging file", and choose "Compact Flash" for the storage place.
	Available memory of the CF card is low.	Select "Main menu → Data Logging Setup → Main Unit Configuration Settings → Logging file", and choose "Compact Flash" for the storage place.
Data cannot be saved in the CF card.	The setting for the number of generations is not correct.	Select "Main menu → Data Logging Setup → Storage File Settings", and confirm "No. of generations".

Web

Condition	Cause	Action to take
Cannot access the Web page.	The Ethernet cable is disconnected.	Connect the Ethernet cable correctly.
	The network address of a PC is different from the address of Web Datalogger Unit.	Confirm the IP addresses of the PC and Web Datalogger Unit.
	The URL entered into a Web browser is not correct.	Confirm the URL to connect, and enter the correct URL into the Web browser.
	A proxy server is set on the browser.	Check the setting of the browser.
	A non-10Base-T compliant Hub is used.	Use a Hub compliant with 10Base-T.
Cannot login.	The user name or password is not correct.	Enter the correct user name and password. If you forget the password, contact your system administrator or us.
	Another user logs in.	After a while, access again.
The screen does not change by clicking "Data Monitor" or "Apply".	The security level of Internet Explorer is set to "High".	From "Internet Options", make an additional setting for the website in "Trusted sites" under "Security".

Time adjustment

Condition	Cause	Action to take
The time cannot be updated.	The Ethernet cable is disconnected.	Connect the Ethernet cable correctly.
	The IP address to be connected is not correct.	Set the IP address of SNTP server correctly.
The time updated is wrong.	The time zone is not correct.	Set the time zone correctly.

Trigger

Condition	Cause	Action to take
The trigger LED does not turn on although the condition is met.	The contact of the input signal line connected to the DLU or an expansion unit is unstable.	Make the connection again.
	The voltage of the input signal line connected to the DLU or an expansion unit is out of the specified range.	Input the voltage within the specifications.
Although the trigger LED turns on, the output is not performed according to the setting. The output is executed only when "Warning" occurs.	The contact of the output signal line connected to the DLU or an expansion unit is unstable.	Make the connection again.
	The output signal is not connected according to the specifications.	Connect the output signal according to the specifications.
	External contacts/external data is not obtained correctly.	
	A register that is not allowed to write is set for the external contacts/external data.	Cannot write into the specified register. Set another register.

PCWAY

Condition	Cause	Action to take
Cannot connect with PCWAY.	The Ethernet cable is disconnected.	Connect the Ethernet cable correctly.
	The IP address to be connected is not correct.	Set the connection server using the PCWAY setting correctly.
Cannot establish the PCWAY connection for a periodic connection.	The connection conditions are not set.	Set the periodic connection at the PCWAY setting screen.

Mail

Condition	Cause	Action to take
Cannot send a mail.	The Ethernet cable is disconnected.	Connect the Ethernet cable correctly.
	The setting for the SMTP server is not correct.	Set the IP address of SMTP server correctly. When the SMTP server is specified with a name, check if the IP address setting for the DNS server is correct.
	The destination mail address is not set correctly.	Set the destination mail address and the group on the user registration screen.
	The source mail address is not correct.	Depending on mail servers, the source mail address may be checked. Set the source mail address on the mail setting screen correctly.
Cannot send a mail by creating a file.	The transmission setting is not correct.	Select "Main menu → Data Logging Setup → Logging file settings", and set "Mail transmission settings" and "Mail transmitting No." correctly.
Cannot send a mail due to an error on the unit.	The transmission setting is not correct.	Select "Main menu → Configuration → Setting of Operations When Error Occurs", and set the transmitting network and group number correctly that enables to send "Error notification mail".
	The transmission conditions are not met.	Select "Main menu → Configuration → Setting of Operations When Error Occurs", and confirm if the "Error check items" are selected.
Cannot send a mail using triggers.	The transmission setting is not correct.	Select "Main menu → Optional Function → Mail Transmission Settings", confirm if "Transmitting Network Selection", "Transmitting Trigger" and "Transmitting Group No." is set correctly.
	The transmission conditions are not met.	Check the trigger history file.

Low-level communication

Condition	Cause	Action to take
Although a command has been transmitted, a response cannot be received.	The wire connection between your machine and the other machine is not correct.	In case of RS232C cassette Connect the SD/RD lines of your machine to the RD/SD lines of the other machine respectively. In case of RS485 cassette Connect the transmission cable between the (+) transmission terminals and between the (-) transmission terminals of each device. Also, connect the terminal station correctly. Check the transmission cable if it is within the specifications. * Use only one type of transmission cable in the same link. Do not mix more than one type.
	The communication conditions of your machine and the other machine are not matched.	Select "Main menu → Data Logging Setup → Configuration", confirm if the communication condition of "COM" is set correctly.
	When using a 1-ch type RS232C cassette, the CS signal is not ON.	If the CS signal is not ON, data cannot be sent. When using as 3-wire type, connect the RS signal and CS signal, and turn ON the CS signal.

