Technical Information

TI 04R01B01-01EN

YTMX580 Multi-Input Temperature Transmitter Startup Guide
(From Device Configuration and Wireless Network Connection to Process Data Monitoring)

[Style : S1]

Contents

YOKOGAWA

Yokogawa Electric Corporation
2-9-32, Nakacho, Musashino-shi, Tokyo, 180-8750 Japan
Tel.: 81-422-52-5634 Fax.: 81-422-52-9802

Introduction

This document describes the configuration of the main devices– including the range settings of the YTMX580 Multi-Point Temperature Transmitter, the connection to the field wireless network, and an example of displaying the process data (PV values) on the DX2000 Paperless Recorder or the MW100 Data Acquisition Unit.

Notes

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Precautions for Use

Scope of Explanation in this Document

- This document does not explain the basic operations of operating systems such as Windows XP. For the basic operations of the respective operating system, please read the User's Guide or other documentation of the respective operating system.
- This document does not explain the basic settings and operations of software, including the configuration tools, and the hardware and software used. For details on the software or the hardware and software used, please read the instruction manuals of the respective software or the hardware and software used.

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1. Overview

One YTMX580 Multi-Input Temperature Transmitter (hereinafter referred to as YTMX) and one YFGW710 Field Wireless Integrated Gateway (hereinafter referred to as YFGW) are connected via the field wireless network, and the process data measured by the YTMX is transmitted to the YFGW at Period of 2 seconds.

The process data is acquired via Modbus/TCP and displayed*1 by the DX2000 Paperless Recorder (hereinafter referred to as DX) or the MW100 Data Acquisition Unit (hereinafter referred to as MW) that is connected to the YFGW via Ethernet.

To configure the YTMX and the field wireless network, two personal computers (hereinafter referred to as PCs) are used.

In one PC (hereinafter referred to as PC1), **Field Wireless Configurator** that is used for field wireless network configuration and maintenance and **Field Wireless Management Tool** that is used for field wireless network and wireless field device management and operation status monitoring are installed.

In the other PC (hereinafter referred to as PC2), **FieldMate Versatile Device Management Wizard** (hereinafter referred to as FieldMate) that is used to configure and provision the VTMX, and **FieldMate Provisioning Device Tool** that runs in conjunction with FieldMate are installed.

Note that the YFGW network is configured as a star topology and wireless field devices are used as IO devices.

*1: For the MW, the data is monitored on the PC.

1.1 Device Configuration

Figure 1 shows the device configuration.

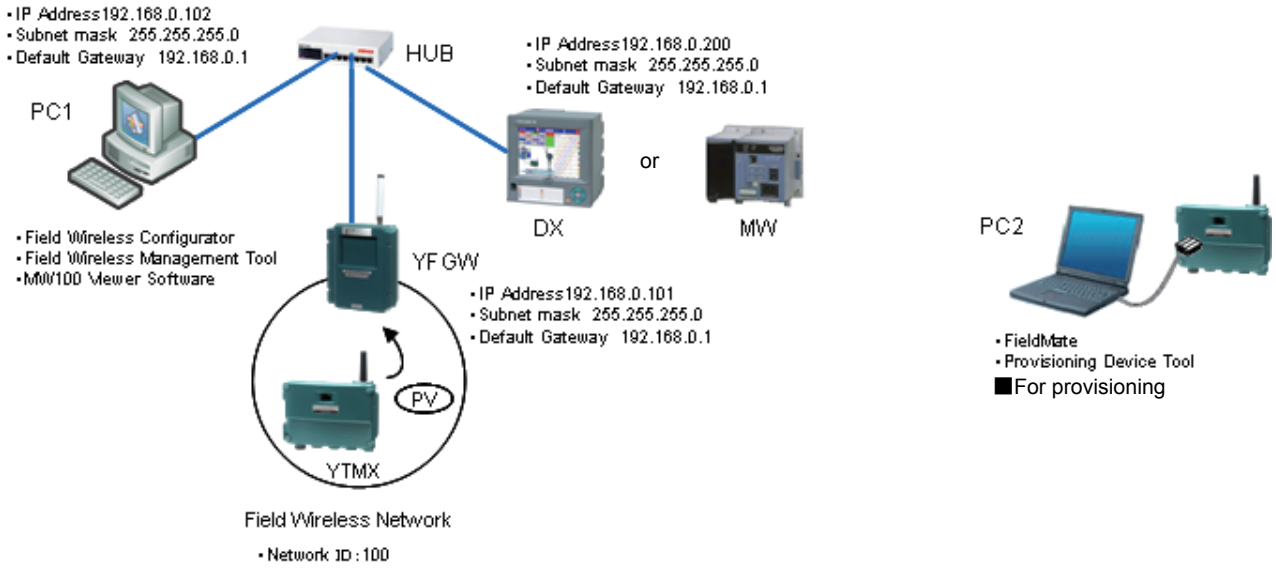


Figure 1 Device Configuration

1.2 Hardware and Software Requirements

Table 1 shows the hardware and software requirements, including products recommended by Yokogawa.

This document describes an example of using the hardware and software listed below.

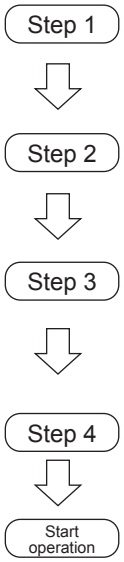
Table 1 Hardware and Software Requirements, including Products Recommended by Yokogawa

Category	Hardware and Software	Quantity	Remarks
Hardware	YTMX580 Multi-Input Temperature Transmitter	1	
	YFGW710 Field Wireless Integrated Gateway	1	
	DX2000 or MW100	1	The MATH option is required.
	Personal computers • PC1 • PC2	2	PC1: For field wireless network configuration and maintenance, and field wireless network and wireless field device management PC2: For device configuration and provisioning
	Infrared adapter Supplier: ACTiSYS Product name: Infrared USB Serial Adapter Product No.: ACT-IR224UN-LN96 (9,600 bps)	1	
	Hub	1	3 ports or more
	LAN cable	3	Straight cable
Software	FieldMate Versatile Device Management Wizard (R2.03.01 or later) • FieldMate Provisioning Device Tool (for provisioning)	1	Wireless field device configuration tool
	Field Wireless Configurator (R1.02.00 or later) Field Wireless Management Tool (R1.02.00 or later)	1 1	Field wireless system configuration tool Included with the YFGW
	MW100 Viewer Software (R3.03.01 or later recommended*1) • MW100 IP Configuration Software (for network configuration)	1	Included with the MW100
Device File	Device File (R3.02.12 or later)*2	1 set	

*1: You can use the software included with the MW used or a compatible revision of software.
*2: An update patch file for Device File R3.02.12 can be downloaded from the website.
<http://field-wireless.com/>

1.3 Configuration Work Flow

Figure 2 shows the configuration work flow. This document explains the operating procedures according to the steps shown in the work flow. For the work items and configuration tools used for the respective work items, refer to Table 2 “Work Items and Configuration Tools.”



Provisioning (Section 3.1)

- Perform a provisioning task to enable the YTMX to join the field wireless network.
  Configuration tool used: FieldMate Provisioning Device Tool

Configuring the YTMX*1 (Section 3.2)

- Configure the device (the YTMX) to measure temperatures.
  Configuration tool used: FieldMate

Configuring the Network (Communication) and Registering Device*2 (Section 3.3)

- Configure the network (communication), register the device (the YTMX) with the YFGW and connect the YTMX to the field wireless network.
  Configuration tool used: Field Wireless Configurator

Configuring Monitoring Device (Section 3.4)

- Configure the DX or the MW to acquire the process data via Modbus/TCP.

Figure 2 Work Flow

Table 2 Work Items and Configuration Tools

Item	Settings	Configuration Tool	Applicable Device and Communication Medium
Provisioning	• Device Tag • Network ID • Join Key • Export Configuration File	FieldMate Provisioning Device Tool	Configure the settings on the YTMX via infrared communication
Configuring the YTMX	• Device Configuration • Input Configuration	FieldMate	Configure the settings on the YTMX via infrared communication or wireless communication*1
Configuring the Network (Communication) and Registering Device	• Import Configuration File • Publication Period • Device Role • Register Device (YTMX) • Modbus Configuration	Field Wireless Configurator	Configure the settings on the YFGW via Ethernet

*1: Configuration via wireless communication is available after operation starts.
*2: Configuration on the YTMX is performed from the YFGW.

2. Preparation

2.1 Designing the Network

To configure the field wireless network, first determine the network ID, the device tag name of the wireless field device (YTMX), and the network information for the Ethernet connection of the YFGW.

This document uses the settings shown in Table 3 to configure the network.

Table 3 Network Settings

Item	Settings			
Network ID	100			
Device Tag (name to identify the device)	YTMX580			
Network Settings	Device	IP Address	Subnet Mask	Default Gateway
	YFGW	192.168.0.101	255.255.255.0	192.168.0.1
	PC1	192.168.0.102		
	DX or MW100	192.168.0.200		
Network Topology	Star			

2.2 Installing the Software and Device File

Table 4 shows the software that is required for configuration.

Install the configuration tools, the infrared adapter driver, and Device File on each of the PCs.

For the installation procedure, refer to the instruction manual of the respective software.

Table 4 PC and Software

PC	Software
PC1	• Field Wireless Configurator (included with the YFGW) • Field Wireless Management Tool (included with the YFGW) • Device File (CF/DD) R3.02.12 or later*1 • MW100 Viewer Software (included with the MW100)
PC2	• FieldMate Versatile Device Management Wizard • Infrared adapter driver

*1: An update patch file for Device File R3.02.12 can be downloaded from the website.
<http://field-wireless.com/>

2.3 Configuring the PC Network

Configure the network settings shown in Table 3 on PC1.

For the network configuration procedures, refer to the instruction manual of the PC.

2.4 Configuring the Monitoring Device Network

The following shows the network settings to connect the DX or the MW to the YFGW via Ethernet.

For the operating procedures, refer to the instruction manuals of the respective devices.

Settings

IP Address: 192.168.0.200

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.0.1

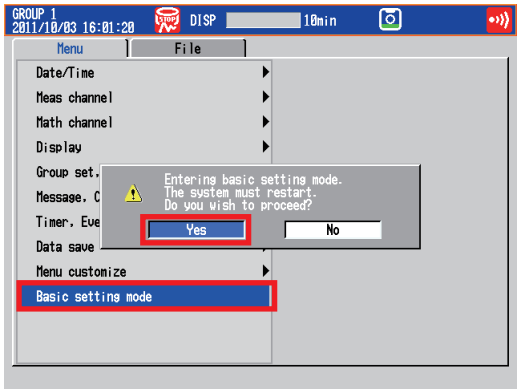
2.4.1 Configuring the DX

Configure the network settings in the Basic Setting Mode.

