OMRON

Type WT30 Utility "WT30-TOOLS" Operation Guide

OMRON Corporation

Introduction

Thank you for using this WT30 Utility "WT30-TOOLS".

"WT30-TOOLS" is free software can be downloaded on Omron's web site.

Before using this tool, read the "License Agreement" thoroughly.

"WT30-TOOLS" supports the following profits for the WT30 installation.

● Radio Wave Environment Monitor

This function is a radio wave environment monitor for WT30 using the frequency band. The radio wave condition of installed environment can be checked. The monitor results can be saved as well.

● Wireless Communication Test

This function is a performing WT30 wireless communication test. The communication quality and received signal strength can be checked. The test results can be saved as well.

● Checking of Operations Condition

This function can be checked an operations condition of WT30 system.

Reference Manual: *WT30 Operations Manual (Cat. No.N138-E1)*

The all contents that this operation guide mentions are operations by Windows 2000. The display or expression may differ by OS.

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Table of Contents

1 Preparation

1.1 PC Operating Environment

The following table is the operating environment required for WT30-TOOLS.

Some items of CPU etc. may differ from OS.

| PC Body	IBM PC/AT compatible machine
CPU	Pentium 166MHz or higher
Memory	256MB or higher
Display	800 X 600 pixel or higher
Hard disk	Available space: 10MB or larger
Serial port	RS-232C 1 port or more
OS	Microsoft Windows 2000 / XP * Internet Explorer 5.0 or later shall be installed.
Required software	Microsoft .NET Framework 1.1

1.2 "Microsoft .NET Framework" Update

"Microsoft .NET Framework 1.1" is required for the use of WT30-TOOLS. Update it according to the following procedure. (*Logon PC as an administrator authority.)

(1) Start "Microsoft Internet Explorer".

(2) Perform "Tool" => "Windows Update" on the menu bar.

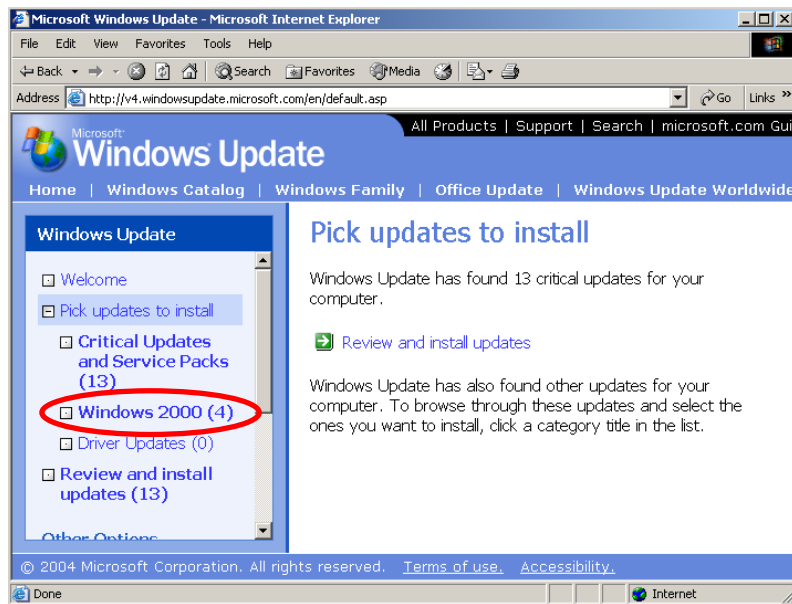(*The explained display herein is "Microsoft Internet Explorer Ver.6".)
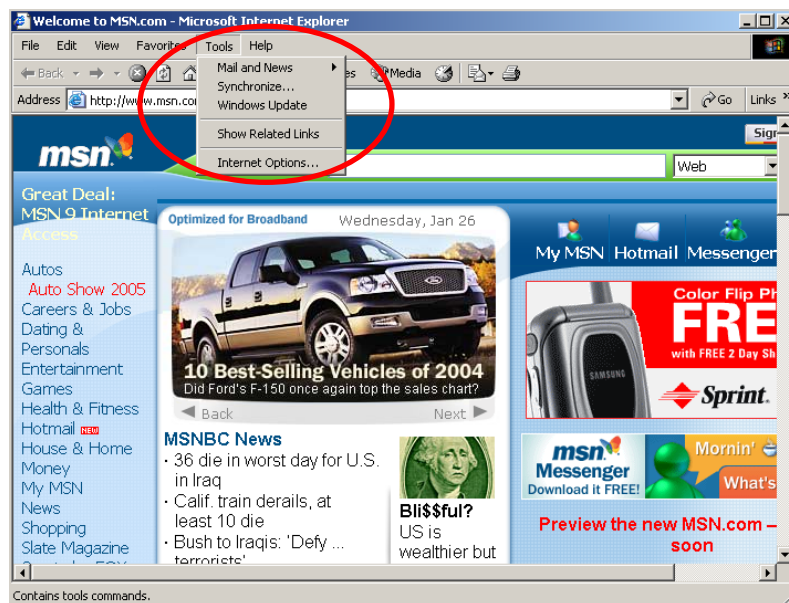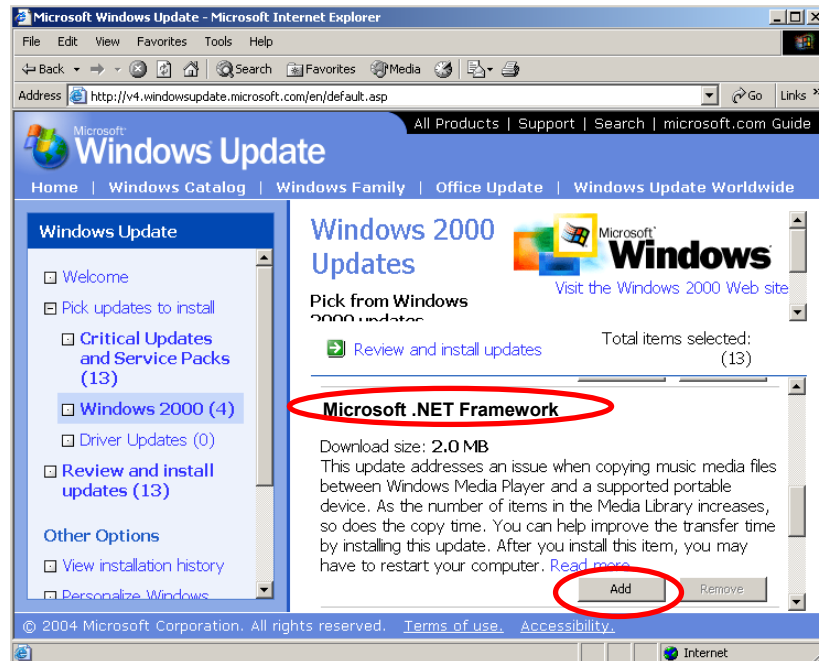
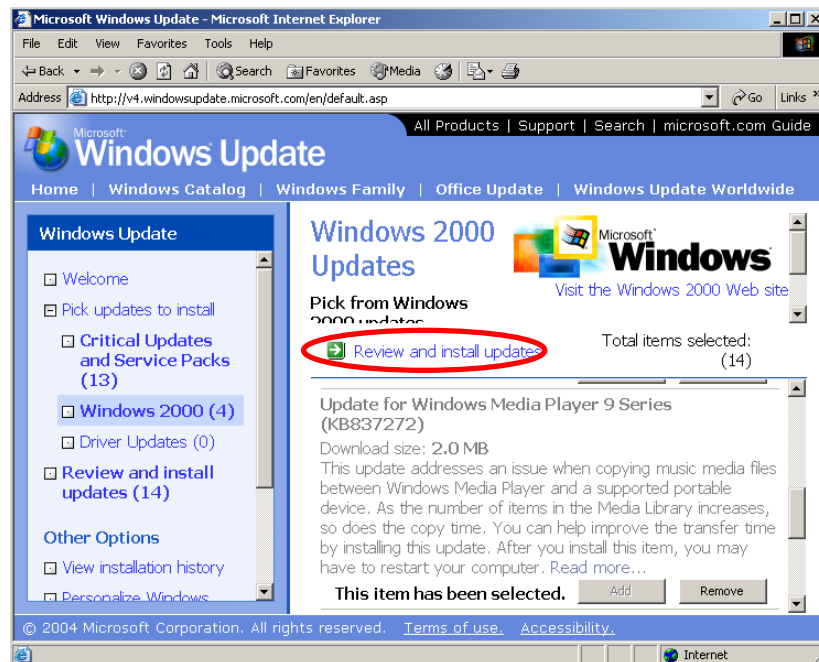(3) Perform "Scan for updates".
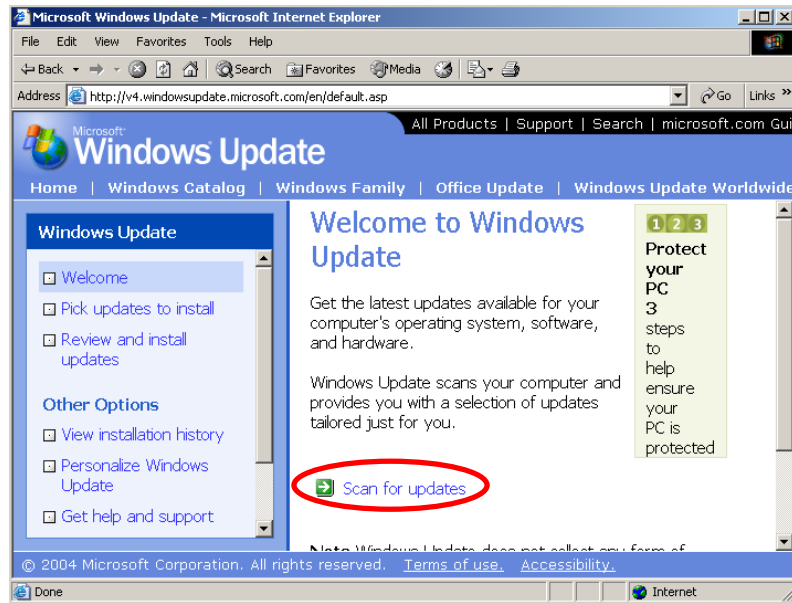
(4) Select "Windows 2000".