FTP

Condition	Cause	Action to take
Cannot connect via FTP.	The Ethernet cable is disconnected.	Connect the Ethernet cable correctly.
	The IP address to be connected is not correct.	Select "Main menu → Network Setup → DLU IP Address", confirm the IP address.
Cannot login.	The user name or password is not correct.	Enter the correct user name and password. If you forget the password, set the password at the user registration again.
	Another user logs in.	After a while, access again.
Although the connection is established, fails in the file operation (such as a list is not displayed).	The FTP tool software used is not supported.	Use another FTP tool software or the FTP pre-installed in Windows (operating by the command prompt) for the file operation.

Dial-up

Condition	Cause	Action to take
Cannot connect with a modem.	The RS232C cable is disconnected.	Connect the RS232C cable correctly.
	The connection of the RS232C cable is not correct.	Check the connect interface of the modem and the pin arrangement of the modem port of the Web Datalogger Unit.
	The communication condition is not correct.	Check the communication conditions of the modem (such as the baud rate) and the communication conditions of the Web Datalogger Unit.
Cannot connect to the destination.	The destination telephone number is not correct. The user name or password required for the authentication.	Confirm the destination telephone number.(When connecting to a provider, note that every lines such as an analog line and PHS line may have different telephone numbers.)
	The modem initialization command is not correct.	Refer to the manual for the modem used, and set the correct initialization command.
	The wait after ATZ is short.	Refer to the manual for the modem used, and lengthen the wait time after reset.
Cannot communication with the destination.	The setting method for the IP or DNS server is not correct.	Adjust the setting methods for the IP and DNS server to the one that specified by the destination.

Inbound connection (PPP server)

Condition	Cause	Action to take
Cannot connect with a modem.	The RS232C cable is disconnected.	Connect the RS232C cable correctly.
	The connection of the RS232C cable is not correct.	Check the connect interface of the modem and the pin arrangement of the modem port of the Web Datalogger Unit.
Cannot connect form the line.	The destination telephone number is not correct. The user name or password is not correct.	Confirm the destination telephone number. Enter the correct user name and password. If you forget the password, set the password at the user registration again.
	The modem initialization command is not correct.	Refer to the manual for the modem used, and input the correct initialization command.
	The wait after ATZ is short.	Refer to the manual for the modem used, and lengthen the wait time after reset.
	The setting method for the IP or DNS server is not correct.	Adjust the setting methods for the IP and DNS server to the one that specified by the destination.
Cannot communication from the connected line.	The IP address is not correct.	Set the IP address correctly.

Chapter 11

Specifications

11.1 Specifications

11.1.1 General Specifications

Item	Specifications	
Rated voltage	24 V DC	
Operating voltage range	21.6 to 26.4 V DC	
Allowable momentary power off time	3 ms Note)	
Ambient temperature	0 to 55 °C	
Storage temperature	-20 to 70 °C	
Ambient humidity	30 to 85 % RH (at 25 °C, non-condensing)	
Storage humidity	30 to 85 % RH (at 25 °C, non-condensing)	
Breakdown voltage	Between input terminals and power supply terminal/function earth	500 V AC for 1 minute
	Between output terminals and power supply terminal/function earth Between input terminals and output terminals	1500 V AC for 1 minute
	Cutoff current: 10 mA However, excluding the protective varistor.	
Insulation resistance	Between input terminals and power supply terminal/function earth	Min. 100 MΩ (Operating voltage: 500 V DC)
	Between output terminals and power supply terminal/function earth	
	Between input terminals and output terminals	
Vibration resistance	10 to 55 Hz, 1 cycle/min. double amplitude of 0.75 mm, 10 min. on 3 axes	
Shock resistance	98 m/s^2 or more, 4 times on 3 axes	
Noise immunity	1000 V[p-p] with pulse widths of 50 ns or 1 μs (based on in-house measurements)	
Operating condition	Free from corrosive gases and excessive dust.	
Consumption current (24 V DC)	Web Datalogger Unit: 300 mA or less Communication cassette COM1, CO2: 20 mA or less Communication cassette COM3, CO4: 25 mA or less	
Weight	Approx. 200 g	

Note) When the momentary power off time is within 3 ms, the operation continues.
When the momentary power off time is 3 to 10 ms, the instantaneous power failure is recorded and the system is rebooted.
When it is more than 10 ms, the operation same as the one when the power turns on is carried out. (The power ON is recorded in the system history.)