Perform the following operation to enter the Basic Setting Mode.

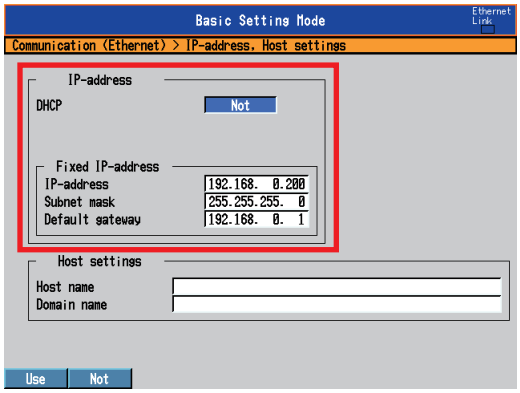
MENU key (to switch to setting mode) > [Menu] tab > [Basic Setting mode] > **DISP/ENTER**

When the dialog box to confirm whether to enter the Basic Setting mode appears, Select [Yes] > **DISP/ENTER**.



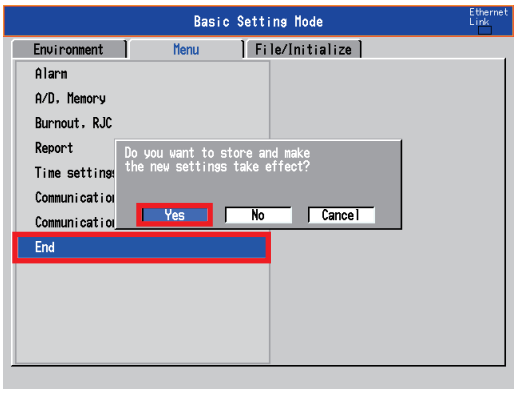
Setup Screen

MENU key (to switch to setting mode) > [Menu] tab > [Basic Setting mode] > [Communication (Ethernet)] > [IP-address, Host settings] > **DISP/ENTER**



When the all the settings have been configured, click [End] to exit the basic setting mode.

The dialog box appears. Select [Yes]. Press **DISP/ENTER**

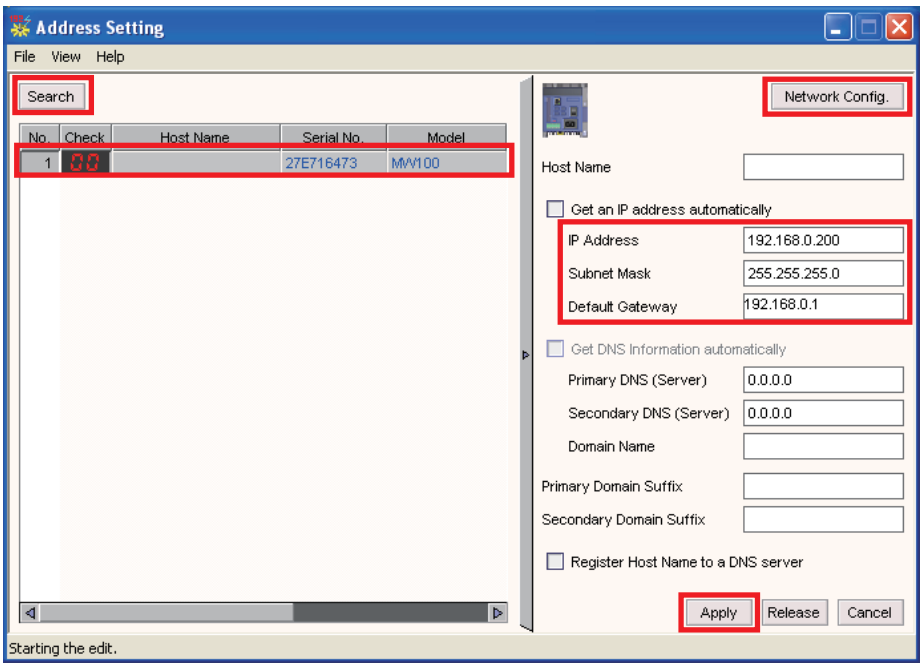


2.4.2 Configuring the MW

Configure the network settings in MW100 IP Configuration Software.

1. Start MW100 IP Configuration Software from the Start menu of PC1.

2. Click [Search]. Select the detected MW and click [Network Configuration]. Configure the network settings and click [Apply].



2.5 Connecting the Devices

Connect the individual devices according to the device configuration shown in Figure 1.

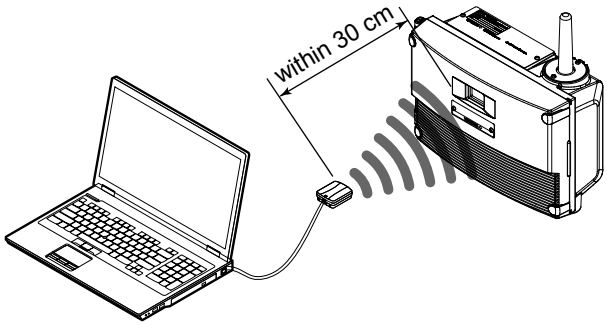
3. Configuration

3.1 Provisioning (Step 1)

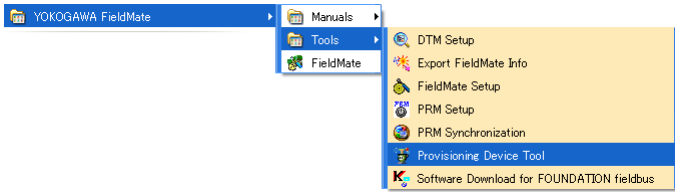
<Important>

Provisioning information is required to connect the YTMX to the gateway. Be sure to export the provisioning information, because the information will need to be imported into Field Wireless Configurator later on.

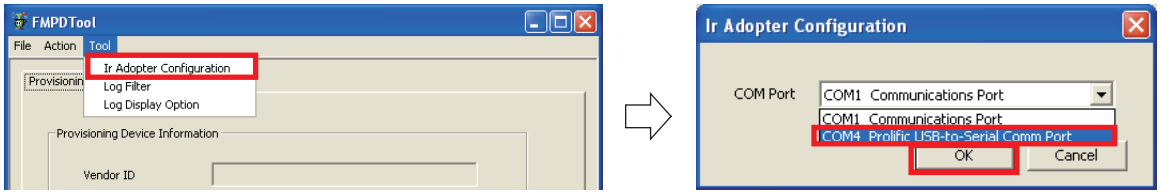
1. Connect the infrared adapter to PC2 and ensure that the distance to the infrared communication port on the front of the YTMX is within 30 cm.



2. Start Provisioning Device Tool from the Start menu.

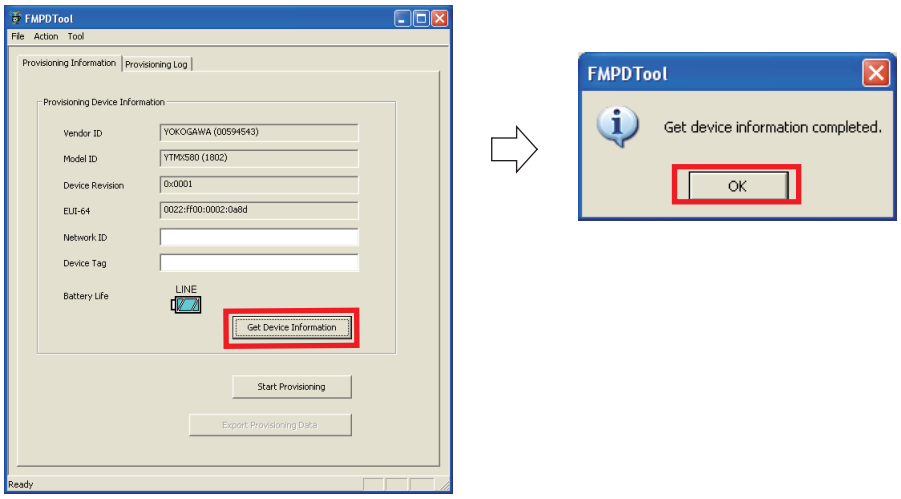


3. Select [Ir Adapter Configuration] from the Tools menu and click [OK]. Select the Com port for the infrared adapter and click [OK].

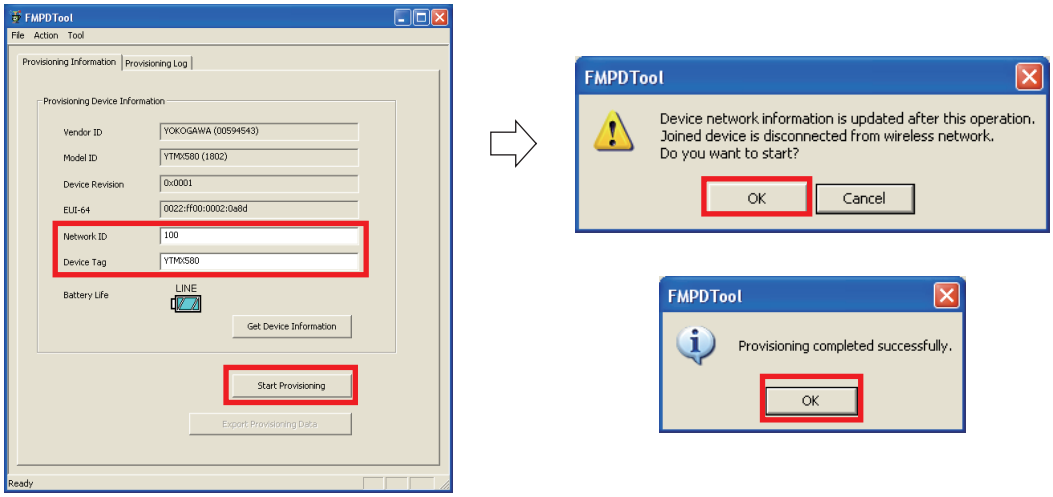


4. Click [Get Device Information].

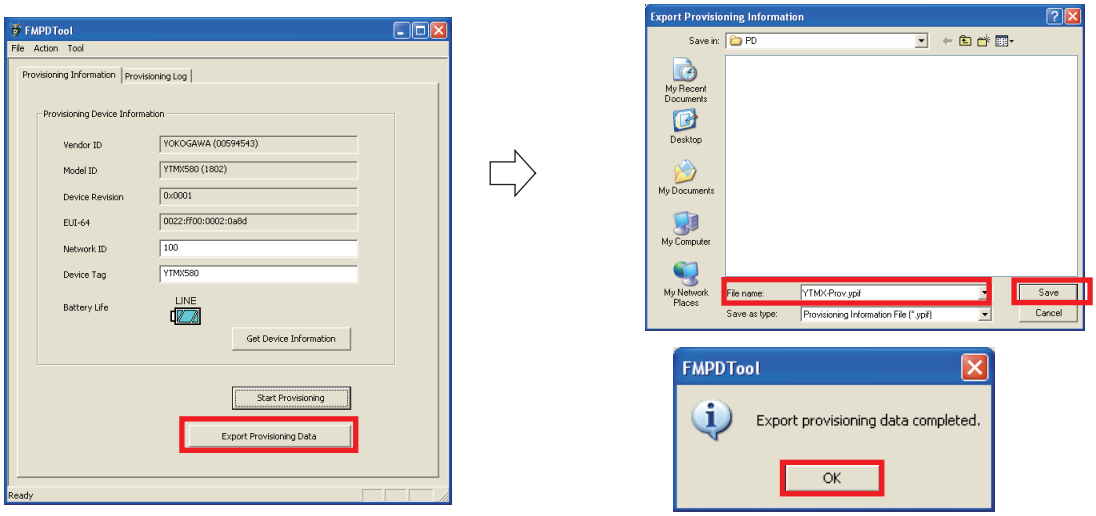
   When the information acquisition is complete, the acquired information and the dialog box to notify you that information acquisition is complete appear. Click [OK].