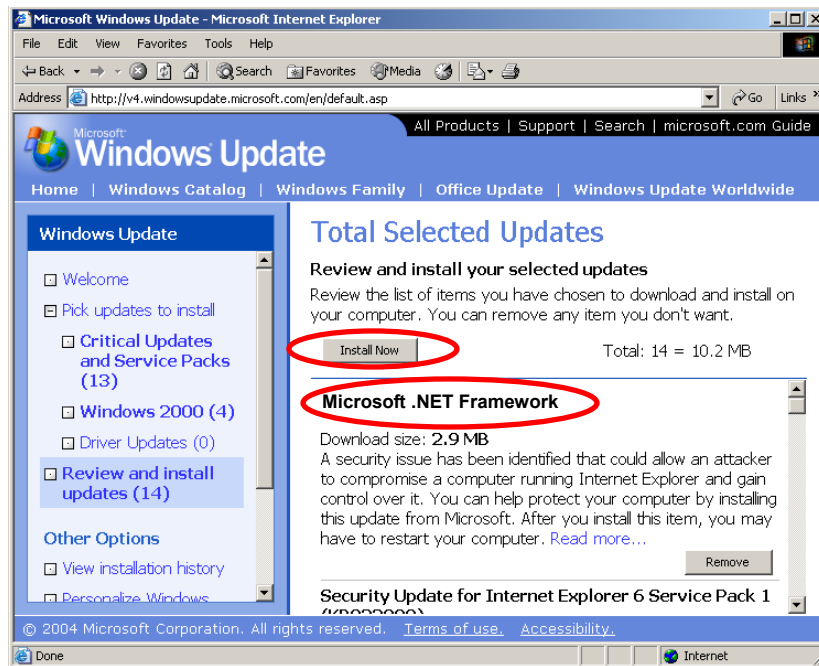　　　(*The display may differ by performed experience of "Windows Update".)

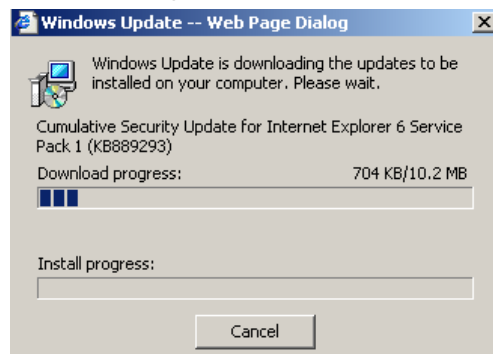(5) Check the existence of "Microsoft .NET Framework" and push "Add" button.