11.1.2 General Specifications

Item			Specifications
Data logging	Data sampling I/F	Internal I/O	Input: 4 points (Pulse input 30 Hz or less)/Output: 1 point
		Expansion unit (Up to 3 units can be connected.)	Digital system: Input: 48 points (Pulse input 1 Hz or less)/Output: 48 points Analog system: Input 24 CH/Output 24 CH
		Through communication cassette	- FP-series PLC (Eco-power meter, wireless sensor) - Mitsubishi FX series - Mitsubishi FX2N series - Mitsubishi FX-series computer link - Omron SYSMAC-C series
	Logging data	Description	- Contact system: Select from "Instantaneous value (ON/OFF)", "Accumulated ON time", "Total switching times" and "Pulse value". - Register system: Instantaneous value, average value, minimum value, maximum value, difference value
		Data format (Available in register system)	16-bit integer (Signed/Unsigned), 32-bit integer (Signed/Unsigned) Binary (16 bits/32 bits), HEX (16 bits/32 bits), character string, real number
		No. of registrable files	16
		Registrable device Note1)	Total 4000 points (250 points/1 file)
	Data save	Storage place Note2)	- Internal memory (SDRAM): 2M bytes - CF card: 8M to 1G bytes
		File system	VFAT/FAT/FAT32
		Saving format	CSV
	Trigger	Trigger type	- Fixed cycle (Select from the cycles predefined, which are 1 second to 24 hours.) - Relay (Leading edge differential, trailing edge differential, both edge differential) - Appointed time (Specify the date and time for every day, etc) - Register (=, >, <,)
		No. of registrable triggers	128

Item			Specifications
Others	Mail Transmission function	Transmission network	LAN, PPP (dial-up)
		Mail contents	Mail title: Within 16 characters Mail text Within 254 characters
		No. of registrable settings	64
	Data setting function	Set object	DLU output, expansion unit (output), PLC/eco-power meter, etc.
		No. of registrable settings	64
	Monitor function	Standard screen	Built-in standard monitor screen (using a web browser) Note3)
		Original monitor screen	Original monitor screens can be created using Java applets.
Network function		Communication protocol	TCP/IP, UDP/IP, PPP (Client/Server)
		Application protocol	HTTP, SMTP(POP/APOP authentication), FTP(server), SNTP, DHCP
Calendar timer			At 0 °C less than 119 seconds per month, at 25 °C less than 51 seconds per month, at 55 °C less than 148 seconds per month (The automatic correction using the SNTP is available.)
Backup			Logging data Note4) , calendar timer (By a gold capacitor and a backup battery sold separately)
Battery discharge life (Value applies when no power is supplied at all) Note4)			250 days or more (Typical lifetime in actual use: approx. 5 years (at 25°C)) (Suggested replacement interval: 1 year)
Security function			User name, password, account type (2 levels)
Self-diagnostic Function			Watchdog timer, setting value check, battery voltage drop

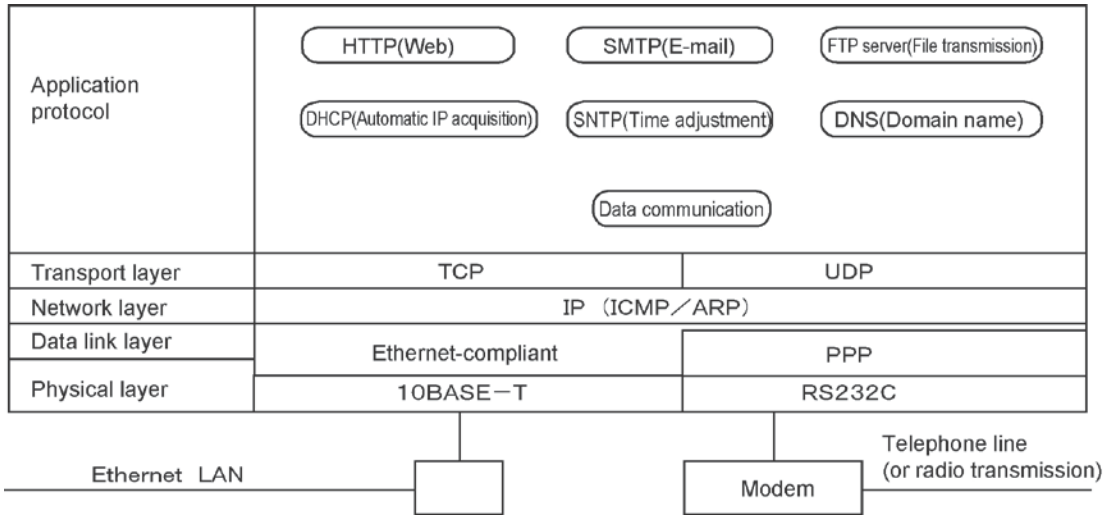
Note1) The registrable numbers are 16 files, 250 in total.
Registering 4000 points is available by setting consecutive points (1 to 250) for one registration.