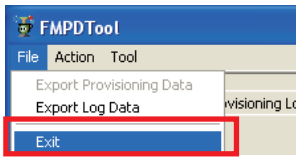
5. Set [100] in Network ID and [YTMX580] in Device Tag, and click [Start Provisioning]. If a device tag is already set, set [YTMX580] as necessary. When the dialog box to confirm whether to update the settings appears, click [OK]. When the completion dialog box appears, click [OK].



6. Click [Export Provisioning Data]. Enter “YTMX-Prov” in File Name and click [Save]. (Default: “c:¥FM¥Export¥PD”) When the dialog box to notify you that the export is complete appears, click [Ok].



7. Click [Exit] from the File menu to exit Provisioning Device Tool.



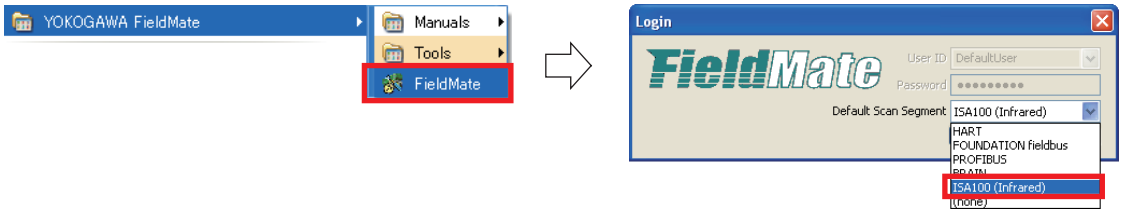
3.2 Setting the YTMX (Step 2)

This section describes the device settings of the YTMX. The screen shows FieldMate R2.03.01 as an example. For details on FieldMate, refer to the instruction manual of FieldMate.

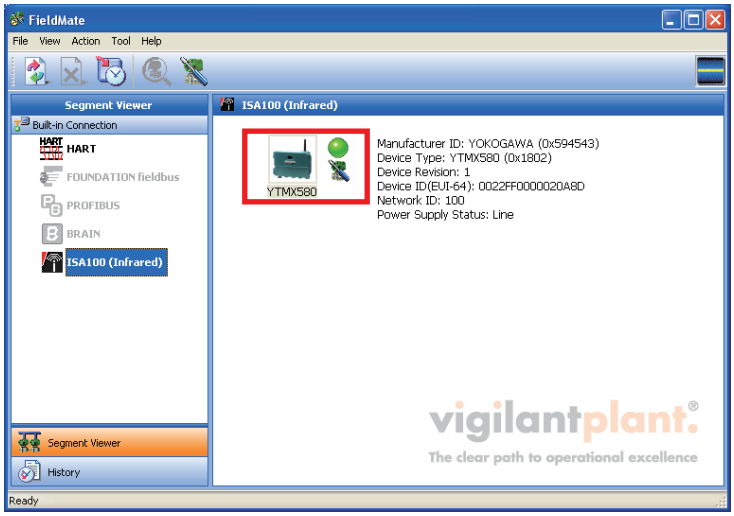
1. Connect the infrared adapter to PC2 and ensure that the distance to the infrared communication port on the front of the YTMX is within 30 cm.

2. Start **FieldMate** from the Start menu.

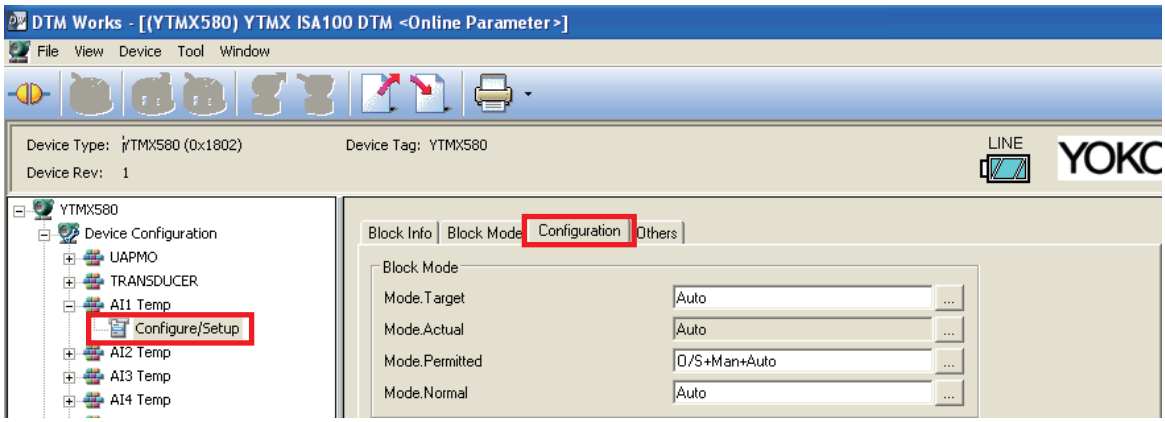
   When the Login window appears, select [ISA100 (Infrared)] from [Default Scan Segment] and click [OK].



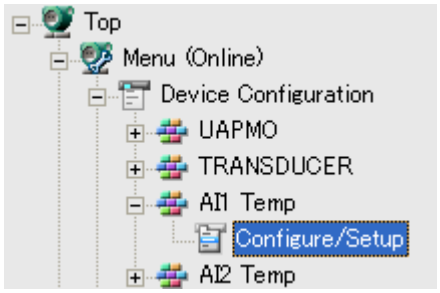
3. When the icon for the detected YTMX is displayed in Segment Viewer, double-click the icon to start DTM Works.



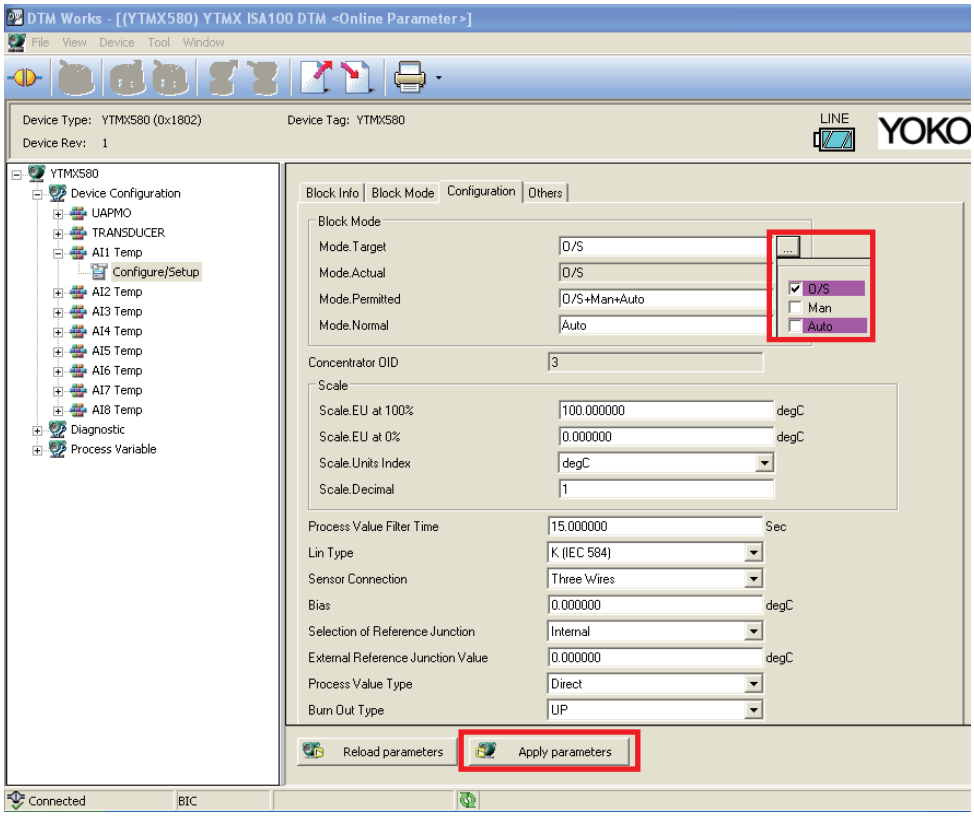
4. Click [Configure/Setup] of [AI1 Temp] from [Device Configuration] and select the [Configuration] tab.



For FieldMate R2.04.01, [Device Configuration] is under [Menu (online)].



5. Select the [O/S] checkbox in [Mode. Target] of [Block Mode] and click [Apply parameters] ([Download to device] for R2.04.01). The changed mode (O/S) is displayed in [Mode. Actual].



6. Configure the settings shown in Table 5 for the respective parameters of AI1 Temp. When configuration of the respective parameters is complete, click [Apply parameters] ([Download to device] for R2.04.01).