(6) Perform "Review and install update".

(7) Check the existence of "Microsoft .NET Framework" under "Total Selected Updates" and push "Install now" button.

(8) The downloading and installation are started.

(9)   Re-start PC after the installing completed.

## 1.3 Downloading and Installation of "WT30-TOOLS"

1.3.1 Downloading

"WT30-TOOLS" can be downloaded free of charge on Omron's web site since "WT30-TOOLS" is not packaged with type WT30.

Download the program file according to the explanation of web site (File name: wt30tools-setup(en).msi). Although the file is compressed and automatically extracted, to save the file into PC is recommended.
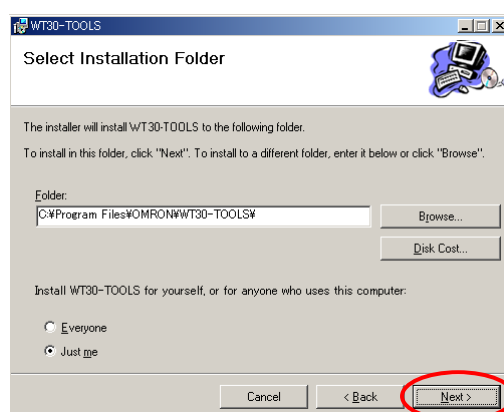
1.3.2 Installation

Install the program file according to the explanation of display.

(1) Start the downloaded file "wt30tools-setup(en).msi".

(2) As the display below is opened first, click "Next >".
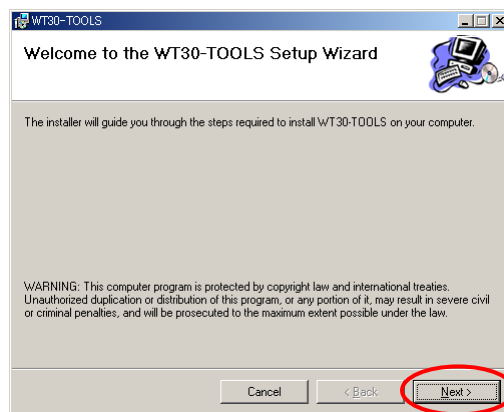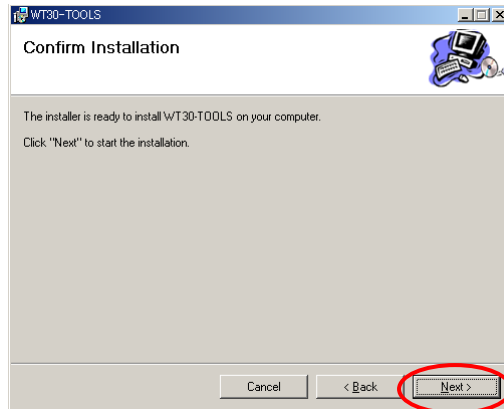

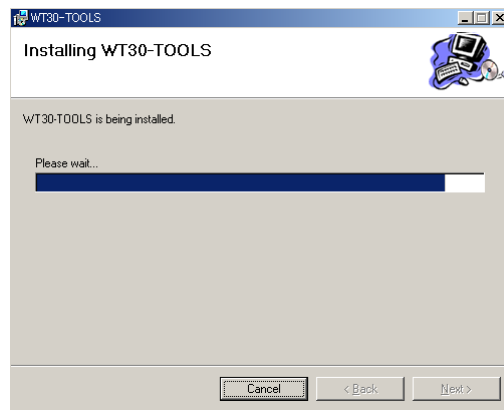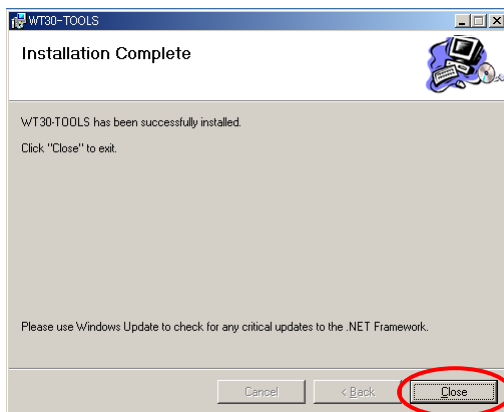(3) Click "Next >" as it is unless otherwise specified.

(4) If the procedure above is no problem, click "Next >".

(5) Wait a moment to install.

(6) Click "Close" after the installation is completed.

1.3.3 Un-installation

For the un-installation of "WT30-TOOLS", perform "Control Panel" => "Application Addition or Deletion", select "WT30-TOOLS" and delete it.

1.3.4 Version

A new version will be provided on Omron's web site. Download it if necessary.

Some specifications may differ from this Operation Guide.

Install the new version after the old version is un-installed.

1.4 Connection between type WT30 and PC

Use the function setting switch of type WT30 as the default setting is.

(1) Connect type WT30 to PC.

For the connected cable, use an RS-232C straight cable (D-SUB 9-pin, male to female).

Refer to *" WT30 Operations Manual"* for the details of the connection to type WT30 serial master station, cable wiring diagram, etc.

(2) Supply the power of type WT30 and PC.
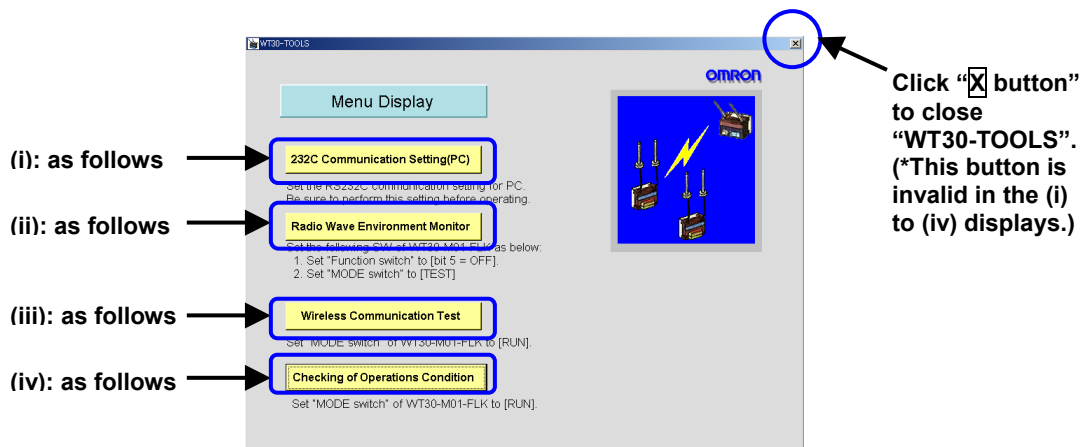
1.5 Start of "WT30-TOOLS"

Select and perform "Start" => "Program" => "OMRON" => "WT30-TOOLS" => "WT30-TOOLS".