Note2) The data in the internal memory will be deleted when the power turns off. (It cannot be backed up with a battery.)
Use the memory as an area for temporarily generating csv files.

Note3) The web browser used should be Internet Explorer 6.0 or later.

Note4) It is the discharge life after turning on electricity to the power supply of DLU for over 5 hours.
The battery life is influenced by the environments such as temperature.

11.1.3 General Specifications

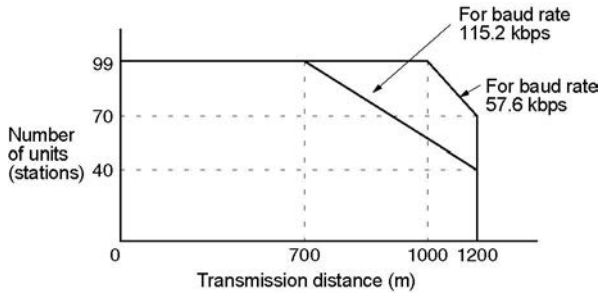


11.1.4 Communication Specifications

Model number	AFPG801	AFPG802	AFPG803	AFPG806	
Interface	**1-ch RS232C (non-isolated)** Note7)	**2-ch RS232C (non-isolated)** Note7)	**1-ch RS485** Note7)	**1-ch RS232C** Note7)	**1-ch RS485** Note5) Note6)
Transmission distance	15 m	15 m	1200 m Note1) Note2)	15 m	1200 m Note1) Note2)
Baud rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps				19200, 115200 bps Note3) Note4)
Communication method	Half-duplex communication				
Synchronous method	Start stop synchronous system				
Communication format	Stop bit: 1 bit/2 bits				
	Parity: None/Even/Odd				
	Data length: 7 bits/8bits				
	Start code: STX/No STX				
	End code: CR/CR+LF/None/ETX				
Data transmission order	Transmits from bit 0 character by character.				
No. of connected units	-	-	Max. 99 units	-	Max. 99 units

Note1) The transmission distance is limited by the specified baud rate and No. of connected units. When using a baud rate of 38400 bps or less, the allowable settings are a maximum of 1200 m and 99 units.

RS485 Transmission distance limitation



Note2) When using a C-NET adapter, the maximum number of connected units is 32, and the baud rate is limited to 19200 bps or less.

Note3) When using the communication cassette AFPG806(COM4), the baud rate of its RS485 port should be defined by the Web Datalogger Unit and the dip switch in the communication cassette. The baud rate for the RS232C port can be set by the Web Datalogger Unit only.

Note4) The termination resistance for the RS485 port in the communication cassette AFPG806(COM4) is set by the dip switch in the communication cassette. There is no termination resistance at the RS232C port.

Note5) When connecting the FPΣ, the response time, i.e. the time after receiving a command until a response is returned, may be adjusted by the following instruction of the FPΣ if necessary. (SYS1 MCOM1, WAITn n = 0 to 999 (Delay a response for [n] scan.)

Note6) When data is transmitted from Web Datalogger Unit via the RS485 communication of communication cassette AFPG803 or AFPG806(COM4), start the transmission of the data to Web Datalogger Unit after the time mentioned below passes at a receiver.

Communication condition	When using AFPG803	When using AFPG806
4800 bps	4.2 ms or more	Do not select.
9600 bps	2.1 ms or more	Do not select.
19200 bps	1.1 ms or more	1.1 ms or more
38400 bps	0.6 ms or more	Do not select.
57600 bps	350μs or more	Do not select.
115200 bps	200μs or more	200μs or more

Note7) For wiring the RS232C, a shielded wire must be used to increase noise suppression.

11.2 Table of I/O allocation

11.2.1 I/O Numbers of FP0/FP0R Expansion Unit (Expanded on the Right)

I/O Numbers of FP0/FP0R Expansion Unit (Expanded on the Right)

- I/O numbers do not need to be set as I/O allocation is automatically performed when an expansion unit is added.
- The I/O numbers of an expansion unit are determined according to the installed position.