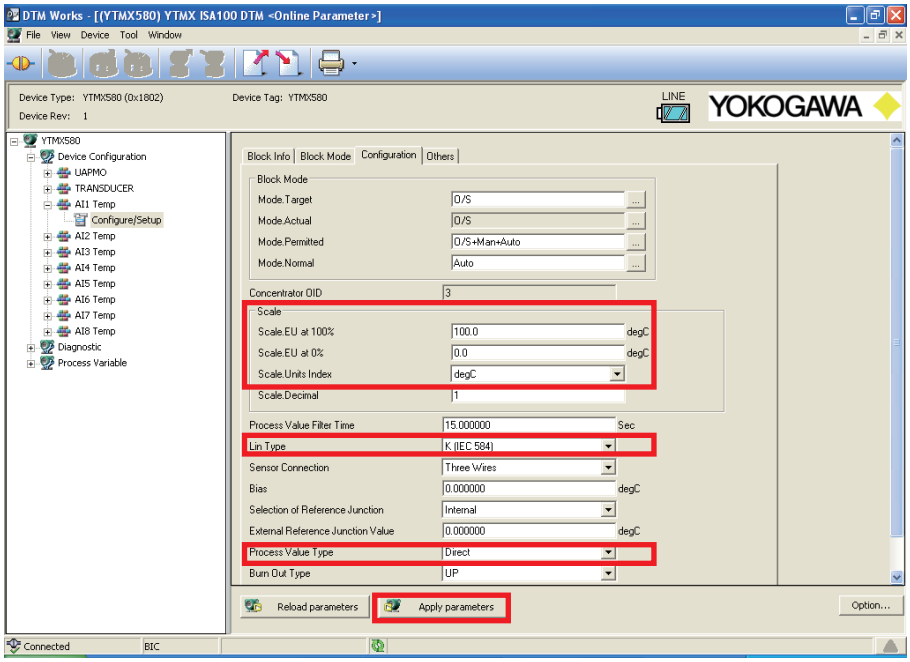
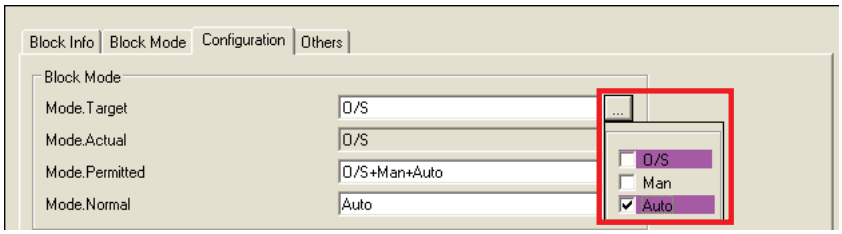


Table 5 Parameter Settings

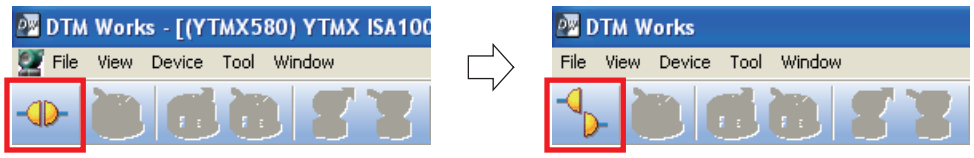
Item	Parameter	AI1 Temp to AI8 Temp
Scale High Limit	Scale.EU at 100%	100.0
Scale Low Limit	Scale.EU at 0%	0.0
Unit	Scale Unit Index	°C (degC)
Input Type	Lin Type	Type K
Data Type	Process Value Type	Direct

7. Select the checkbox for Auto in [Mode. Target] of [Block Mode] and click [Apply parameters].

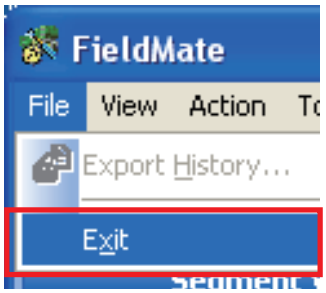


8. Repeat steps 4 to 7 for setting AI1 Temp to configure the settings for AI2 Temp to AI8 Temp.

9. When configuration of the respective settings is complete, click the connection/disconnection icon (disconnect) in DTM Works to exit DTM Works.



10. Click [Exit] from the File menu to exit FieldMate.

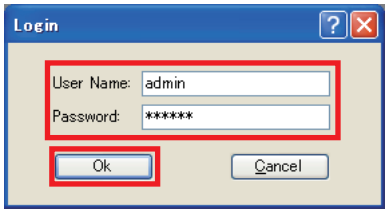


3.3 Configuring the Network (Communication) and Registering the Device (Step 3)

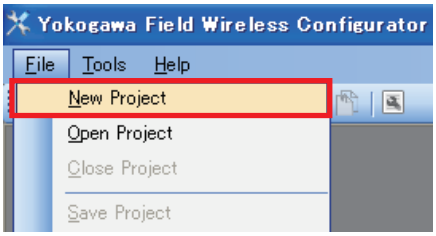
3.3.1 Configuring Network (Communication)

1. Start **Field Wireless Configurator** from the Start menu of PC1.

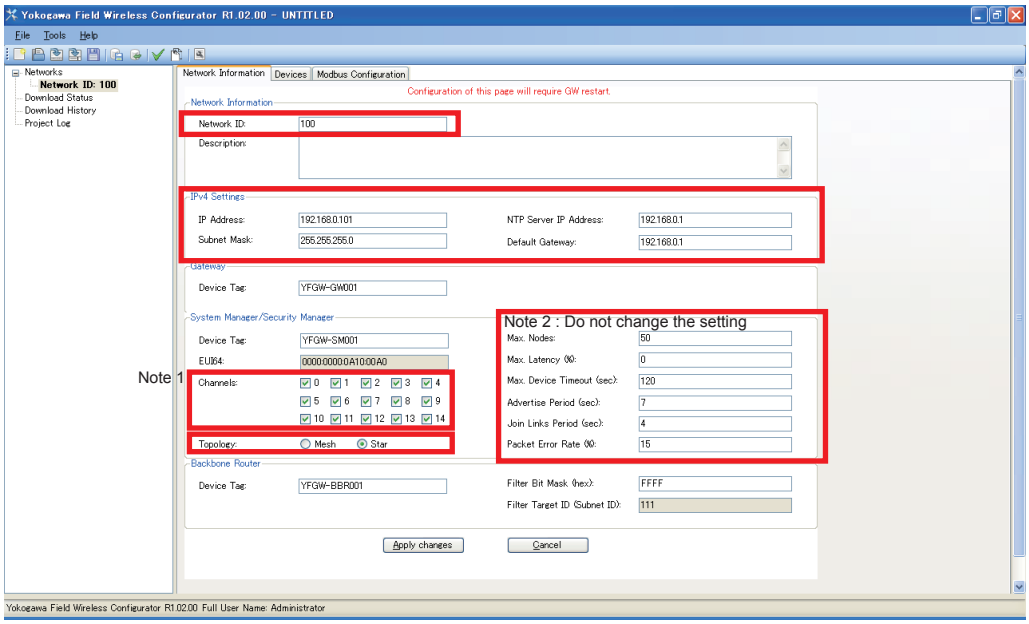
2. When the Login dialog box appears, enter "**admin**" in Login Name and Password and click [OK].



3. Click [New Project] from the File menu.



4. Configure the settings shown in Table 6, such as Network ID and Network Information.



Note 1: The ISA100.11a field wireless network uses the wireless frequency bandwidths for the respective channels defined in the IEEE 802.15.4. Clear the check boxes for the channels whose use is prohibited by the law of your country.
Note 2: Do not change the settings in the System Manager/Security Manager field.

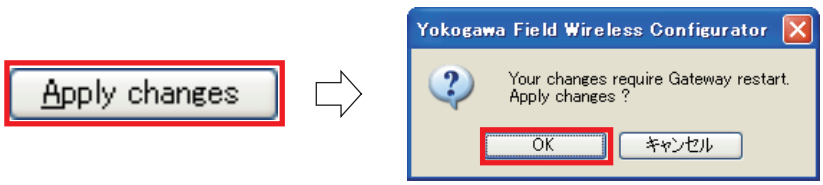
- Max Nodes
- Max Latency
- Max Device Timeout
- Advertise Period
- Join Links Period

Table 6 Network Information

Item	Settings	Remarks
Network ID	100	The YFGW710 works with the network ID specified here.
IP Address	192.168.0.101	**Field Wireless Configurator** will access the YFGW710 that is specified here.
Subnet Mask	255.255.255.0	
Default Gateway	192.168.0.1	
NTP Server IP Address	192.168.0.1	If the server is not used, set the same IP address as that of Default Gateway.
Topology	Star	
Channel	Select the check boxes for the channels to be used. Clear the check boxes for the channels whose use is prohibited by the law of your country or region.	

Note: The IP address set in YFGW is needed to change the settings next time. Write down the IP address for future reference.

5. When the configuration of the respective parameters is complete, click [Apply Changes]. When the confirmation dialog appears, click [OK].

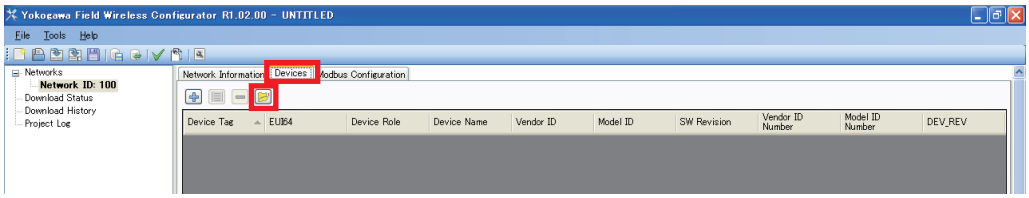


3.3.2 Registering the Device (YTMX)

Import the provisioning information and register the device (YTMX) with the YFGW. Copy the provisioning information file (YTMX-Prov.ypif) that was exported (saved to PC2) in Step 1 Provisioning to PC1.