If you installed as the clause 1.3.2 procedure, the program file is stored in "Program Files¥OMRON¥WT30-TOOLS".

2 Use of "WT30-TOOLS"

2.1 Menu Display

Start "WT30-TOOLS", and "Menu Display" is opened.

(i): as follows

(ii): as follows

(iii): as follows

(iv): as follows

Click "X button" to close "WT30-TOOLS". (*This button is invalid in the (i) to (iv) displays.)

◆**Menu**

(i) 232C Communication Setting(PC) (☞ Refer to page 12 clause 2.2)

Set the RS-232C communication setting for PC. Be sure to perform this setting before the operating. The (ii) to (iv) menu is not available without this setting.

(ii) Radio Wave Environment Monitor (☞ Refer to page15 clause 2.3)

The radio wave environment at the WT30 installed place can be checked and the log can be recorded.

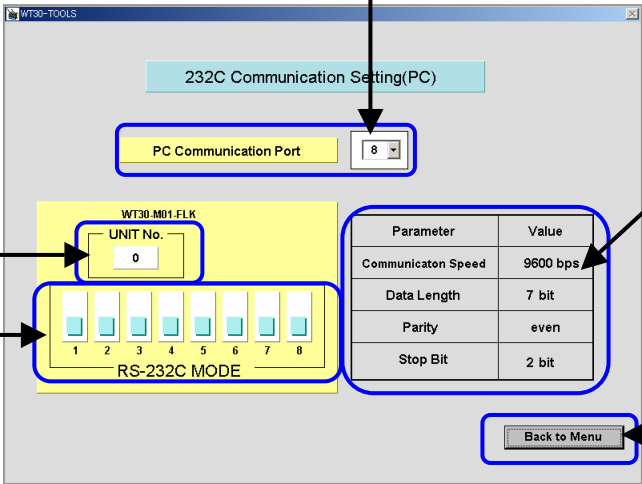(iii) Wireless Communication Test (☞ Refer to page19 clause 2.4)

The wireless communication test between type TP30 serial master station and I/O slave station can be checked and the log can be recorded.

(iv) Checking of Operations Condition (☞ Refer to page 22 clause 2.5)

Check the operations condition of plural of WT30 I/O slave stations.
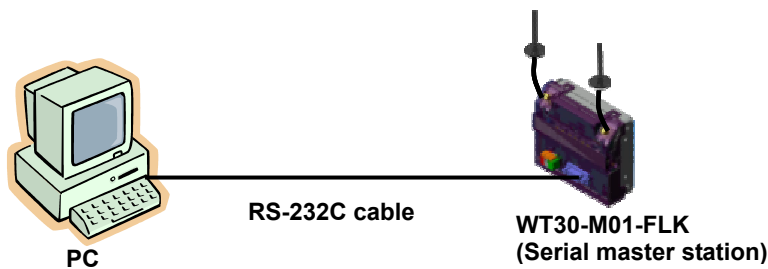
2.2 232C Communication Setting (PC)

(i): as follows

WT30-TOOLS

232C Communication Setting(PC)

PC Communication Port   `8`

Check the setting condition of RS-232C MODE.

WT30-M01-FLK

(ii): as follows → UNIT No. `0`

(iii): as follows →

1 2 3 4 5 6 7 8

RS-232C MODE

Parameter	Value
Communicaton Speed	9600 bps
Data Length	7 bit
Parity	even
Stop Bit	2 bit

Go back to Menu, and the set parameter is loaded as well.

Back to Menu

◆**System Configuration**

RS-232C cable

PC

**WT30-M01-FLK
(Serial master station)**
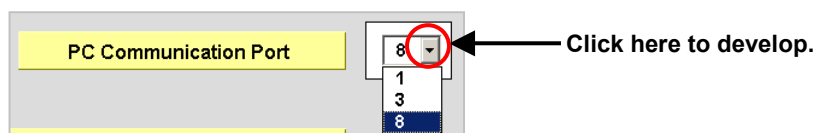
◆**Setting Procedure**

(i) PC communication port

Set the communication port number of PC connected to type WT30.

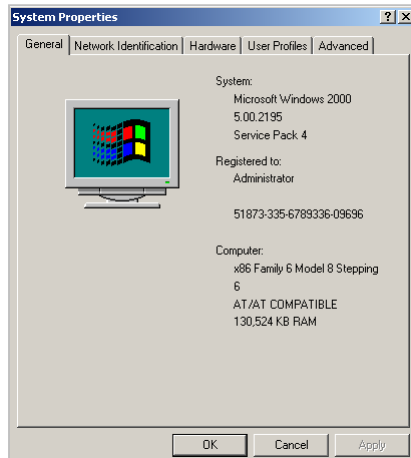PC Communication Port   `8`   **Click here to develop.**
1
3
8

*Example) How to check the communication port number of PC

1) Right-click "My Computer" on the desktop.

wt30tools1...