Unit Types		Number of allocation	Expansion unit 1	Expansion unit 2	Expansion unit 3
FP0/FP0R Expansion Unit	E8X	Input (8 points)	X20 to X27	X40 to X47	X60 to X67
	E8R	Input (4 points)	X20 to X23	X40 to X43	X60 to X63
		Output (4 points)	Y20 to Y23	Y40 to Y43	Y60 to Y63
	E8YT/P E8YR	Output (8 points)	Y20 to Y27	Y40 to Y47	Y60 to Y67
	E16X	Input (16 points)	X20 to X2F	X40 to X4F	X60 to X6F
	E16R	Input (8 points)	X20 to X27	X40 to X47	X60 to X67
	E16T/P	Output (8 points)	Y20 to Y27	Y40 to Y47	Y60 to Y67
	E16YT/P	Output (16 points)	Y20 to Y2F	Y40 to Y4F	Y60 to Y6F
	E32T/P	Input (16 points)	X20 to X2F	X40 to X4F	X60 to X6F
		Output (16 points)	Y20 to Y2F	Y40 to Y4F	Y60 to Y6F
FP0 Analog I/O Unit	FP0-A21	Input CH0	AD10	AD20	AD30
		Input CH1	AD11	AD21	AD31
		Output CH0	DA10	DA20	DA30
FP0 A/D Converter Unit	FP0-A80	Input CH0 to 7	AD10 to AD17	AD20 to AD27	AD30 to AD37
FP0 Thermocouple Unit	FP0-TC4 FP0-TC8				
FP0 D/A Converter Unit	FP0-A04V FP0-A04I	Output CH0 to 3	DA10 to DA13	DA20 to DA23	DA30 to DA33

11.3 Table of Error Codes

11.3.1 Hardware Error Code

Hardware error code

No.	Name	Status	Error contents andsteps to take
E26	ROM error	Halt	Probably a hardware abnormality. =>Please contact your dealer.
E42	I/O unit verify error (I/O unit verify error)	Run	I/O unit wiring condition has changed compared to that at time of power-up. =>Check the I/O unit of which wiring condition has changed in the system history.
E50	Battery error	Run	The voltage of the backup battery lowered or the backup battery is not installed in the unit. =>Check the installation of the backup battery and then replace the battery if necessary.

11.3.2 Network Error Code

Communication initialization error code (0 [NET INIT])

No.	Name	Error contents and steps to take
E5	DHCP discovery error (IP automatic acquisition error)	IP could not be acquired from the DHCP server. Communication with the DHCP server could not be achieved. =>Check if the network system has no error.

PPP error code (1 [PPP SERVER] , 2 [PPP SERVER])

No.	Name	Error contents and steps to take
E12	Unauthorized error	Failed in authentication. Communication with the connected PPP server could not achieved. =>Check the user name and password. =>Check if the network system has no error.
E13	AT command error	An error was returned for the AT command transmitted to the modem. =>Check the initialization command/telephone number.
E14	Not support result	A result text that is not supported was returned from the modem. =>Check the modem and its manual.
E15	Dial tone error	Dial tone was not detected. =>Check the modem and its manual.
E16	Call error	The destination is busy, or the destination modem cannot be detected.
E17	No answer error	Silence detection could not be done. =>Check the modem and its manual.
E18	Hand set in use error	The telephone set was being used. =>Check the modem and its manual.
E19	Modem error	The modem could not be detected. =>Check if the modem is powered off or check the cable to the modem. Confirm the dial type.

Mail error code (25 [MAIL])

No.	Name	Error contents and steps to take
E50	Attached file error	Failed in attaching the file. =>The file may be damaged. Format the CF card.
E51	No attached file	Could not access the attached file. =>The attached file may not be generated. Check if the file has been generated by displaying the unit operation/file download with the browser.
E52	Attached file size error	The size of the attached file exceeded the allowable size. =>Get the target file by displaying the logging file operation with the browser.
E53	MAIL DNS error (SMTP)	Failed in searching the name of DNS. =>Check if the IP of the DNS server has been correctly registered. Check if the DNS server is operating. Check if the domain name of the SMTP server has been correctly specified.
E54	MAIL DNS error (POP)	Failed in searching the name of DNS. =>Check if the IP of the DNS server has been correctly registered. Check if the DNS server is operating. Check if the domain name of the POP server has been correctly specified.
E57	MAIL configuration error	There is an error in the setting. =>Check if the destination address/source address/SMTP server IP/POP server IP (when setting authentication) have been correctly specified.
E58	MAIL send error	Failed in communicating with the SMTP server. =>Check if the IP of the SMTP server has been correctly specified. Check if the SMTP server is operating. Check if the authentication function of the mail server conforms to the one of the Web Datalogger Unit.
E59	MAIL POP AUTH error	Failed in communicating with the POP server. =>Check if the account or password required for the POP authentication has been correctly specified. Check if the POP server is operating. Check if the authentication function of the mail server conforms to the one of the Web Datalogger Unit.