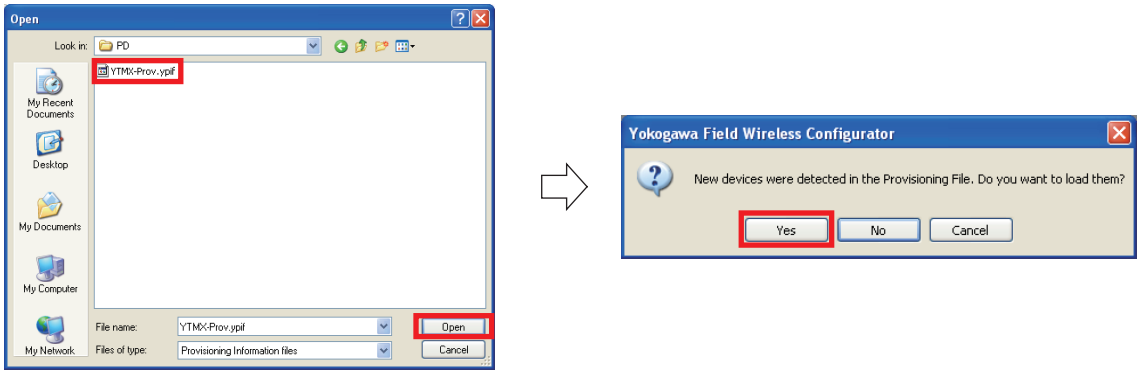
Importing the Provisioning Information

1. Click the [Devices] tab and click the [Open File] icon.



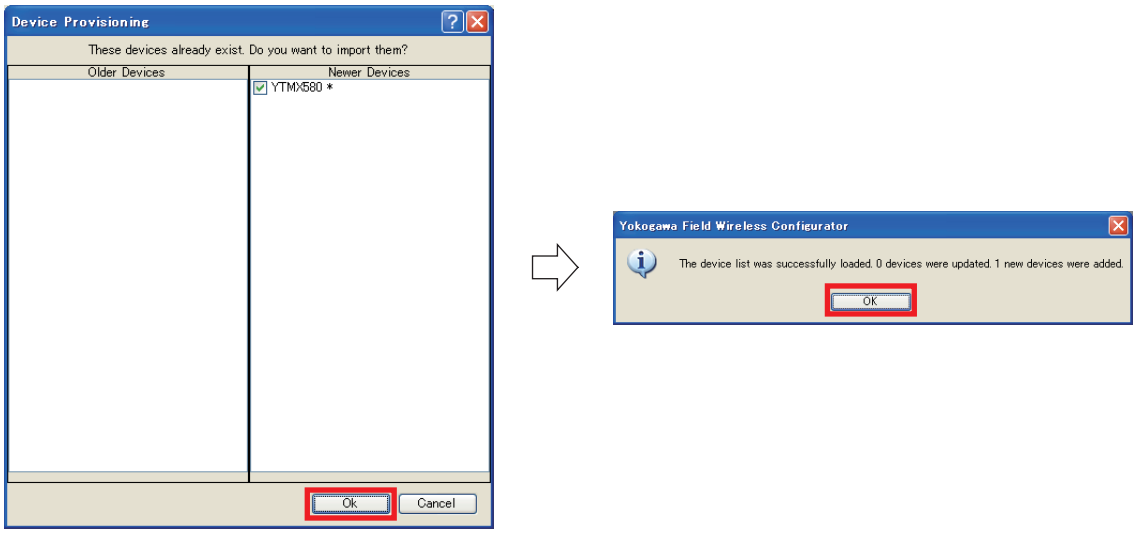
2. Select the file (YTMX-Prov.ypif) from the location to which the provisioning file was copied, and click [Open]. When the dialog box to confirm whether to load the provisioning file appears, click [Yes].

* If the network IDs of Field Wireless Configurator and the provisioning file are not identical, the provisioning file will not open.



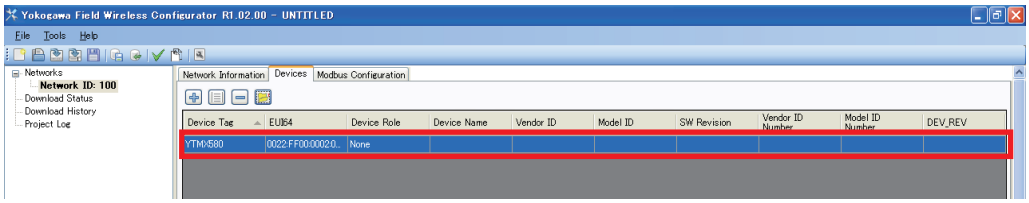
3. When the **Device Provisioning** window appears, click [OK].

When the message to confirm whether to add the device file appears, click [OK].

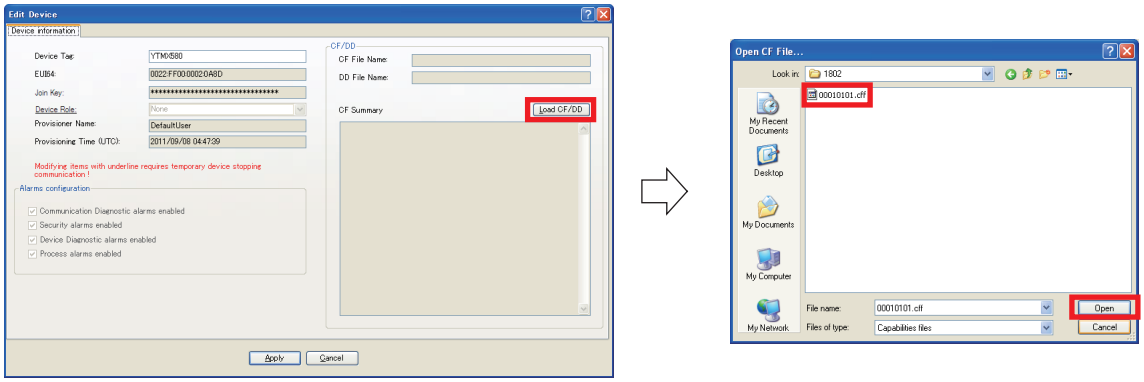


Loading CF/DD File

1. Double-click the displayed **Device Tag**.

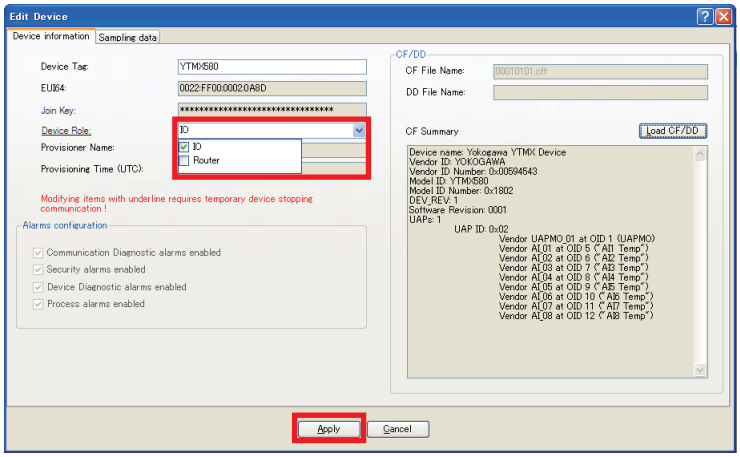


2. When the **Edit Device** window appears, click [Load CF/DD]. Select the CF file (00010101.cff) for the YTMX and click [Open]. (Default: c:¥Program Files¥Yokogawa¥DTM¥DTMev¥EV¥ISA100¥00594543¥1802)



Setting Device Role

Set [IO] in [Device Role] (uncheck the box for Router) and click [Apply].

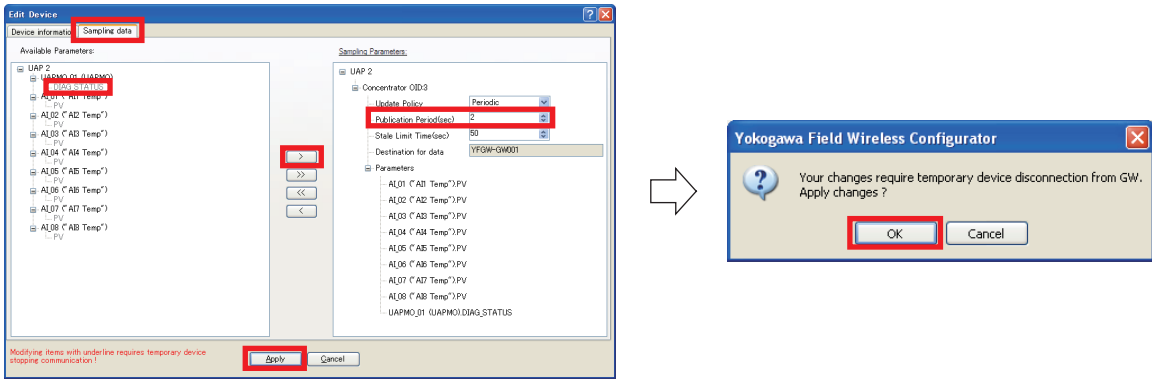


Setting Publication Period

Click the [Sampling Data] tab, click [DIAG_STATUS] of [UAP 2] [UAPMO_01] of Available Parameter, and click the [>] button.

Set 2 (sec) in [Publication Period (sec)] and click [Apply].

When the confirmation message appears, click [OK].

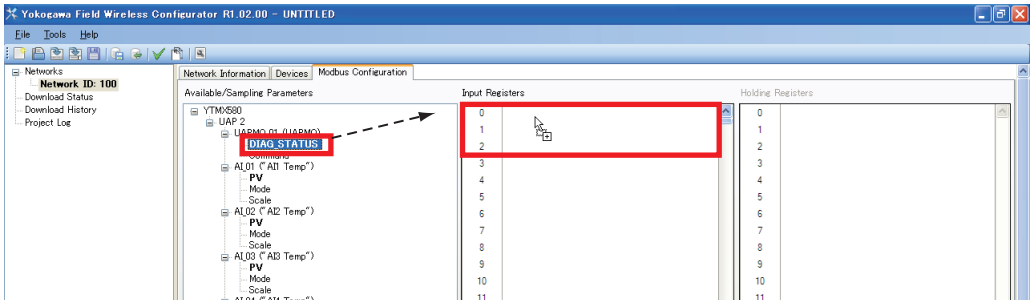


Setting Modbus Resisters

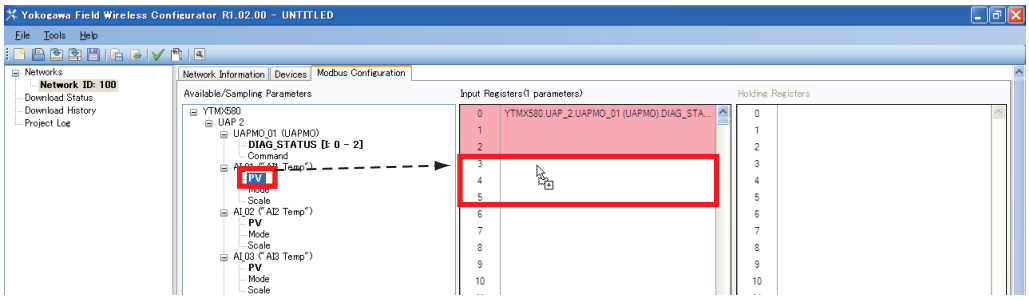
Map the process data (parameters) to the registers of the YFGW according to the settings below.