My Computer
Open
Explore
Search...
Manage
Map Network Drive...
Disconnect Network Drive...
Create Shortcut
Rename
Properties

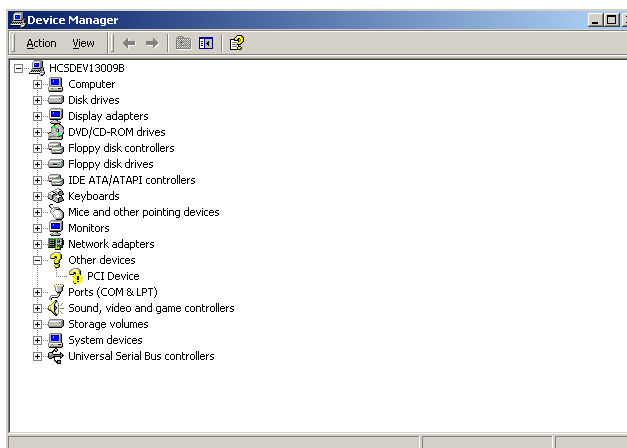My Network Places

Recycle Bin
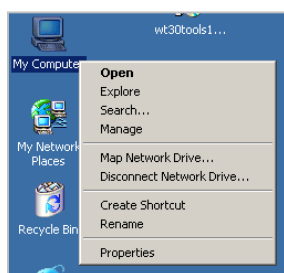
2) Click "Property", and the "System Property" box is opened.

3) Click the "Hardware" tab, and click "Device Manager".
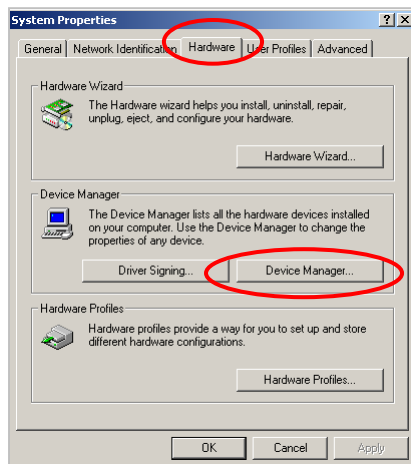
4) "Device Manager" is opened.

5) Click "+" on the left side of "Port (COM and LPT)", and then it develops.

Check the using communication port number.
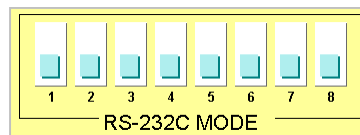
(ii) UNIT number setting

Input UNIT number of type WT30-M01-FLK (serial master station).

Note) The setting shall correspond to the "UNIT No." switch setting of type WT30 serial master station.

UNIT No.
0 ← Input UNIT number.

(iii) RS-232C MODE setting

◆**Setting Items**

RS-232C MODE (switches 1-8)

| No.	Function	ON	OFF
1	Communications setting selection	Detailed settings (setting for No.2 to 8 used)	Default settings (baud rate: 9,600 bps; data length: 7 bits; parity: even; stop bits:2) Settings for No.2 to 8 are ignored.
2	Baud rate (bps) (*) Total value=0: 1,200 =1: 2,400	1	0
3	=2: 4,800 =3: 9,600 =4: 19,200	2	0
4	=5: 38,400 =6: 57,600 =7: 115,200	4	0
5	Data length	8 bits	7 bits
6	Parity	None	Yes
7		Odd	Even
8	Stop bits	1 bit	2 bits

*Example) If pins 2, 3 and 4 are all ON, the total is 7, which corresponds to a baud rate of 115,200 bps.

◆**Method of the Switch Setting**

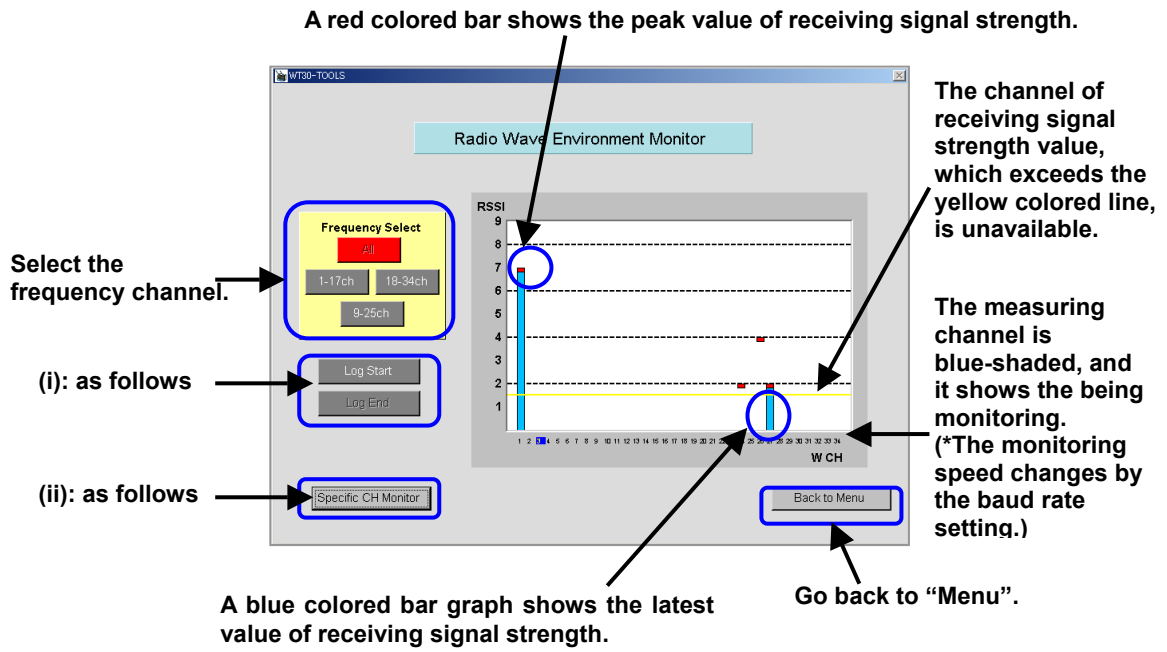The upper side is ON and the lower side is OFF (default: all switches are OFF).

Click to changeover ON to OFF (or OFF to ON). (*Drag is invalid.)
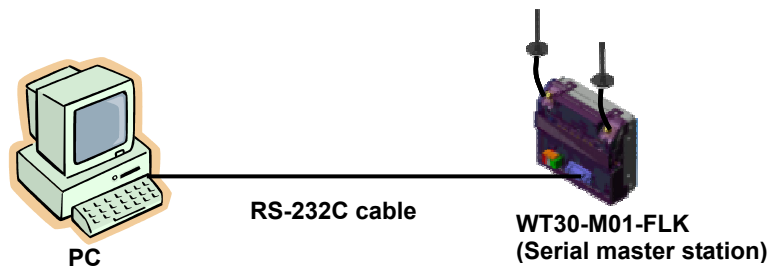
＜OFF＞   ＜ON＞

← Cursor
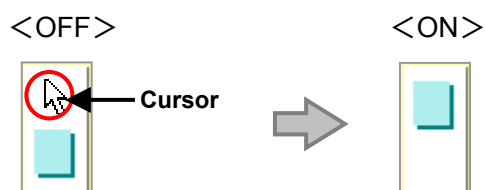
That is all for the settings.