SNTP error code (128 [SNTP])

No.	Name	Error contents and steps to take
E62	SNTP DNS error	Failed in searching the name of DNS. =>Check if the IP of the DNS server has been correctly registered. Check if the DNS server is operating. Check if the domain name of the SNTP server has been correctly specified.
E63	SNTP server IP error	There is an error in the setting. =>Check if the IP of the SNTP server has been correctly specified.
E64	SNTP time configuration error	There is an error in the setting. =>Check if the IP of the SNTP server has been correctly specified.
E66	SNTP send error	Data could not be transmitted to the SNTP server. =>Check if the IP of the SNTP server has been correctly specified. Check if the SNTP server is operating.
E67	SNTP receive error	There was no response from the SNTP server. =>Check if the SNTP server is operating.
E68	SNTP response error	There was an error in the data obtained from the SNTP server. =>Check if the SNTP server is operating properly.
E69	Time conversion error	There was an error in the time obtained from the SNTP server. =>Check if the SNTP server is operating properly.

PCWAY error code (9091 [PCWAY])

No.	Name	Error contents and steps to take
E92	PCWAY connection error	Failed in connecting to all the registered PCWAY servers. =>Check if the IP of the PCWAY servers have been correctly specified. Check if the PCWAY servers are operating.

If a command is not transmitted within 5 seconds (data is not received by the DLU within 5 seconds) although a PC, etc has established the connection to transmit the command (such as MEWTOCOL) to the DLU, the DLU will close this connection.
If the DLU closes the connection successfully, it will not be recorded in the error history. However, if it fails, the following errors will occur. (However, as these errors are recovered automatically, it is no problem if the communication after the errors is performed normally.)

9094 port error code

No.	Name	Error contents and steps to take
E110	9094 close error 1	There was no Fin/Ack for the Fin issued by the DLU from the destination.
E111	9094 close error 2	rst was issued from the PC before the close operation is executed.
E112	9094 close error 3	The DLU failed to close the connection.

9095 port error code

No.	Name	Error contents and steps to take
E120	9095 close error 1	There was no Fin/Ack for the Fin issued by the DLU from the destination.
E121	9095 close error 2	rst was issued from the PC before the close operation is executed.
E122	9095 close error 3	The DLU failed to close the connection.

11.3.3 Hardware Error Code

Communication error code

No.	Name	Error contents and steps to take
E40	BCC error	BCC error occurred. =>Check the communication status such as a noise.
E41	Format error	An abnormal response was received from the destination unit. =>Check the communication status such as a noise. Also, when communicating via RS485, the destination unit may have sent the response before the DLU is ready for receiving data. Adjust the transmission waiting time of the destination unit. * When communicating via RS485, the DLU will be ready for receiving data after 2 characters since it has sent a command.
E42	Not support	The destination unit does not support the transmission command. =>Check the command supported for the destination unit.
E60	Parameter error	The specified data does not exist in the destination unit. =>Check the setting of the register name.
E61	Data error	The specified data does not exist in the destination unit. =>Check the setting of the register number.
E74	Time out error	The response timeout occurred. =>The baud rate may not be matched or a cable may be disconnected. Check the communication status. If the status is normal, reset the appropriate timeout period.

11.3.4 File Error Code

File error code

No.	Name	Error contents and steps to take
E13	Access error	It cannot access the CF card. =>Check if the CF card is inserted into the unit.
E24	Too many open files	As there are too many open files, the appropriate file cannot be open. =>Close the unnecessary open files.
E28	No memory	There is no free space in the device where data is written. =>Change the CF card or delete some files to keep free space.

11.3.5 Internal Error Code

Communication initialization error code (0 [NET INIT])

No.	Name	Error contents and steps to take
Unfixed	Blank	Probably an abnormality in this system. =>Reboot the Web Datalogger Unit.

11.4 Table of Relays and Memory Areas

11.4.1 Table of Relays and Memory Areas

Name			Number of points and range of memory area available for use	Function
Relay	External input relay	X	512 point (X0 to X31F)	Turns on or off based on external input.
	External output relay	Y	512 points (Y0 to Y31F)	Externally outputs on or off state.
	Internal relay	R	256 points (R0 to R15F)	Turns on or off within DLU only. It can be used as a trigger contact.
Memory area	External input	WX	32 words (WX0 to WX31)	16 points are handled as one word.
	External output	WY	32 words (WX0 to WX31)	16 points are handled as one word.
	Internal relay	WR	16 words (WR0 to WR15)	16 points are handled as one word.
	Data register	DT	8000 words (DT0 to DT7999)	The current value of the data logged in the DLU is reflected. Registration No. 1: 2 words from DT0 Registration No. 2: 2 words from DT2 ⋮ Registration No. 4000: 2 words from DT7998

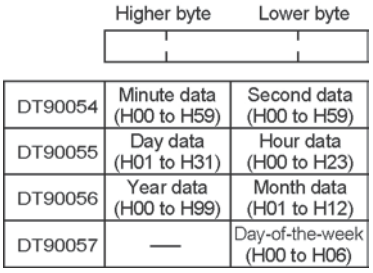
Note) The number of points noted above is the number reserved as the calculation memory. The actual number of points available for use is determined by the hardware configuration.