Parameter	Input Register Number
UAPMO_01 DIAG_STATUS	0
AI_01 PV	3
AI_02 PV	6
AI_03 PV	9
AI_04 PV	12
AI_05 PV	15
AI_06 PV	18
AI_07 PV	21
AI_08 PV	24

1. Click the [Modbus Configuration] tab. Drag **DIAG_STATUS** to position 0 of Input Register.

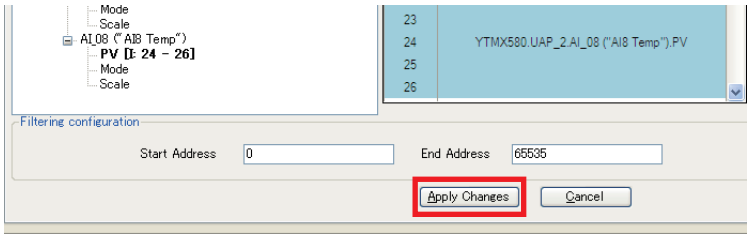


2. Drag **PV** of AI_01 to position 3 of Input Register.



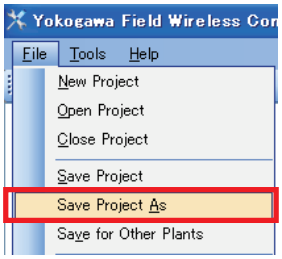
3. Repeat the same operation for AI_02 to AI_08 to map the parameters to the registers.

4. When the mapping of the parameters is complete, click [Apply Changes].



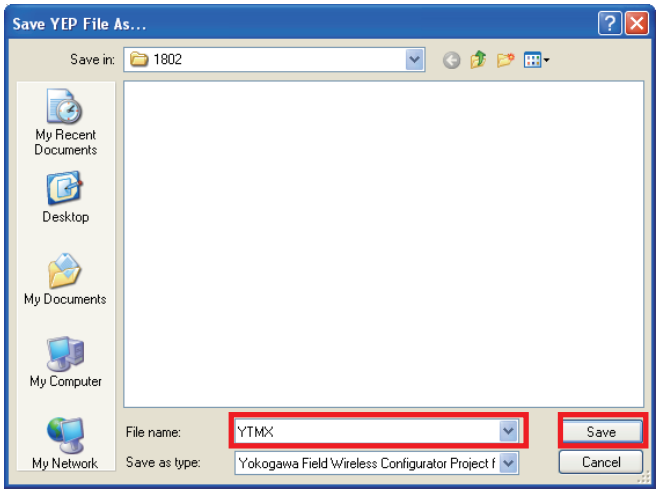
Saving Project File

1. Click [Save Project As] from the File menu.



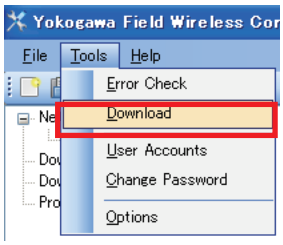
2. Enter “YTMX” in File Name and click [Save].

Note: The saved file is needed to change the settings next time. Keep it for future use.

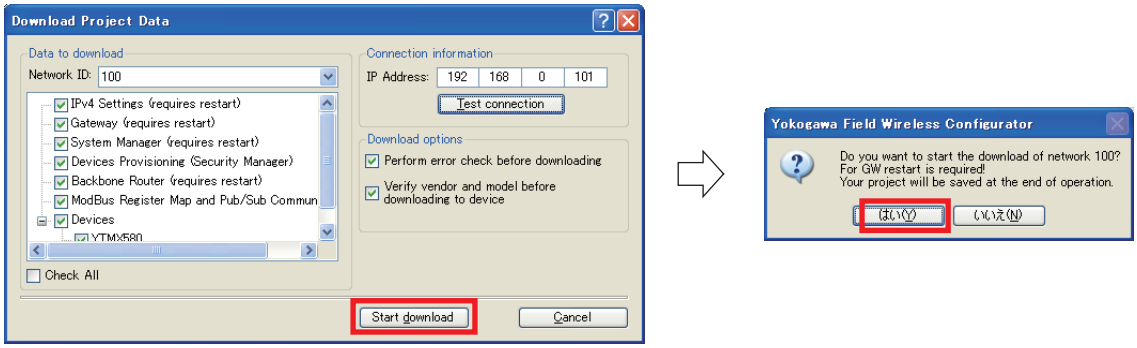


Downloading

1. Click [Download] from the Tools menu.

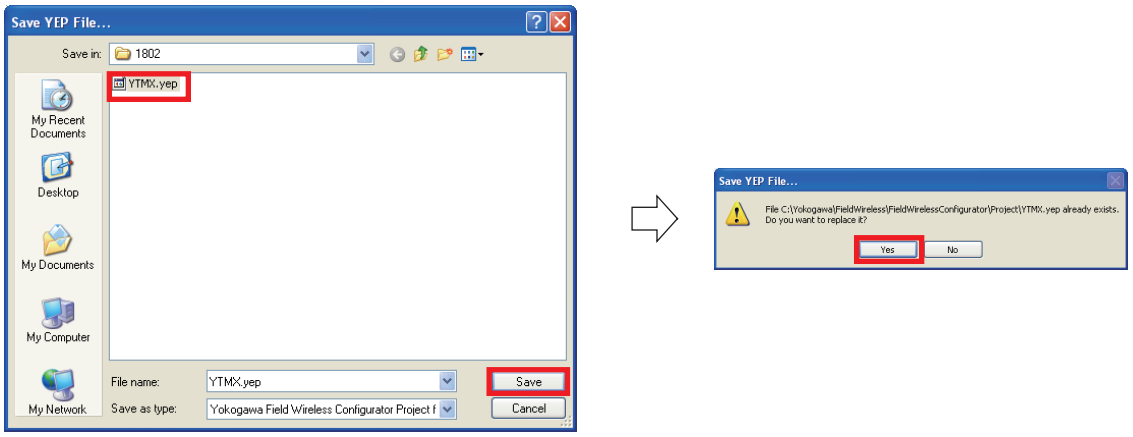


2. When the **Download Project Data** window appears, click [Start download]. When the confirmation message appears, click [Yes].



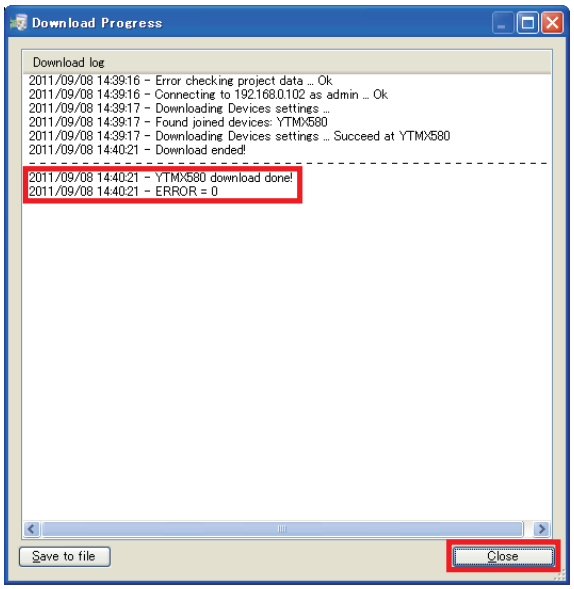
3. Select **YTMX.yep** and click [Save].

   When the message to confirm whether to replace the file appears, click [Yes].



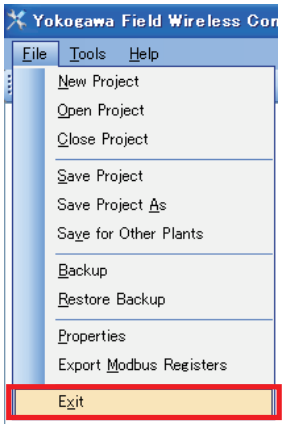
4. When the download is complete, confirm that there are no errors and click [Close].

   If errors such as a timeout occur, wait for about 3 minutes and then click [Start download] again.



5. Click [Close] in the Download Project Data dialog box.

   Click [Exit] from the File menu to exit **Field Wireless Configurator**.



3.4 Configuring the Monitoring Device (Step 4)

This section explains the settings for displaying the process data in the DX or the MW. For the operating procedures, refer to the instruction manuals of the respective devices.

3.4.1 Configuring the DX

Configuring the Modbus Client

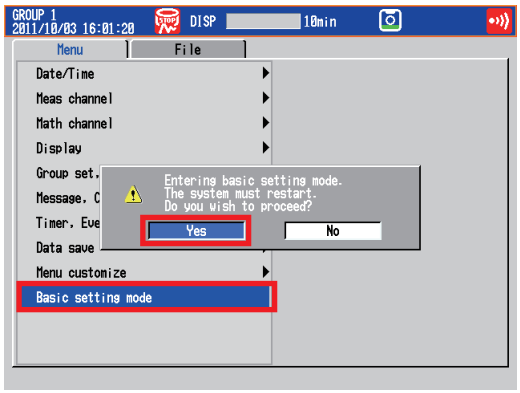
Configure the Modbus client in the Basic Setting Mode.

Perform the following operation to enter the Basic Setting Mode.

Setup Screen

MENU key (to switch to setting mode) > [Menu] tab > [Basic Setting mode] > **DISP/ENTER**

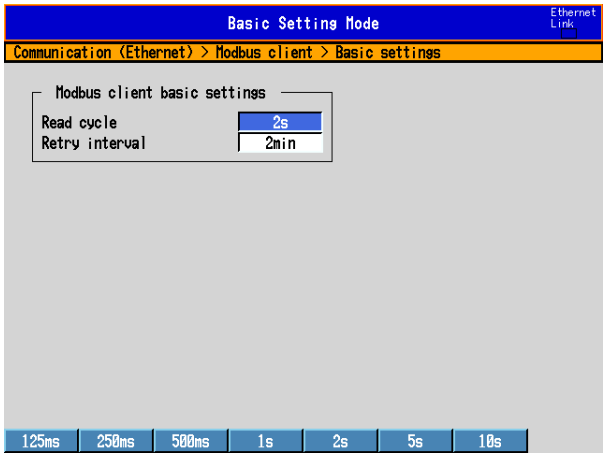
When the dialog box to confirm whether to enter the Basic Setting mode appears, Select [Yes], > **DISP/ENTER**



Basic Configuration

Setup Screen

[Communication (Ethernet)] > [Modbus Client] > [Basic Setting] > **DISP/ENTER**



Settings

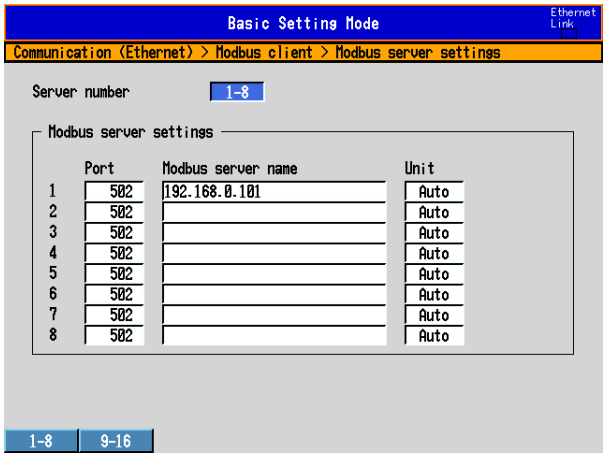
Read cycle: 2s

Retry interval: 2min

Configuring the Connection Destination Server

Setup Screen

[Communication (Ethernet)] > [Modbus Client] > [Modbus server settings] > **DISP/ENTER**