2.3 Radio Wave Environment Monitor

The frequency channel monitor automatically starts as soon as this menu is opened. Perform monitoring, and judge the frequency channel usability.

A red colored bar shows the peak value of receiving signal strength.

The channel of receiving signal strength value, which exceeds the yellow colored line, is unavailable.

Select the frequency channel.

(i): as follows

(ii): as follows

The measuring channel is blue-shaded, and it shows the being monitoring. (*The monitoring speed changes by the baud rate setting.)

	Radio Wave Environment Monitor	

Frequency Select
All
1-17ch   18-34ch
9-25ch

Log Start
Log End

Specific CH Monitor

RSSI
9 8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
W CH

Back to Menu

A blue colored bar graph shows the latest value of receiving signal strength.

Go back to "Menu".

◆System Configuration

RS-232C cable

PC

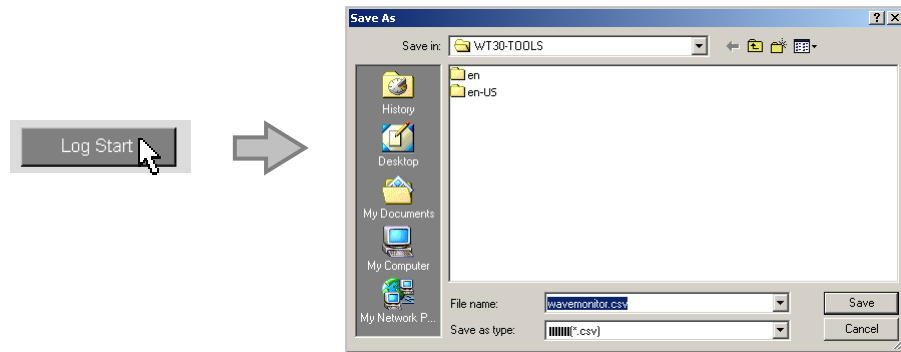**WT30-M01-FLK (Serial master station)**

◆**Procedure**

(i) "Radio Wave Environment" Log

The log record of radio wave environment can be saved into PC (file type: CSV).

Click "Log Start", and then the "Save as Name" box is opened.

Specify "Saving Place" and "File Name" before click of "Save", and the log file record starts, while the monitor screen is displayed.

The display during the log saving is as the following illustration. Click "Log End", and the log file record ends and then the display returns to the original display. (*The buttons except "Log End" are invalid during the log saving.)

Open the saved log file after "Log End", the following data is shown.

Receiving Signal Strength of the each channel
0～1: Available range for the specified channel
2～9: Unavailable range for the specified channel

(ii) Specific CH Monitor

The radio wave condition of the specific frequency channel is monitored, and the following items can be checked.
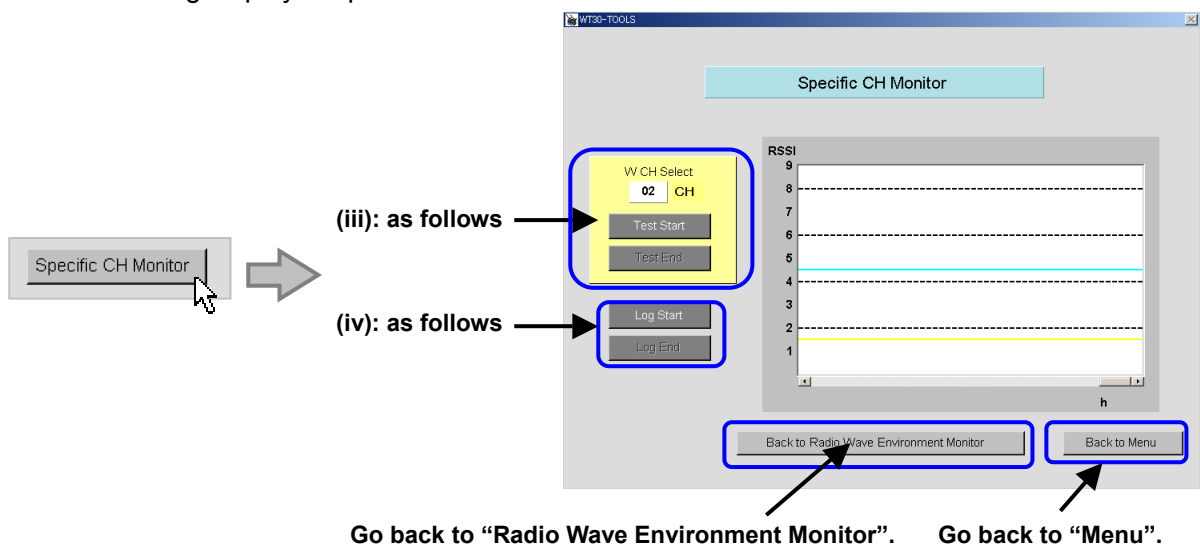
<Check item 1> Final check of condition of available frequency channel

(☞ Refer to page 17 (iii)、page18 (iv))

<Check item 2> Check of receiving signal strength of communication radio wave

(☞ Refer to page 17 (iii)、page18 (iv))

Click "Specific CH Monitor" on the display "Radio Wave Environment Monitor", and the following display is opened.

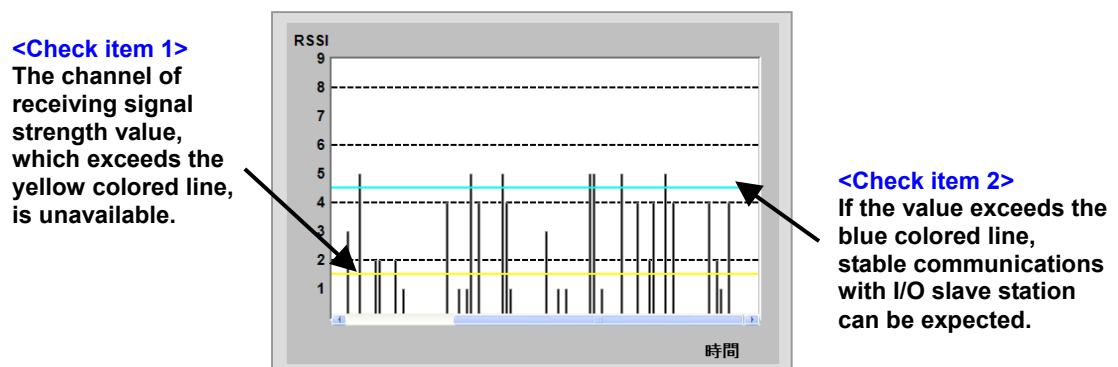Go back to "Radio Wave Environment Monitor".   Go back to "Menu".