11.4.2 Special Internal Relay (R)

Relay number	Name	Description
R9000	Self-diagnostic error flag	Turns on when a self-diagnostic error occurs.
R9005	Backup battery error flag (non-hold)	Turns on when a backup battery error occurs. The remaining battery level is checked once every hour.
R9006	Backup battery error flag (hold)	Turns on when a backup battery error occurs. Once a battery error has been detected, this is held even after recovery has been made. → It goes off if the power supply is turned off.
R9013	Initial pulse relay (ON)	Goes on for only the first scan after operation (RUN) has been started, and goes off for the second and subsequent scans.
R9020	RUN mode flag	Turns off while the mode selector is set to STOP. Turns off while the mode selector is set to RUN.
R9021	Logging flag	Turns on while data is being logged.
R902A	CF card error flag	Turns on when an error occurs while accessing the CF card.
R902B	CF cover detection flag	Turns on when the CF card cover is installed.
R4303-4393	COM1 communication error flag	Turns on when the communication error occurs during gathering data at unit numbers 0 to 99 of COM1. (Unit No. 0 is 1:1 communication.)
R4430-4493	COM2 communication error flag	Turns on when the communication error occurs during gathering data at unit numbers 0 to 99 of COM2. (Unit No. 0 is 1:1 communication.)

11.4.3 Special Data Register (DT)

A: Available N/A: Not available

Register No.	Name	Description	Reading	Writing
DT90028 DT90029	No. of CF card writing	Counts the number of writing to a CF card.	A	A
DT90054	Clock/calendar setting (minute/second)	The year, month, day, hour, minute, second and day-of-the-week data for the calendar timer is stored. The built-in calendar timer will operate correctly through the year 2099 and support leap years.  	A	A
DT90055	Clock/calendar setting (day/hour)			
DT90056	Clock/calendar setting (year/month)			
DT90057	Clock/calendar setting (day-of-the-week)			
DT90062 DT90063	COM1 scan time (current value)	Stores the current value of a time to be taken for the data logging through COM1.	A	N/A
DT90064 DT90065	COM1 scan time (Minimum value)	Stores the minimum value of a time to be taken for the data logging through COM1.	A	N/A
DT90066 DT90067	COM1 scan time (Maximum value)	Stores the maximum value of a time to be taken for the data logging through COM1.	A	N/A
DT90070	COM1 Number of unit no. mismatch	Counts the number of times that the transmitted unit number and the received unit number is mismatched when gathering data with COM1.	A	N/A
DT90082 DT90083	COM2 scan time (current value)	Stores the current value of a time to be taken for the data logging through COM2.	A	N/A
DT90084 DT90085	COM2 scan time (Minimum value)	Stores the minimum value of a time to be taken for the data logging through COM2.	A	N/A
DT90086 DT90087	COM2 scan time (Maximum value)	Stores the maximum value of a time to be taken for the data logging through COM2.	A	N/A
DT90090	COM2 Number of unit no. mismatch	Counts the number of times that the transmitted unit number and the received unit number is mismatched when gathering data with COM2.	A	N/A

11.5 BIN/HEX/BCD Codes

Decimal	Hexadecimal	Binary data	BCD data (Binary coded decimal)
0	0000	00000000 00000000	0000 0000 0000 0000
1	0001	00000000 00000001	0000 0000 0000 0001
2	0002	00000000 00000010	0000 0000 0000 0010
3	0003	00000000 00000011	0000 0000 0000 0011
4	0004	00000000 00000100	0000 0000 0000 0100
5	0005	00000000 00000101	0000 0000 0000 0101
6	0006	00000000 00000110	0000 0000 0000 0110
7	0007	00000000 00000111	0000 0000 0000 0111
8	0008	00000000 00001000	0000 0000 0000 1000
9	0009	00000000 00001001	0000 0000 0000 1001
10	000A	00000000 00001010	0000 0000 0001 0000
11	000B	00000000 00001011	0000 0000 0001 0001
12	000C	00000000 00001100	0000 0000 0001 0010
13	000D	00000000 00001101	0000 0000 0001 0011
14	000E	00000000 00001110	0000 0000 0001 0100
15	000F	00000000 00001111	0000 0000 0001 0101
16	0010	00000000 00010000	0000 0000 0001 0110
17	0011	00000000 00010001	0000 0000 0001 0111
18	0012	00000000 00010010	0000 0000 0001 1000
19	0013	00000000 00010011	0000 0000 0010 1001
20	0014	00000000 00010100	0000 0000 0010 0000
21	0015	00000000 00010101	0000 0000 0010 0001
22	0016	00000000 00010110	0000 0000 0010 0010
23	0017	00000000 00010111	0000 0000 0010 0011
24	0018	00000000 00011000	0000 0000 0010 0100
25	0019	00000000 00011001	0000 0000 0010 0101
26	001A	00000000 00011010	0000 0000 0010 0110
27	001B	00000000 00011011	0000 0000 0010 0111
28	001C	00000000 00011100	0000 0000 0010 1000
29	001D	00000000 00011101	0000 0000 0010 1001
30	001E	00000000 00011110	0000 0000 0011 0000
31	001F	00000000 00011111	0000 0000 0011 0001
:	:	:	:
63	003F	00000000 00111111	0000 0000 0110 0011
:	:	:	:
255	00FF	00000000 11111111	0000 0010 0101 0101
:	:	:	:
9999	270F	00100111 00001111	1001 1001 1001 1001