Settings

Connection Destination Server 1

Port: 502

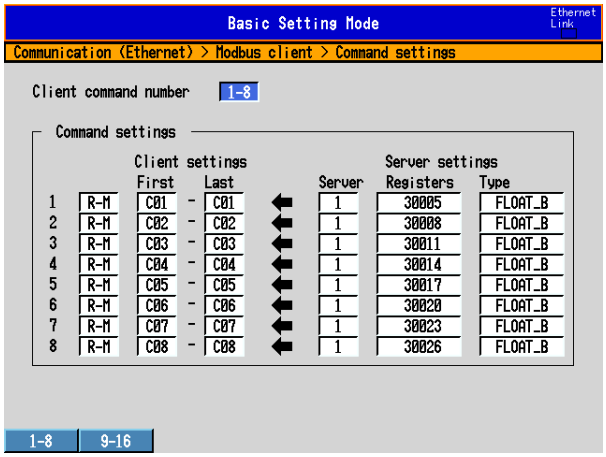
Modbus Server Name: 192.168.0.101 (IP address of the YFGW)

Unit: Auto

Setting Transmission Commands

Setup Screen

[Communication (Ethernet)] > [Modbus Client] > [Command settings] > **DISP/ENTER**



Settings

Command No.	Command Type	Client	Server		
		First/Last	Connection Destination	Register	Type
1	R-Math	C01	1	30005	FLOAT_B
2		C02		30008	
3		C03		30011	
4		C04		30014	
5		C05		30017	
6		C06		30020	
7		C07		30023	
8		C08		30026	

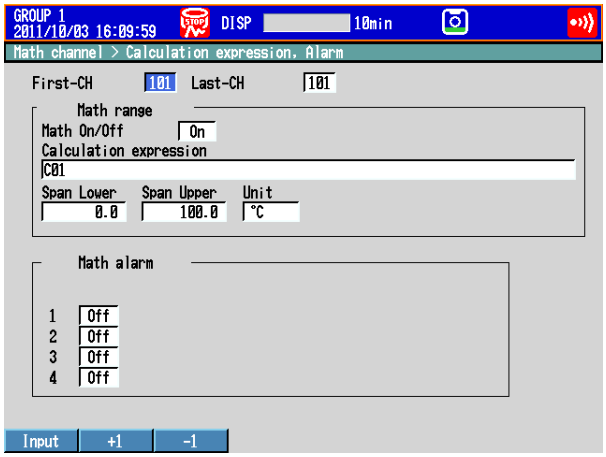
When configuration of the parameters is complete, click [End] to exit the Basic Configuration Mode. When the dialog box to confirm whether to save the settings appears, select [Yes] > **DISP/ENTER.**

Setting the Calculation Expression

In the calculation channel, set the communication channel to which the process data is to be loaded.

Setup Screen

MENU key (to switch to setting mode) [Menu] tab > [Math Channel] > [Calculation expression, Alarm] > **DISP/ENTER**



Settings

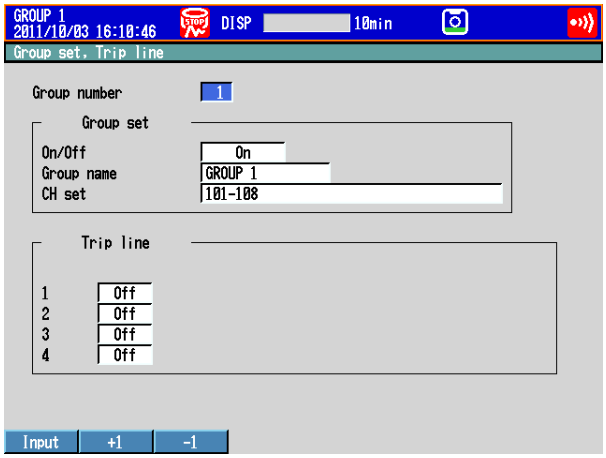
Calculation Channel	Calculation Expression	Span Lower	Span Upper	Unit
101	C01	0.0	100.0	°C
102	C02			
103	C03			
104	C04			
105	C05			
106	C06			
107	C07			
108	C08			

Setting the Group

Set the group for the channels to be displayed.

Setup Screen

MENU key (to switch to setting mode) > [Menu] tab > [Group set, Trip line] > **DISP/ENTER**



Settings

Group No. 1

On/Off: On

Group Name: Set any name.

Channel Setting: 101 – 108

3.4.2 Configuring the MW100

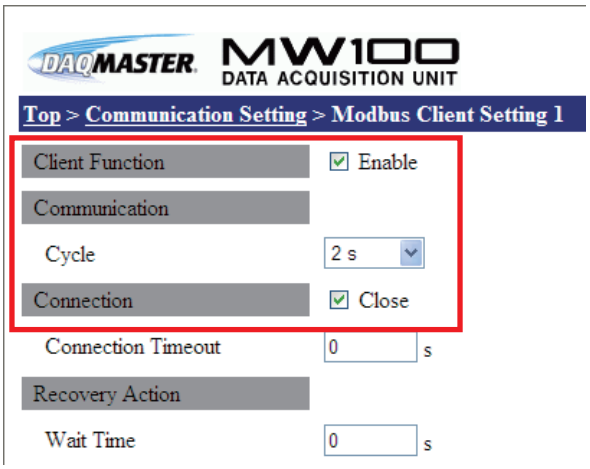
This section describes the settings for displaying the process data in the MW. For the operating procedures of the MW, refer to the instruction manual of the MW.

■ Configuring the Modbus Client

● Modbus Client Setting 1

Setup Screen

Top window > [Communication Setting] > [Modbus Client Setting 1]



Settings

Client Function: Enable

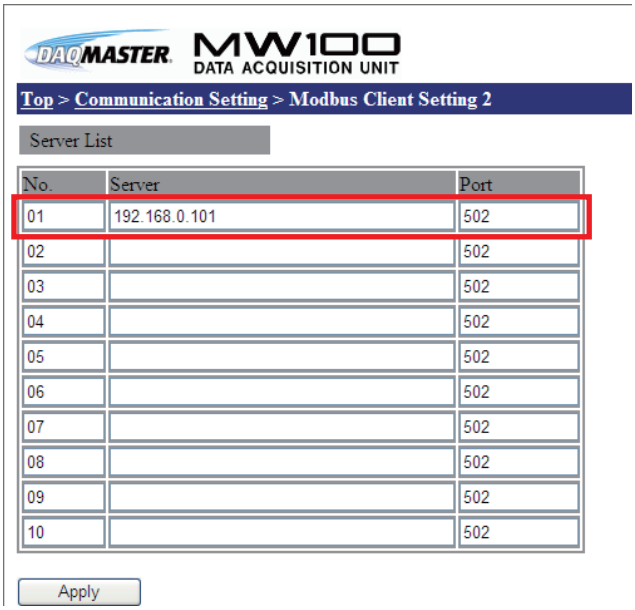
Cycle: 2 s

* Change the settings for the cycle, connection, and recovery action depending on the communication environment.

Modbus Client Setting 2

Setup Screen

Top window > [Communication Setting] > [Modbus Client Setting 2]



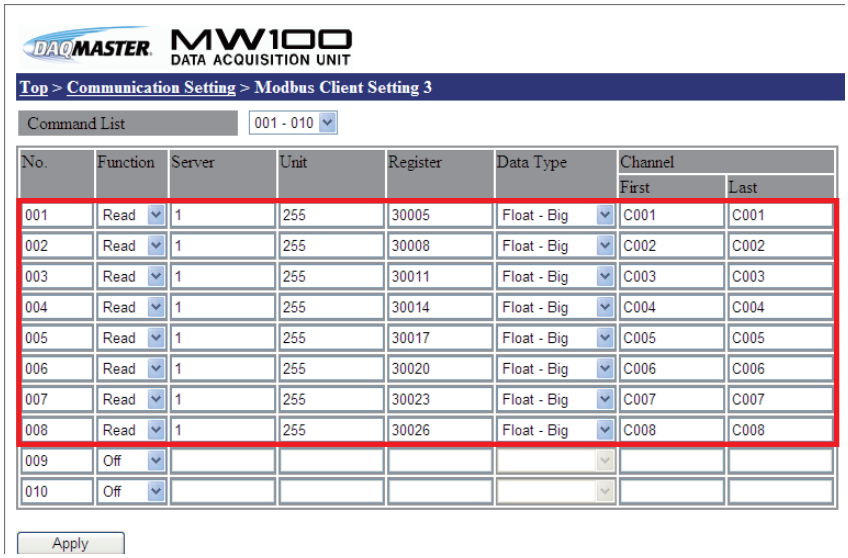
Settings

No. 1 Server: 192.168.0.101 (Set the IP address of the YFGW.)

Modbus Client Setting 3

Setup Screen

Top window > [Communication Setting] > [Modbus Client Setting 3]



Settings

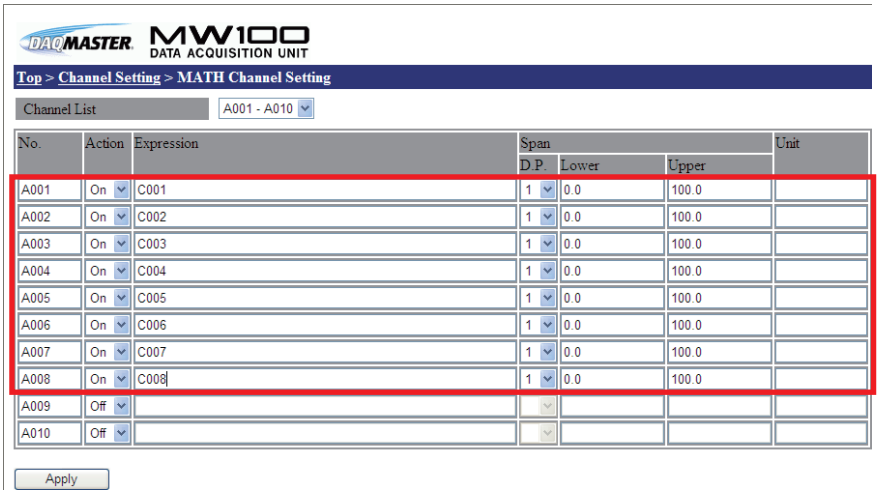
No.	Type	Server	Unit	Register	Data Type	Channel	
						Top	End
001	Read	1	255	30005	Float-Big	C001	C001
002	Read			30008		C002	C002
003	Read			30011		C003	C003
004	Read			30014		C004	C004
005	Read			30017		C005	C005
006	Read			30020		C006	C006
007	Read			30023		C007	C007
008	Read			30026		C008	C008

Setting MATH channel Expressions

In the MATH channels, set the communication channels to which the process data of the respective channels is to be loaded.