(iii) W CH Select

Input the channel first and click "Monitor Start", and the monitoring starts.

The display during monitoring is as the following illustration. Click "Monitor End", and the monitoring record ends and then the display returns to the original display.
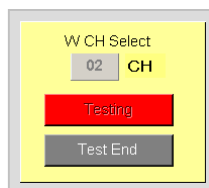
The receiving signal strength graph during monitoring is as the following illustration. The bar graph shows the receiving signal strength value of the selected channel.

<Check item 1>
The channel of receiving signal strength value, which exceeds the yellow colored line, is unavailable.

<Check item 2>
If the value exceeds the blue colored line, stable communications with I/O slave station can be expected.
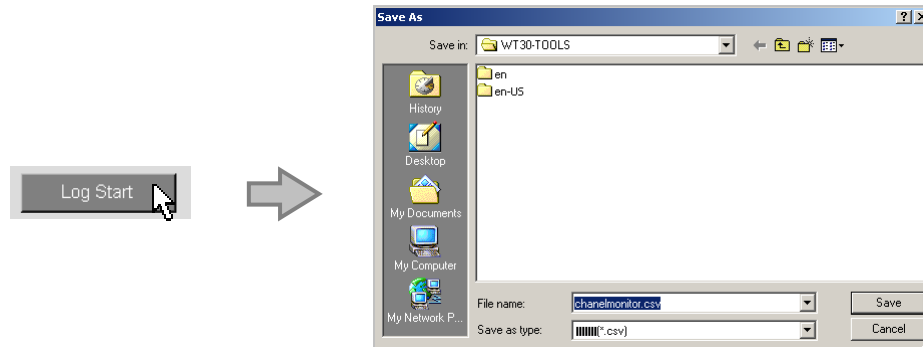

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(iv) "Specific CH Monitor" Log

The log record of specific CH monitor can be saved into PC (file type: CSV).

Click "Log Start", and then the "Save as Name" box is opened.

Specify "Saving Place" and "File Name" before click of "Save", and the log file record

starts, while the monitor screen is displayed.

The display during the log saving is as the following illustration. Click "Log End", and the log file record ends and then the display returns to the original display. (*The buttons except "Log End" are invalid during the log saving.)

Open the saved log file after "Log End", the following data is shown.

Columns B "RSSI [0-9]" indicates 10 levels, and columns C "RSSI [0-255]" indicates 256 levels. (*To check by "RSSI [0-9] is recommended.)


<Check item 1>
    Final check of condition of available frequency channel
        0 to 1: Available range for the specified channel
   2 to 9: Unavailable range for the specified channel

<Check item 2>
    Check of receiving signal strength of communication radio wave
        0～4: Unexpected range for stable communications with I/O slave station
        5 to 9 : Expected range for stable communications with I/O slave station

2.4 Wireless Communication Test

The display is as the following illustration. Communicate type WT30 serial master station with I/O slave station, and carry out the wireless communication test.

Go back to "Menu".

◆**System Configuration**
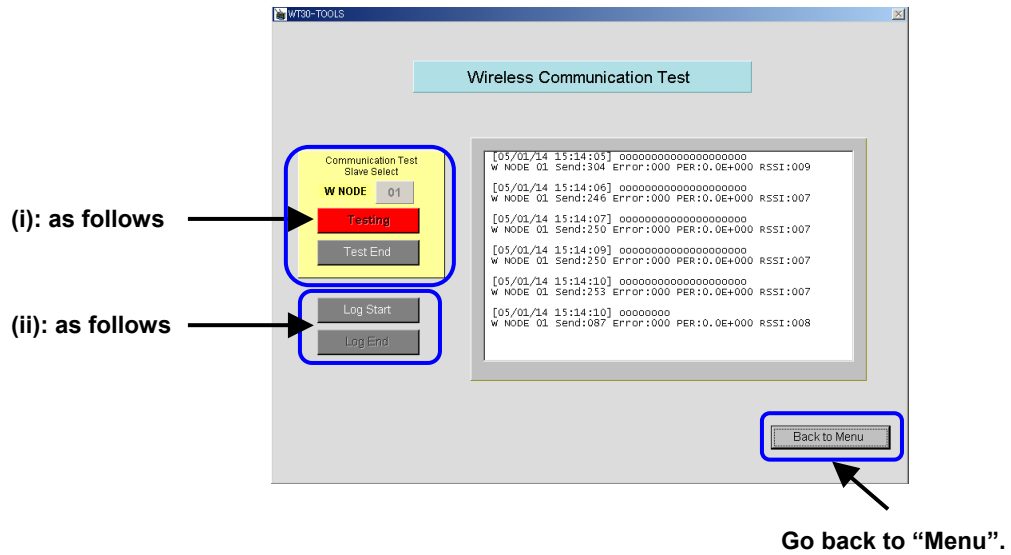
| PC | RS-232C cable | WT30-M01-FLK
(Serial master station) | WT30
(I/O slave station) |
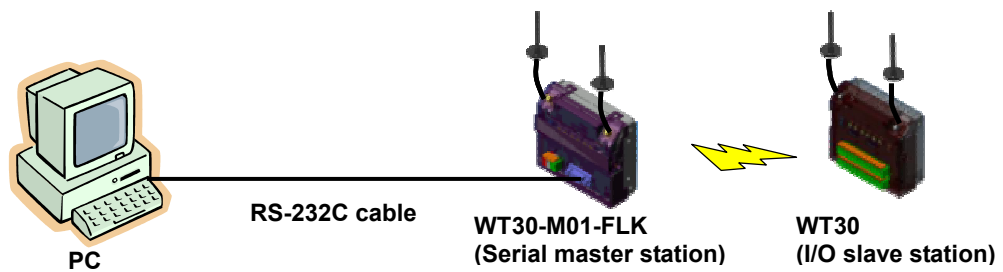
◆Procedure

(i) Selection of communication tested I/O slave station

Input the W NODE of the communication tested I/O slave station first and click "Test Start", and the test starts.