11.6 ASCII Codes

ASCII Codes

b_7	b_6	b_5	b_4	b_3	b_2	b_1	b_0	R \ C	0	1	2	3	4	5	6	7
				0	0	0	0	0	NUL	DEL	SPACE	0	@	P	`	p
				0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
				0	0	1	0	2	STX	DC2	″	2	B	R	b	r
				0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
				0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
				0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
				0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
				0	1	1	1	7	BEL	ETB	’	7	G	W	g	w
				1	0	0	0	8	BS	CAN	(	8	H	X	h	x
				1	0	0	1	9	HT	EM	)	9	I	Y	i	y
				1	0	1	0	A	LF	SUB	*	:	J	Z	j	z
				1	0	1	1	B	VT	ESC	+	;	K	[	k	{
				1	1	0	0	C	FF	FS	,	<	L	\	l	|
				1	1	0	1	D	CR	GS	-	=	M	]	m	}
				1	1	1	0	E	SO	RS	.	>	N	^	n	~
				1	1	1	1	F	SI	US	/	?	O	_	o	DEL

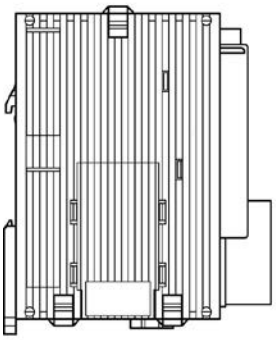
Chapter 12

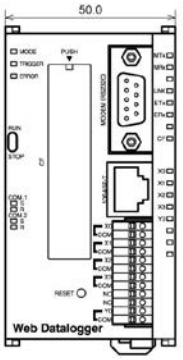
Dimensions and Others

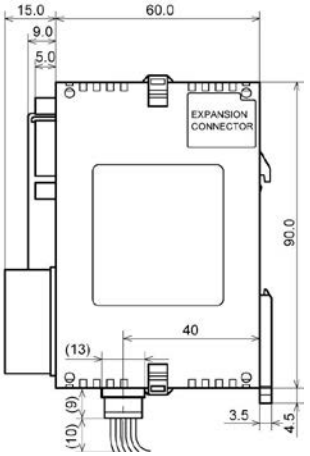
12.1 Dimensions

12.1.1 Web Datalogger Unit

AFL1200





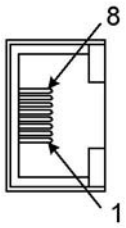


(Unit: mm)

12.2 Others

12.2.1 Ethernet Communication

10BASE-T-compliant RJ45 connector

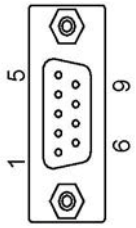


Pin No.	Signal name
1	TX+
2	TX-
3	RX+
4	Not used
5	Not used
6	RX-
7	Not used
8	Not used

Note) Use a straight cable to connect with a HUB. Use a cross cable to establish 1:1 connection with a PC, etc.

12.2.2 Modem Port

RS232C specifications (IBM PC/AT serial port-compatible)



Pin No.	Signal name	Direction	Description
1	CD	←	Carrier detect
2	RXD	←	Receive Data
3	TXD	→	Send Data
4	DTR	→	Data terminal ready
5	SG	-	Signal ground
6	DSR	←	Data set ready
7	RTS	→	Request to Send
8	CTS	←	Clear to Send
9	RI	←	Ring indicator

Record of changes

Manual No.	Date	Desceiption of changes
ARCT1F422E	Jun.2008	1st edition
ARCT1F422E-1	Oct.2008	2nd edition Change of Company name
ARCT1F422E-2	Dec.2008	3rd edition
ARCT1F422E-3	Feb.2010	4th edition
ARCT1F422E-4	Jun.2011	5th edition Change of Company name
ARCT1F422E-5	Jul.2013	6th edition Change of Company name
ARCT1F422E-6	Dec.2013	7th edition