Setup Screen

Top Window > [Chanel Setting] > [MATH Channel Setting]



Settings

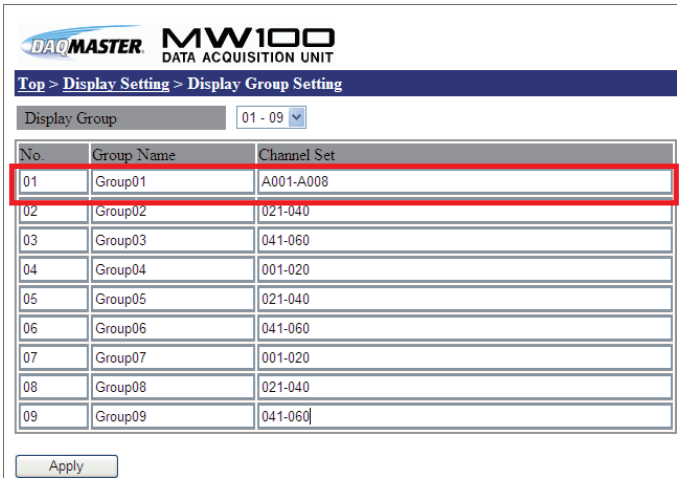
No.	Action	Expression	Span			Unit
			Decimal Point	Lower	Upper	
A001	On	C001	1	0.0	100.0	
A002		C002		0.0	100.0	
A003		C003		0.0	100.0	
A004		C004		0.0	100.0	
A005		C005		0.0	100.0	
A006		C006		0.0	100.0	
A007		C007		0.0	100.0	
A008		C008		0.0	100.0	

Setting the Group

Set the calculation channels in the display group (No.).

Setup Screen

Top Window > [Display Setting] > [Display Group Setting]



Settings

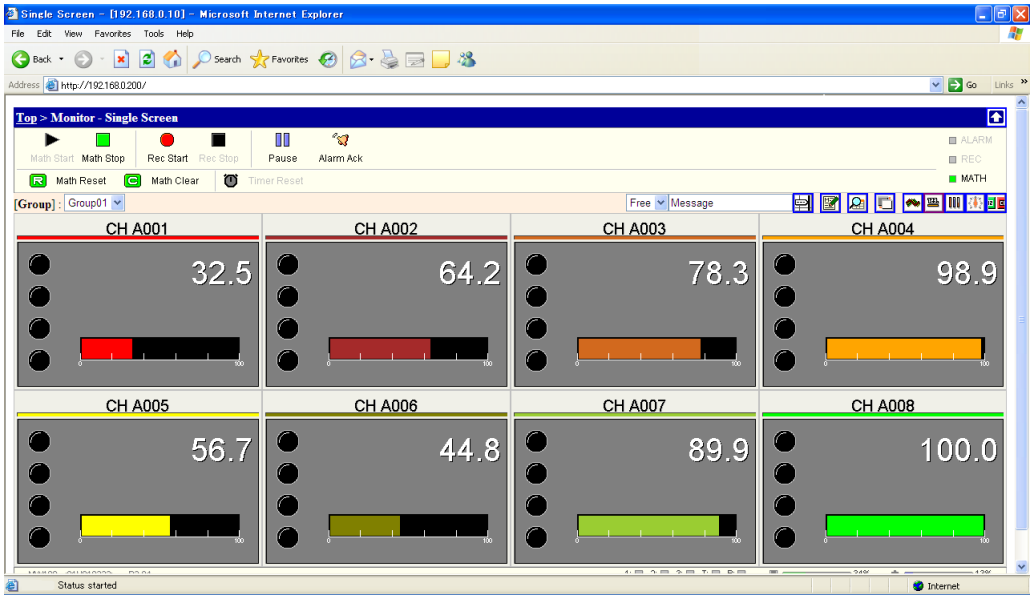
No.	Group Name	Channel Set
01	Group 1*1	A001-A008

*1: Set any group name.

4. Checking the Display of Process Data

When configuration of all the parameters is complete, check that the process data is displayed on the DX or the MW.

DX2000 Display Example



MW100 Display Example (shown in a PC Window)

Appendix 1 Modbus Registers

The table below shows the parameters of the YTMX and the corresponding Modbus registers of the YFGW. Three words are used to map one parameter of the YTMX to the corresponding Modbus register of the YFGW.

YTMX Parameter				YFGW Register		
Parameter	Data Element			Input Register	Register No.	Data Type
UAPMO_01 (UAPMO)	1st word	Status	—	0	30001	UINT16
	2nd word	DIAG_STATUS	Upper	1	30002	UINT32
	3rd word		Lower	2	30003	
AI_01 (AI1 Temp)	1st word	Status	—	3	30004	UINT16
	2nd word	PV	Upper	4	30005	FLOAT_B
	3rd word		Lower	5	30006	
AI_02 (AI2 Temp)	1st word	Status	—	6	30007	UINT16
	2nd word	PV	Upper	7	30008	FLOAT_B
	3rd word		Lower	8	30009	
AI_03 (AI3 Temp)	1st word	Status	—	9	30010	UINT16
	2nd word	PV	Upper	10	30011	FLOAT_B
	3rd word		Lower	11	30012	
AI_04 (AI4 Temp)	1st word	Status	—	12	30013	UINT16
	2nd word	PV	Upper	13	30014	FLOAT_B
	3rd word		Lower	14	30015	
AI_05 (AI5 Temp)	1st word	Status	—	15	30016	UINT16
	2nd word	PV	Upper	16	30017	FLOAT_B
	3rd word		Lower	17	30018	
AI_06 (AI6 Temp)	1st word	Status	—	18	30019	UINT16
	2nd word	PV	Upper	19	30020	FLOAT_B
	3rd word		Lower	20	30021	
AI_07 (AI7 Temp)	1st word	Status	—	21	30022	UINT16
	2nd word	PV	Upper	22	30023	FLOAT_B
	3rd word		Lower	23	30024	
AI_08 (AI8 Temp)	1st word	Status	—	24	30025	UINT16
	2nd word	PV	Upper	25	30026	FLOAT_B
	3rd word		Lower	26	30027	

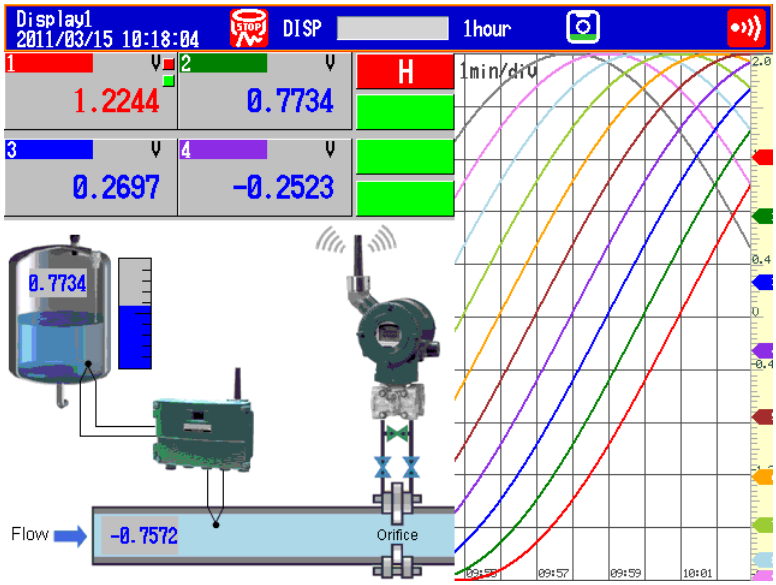
Appendix 2 Explanation of Terms

Term	Explanation
Provisioning	Refers to the task to set the security information and network information for enabling the transmitter to join the field wireless network. This transmitter uses the infrared communication for the provisioning task.
CF (Capabilities File)/DD (Device Description)	The CF file contains the information such as the vendor of the field wireless device, its model and revision, or types of process data (e.g. flowrate, temperature, and pressure) and number of process data records. The DD file contains the information on parameters such as data structure and attributes.
Device DTM	Device DTM (Device Type Manager) is the driver software for field devices provided based on the FDT (Field Device Tool) technology.
Publish	Refers to the action to measure the process and transmit the process data via wireless communication at an Period set in the wireless field devices.
Network Topology	There are two network topologies, star and mesh, in field wireless communication systems. Yokogawa recommends the star network topology as it has advantages such as deterministic network actions facilitating future management and superb scalability. **Star Network** In this network topology, the communication paths at the time of installation do not change over time. Latency can be minimized and high reliability can be provided. (To configure a star network, YFGW710s must be installed in a distributed manner to enable all wireless field devices to communicate with the YFGW710 directly.) **Mesh Network** For applications where the latency of data is low in the priority list, data can be transmitted wirelessly using devices that relay data (routing devices). It is easy to extend the wireless communication distance using routing devices. The downside is a large latency and the shortening of the battery life of wireless devices that relay data.
Device Role	Refers to functional roles, specifically IO and routing functions of field wireless devices.
Routing Function (Device)	Refers to a function (device) to relay data, specifically receive data from another field wireless device and transmit it to another one.
IO Function (Device)	Refers to a function (device) to transmit process data that was obtained by measurement on its own.
Block Mode	Refers to a universal parameter to display the operating condition of the respective blocks. There are the following modes. Target: Sets the operating condition of the block. Actual: Indicates the current operating condition. Permit: Indicates the operating condition that the block is allowed to take. Normal: Indicates the operating condition that the block will usually take. Changing the mode of the function block to O/S (Out of Service) in the Target mode causes the function block to stop the action. In this status, the settings can be changed. Changing the mode of the function block to Man (Manual) causes the function block to stop the update of the output value. Changing the mode of the function block to Auto causes the function block to update the measurement value. Normally, set Auto.

Appendix 3 DX Custom Display Example

The custom display function of the DX allows the user to customize the display flexibly by changing the size and layout of the display objects (e.g. trend, digital, and bar graph).

Furthermore, the display can be turned into an intuitive overview monitor by placing image files (bitmap) on the display.



Customized DX Display Example

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