The display during test is as the following illustration. Click "Test End", and the test ends and then the display returns to the original display.
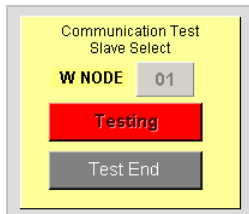
The test results are as the following display. The display is updated at the cycle of every about 2 seconds. The indicated O or X should be the outlook for the judgment.

(ii) "Communication test" log

   The log record of communication test can be saved into PC (file type: CSV).

   Click "Log Start", and then the "Save as Name" box is opened.

   Specify "Saving Place" and "File Name" before click of "Save", and the log file record starts, while the monitor screen is displayed.
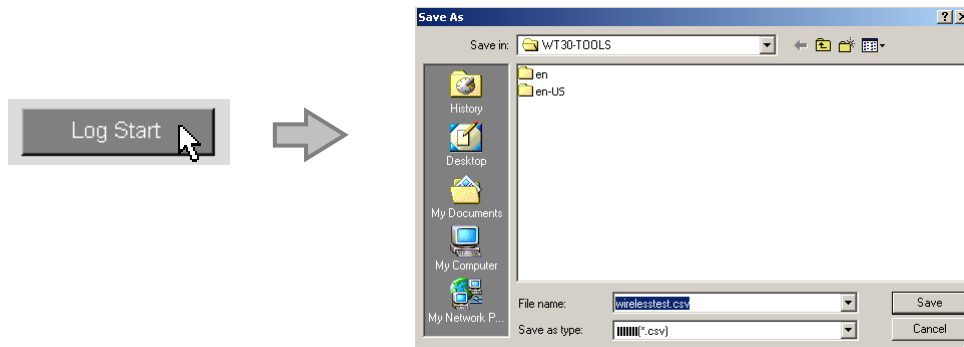
   The display during the log saving is as the following illustration. Click "Log End", and the log file record ends and then the display returns to the original display. (*The buttons except "Log End" are invalid during the log saving.)

   Open the saved log file after "Log End", the following data is shown.

   Refer to "How to make of test results" in the previous page item (i).

<How to find the average>

$$PER = \frac{SUM\ (Error)}{SUM\ (Send)}$$

If the results of the wireless communication test are not well, refer to "WT30 Operations Manual".

2.5 Checking of Operations Condition

The display is as the following illustration. The operations condition of WT30 system can be monitored.

Checking of Operations Condition

Salave No	IN	OUT	Addition	Status	Rout	RSSI	RSSI Monitor
1	16	0	0	0	M01	8	o o o o o o o o
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
Repeater	-	-	-	-			

Change the display of I/O slave station number. → Prev | Next

Wireless Communication Cycle Time: 8 ms

Back to Menu

Go back to "Menu".

◆**System configuration**

PC — RS-232C cable — WT30-M01-FLK (Serial master station) — WT30 (I/O slave station) — WT30 (I/O slave station) — 64 stations Max. — WT30 (I/O slave station)
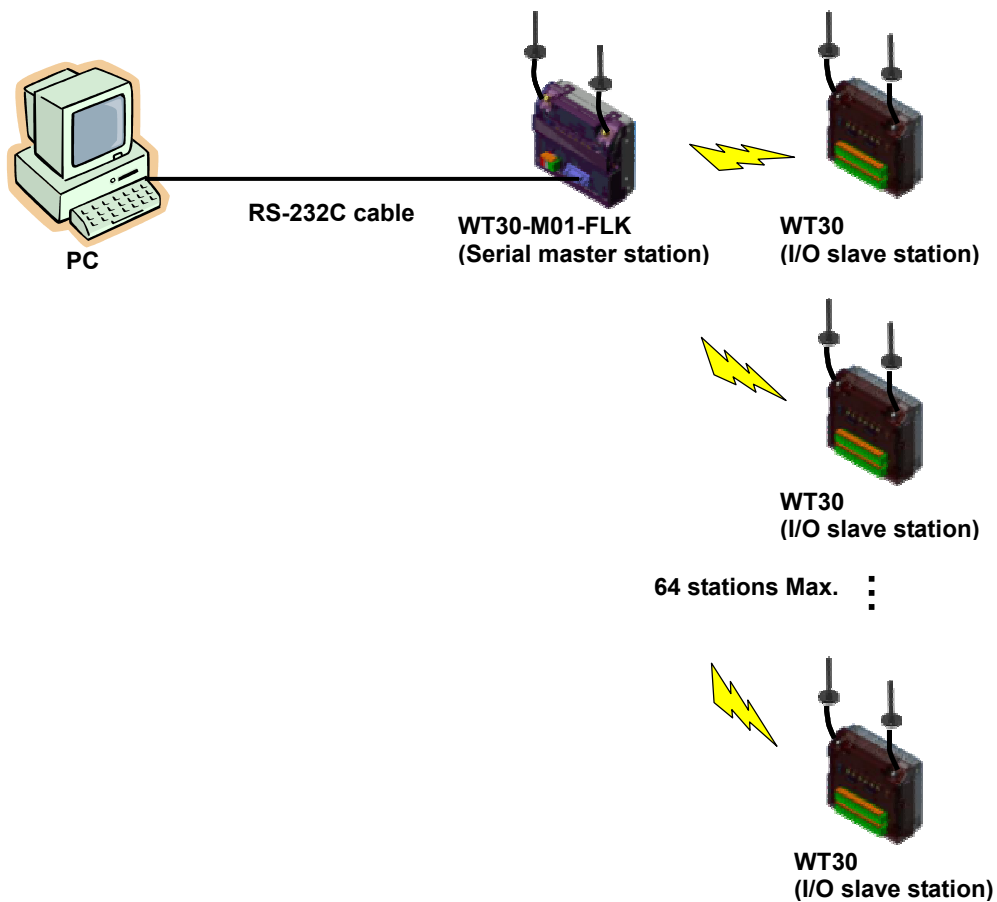
◆How to make of display

This column shows the communication from Serial master station directly or via repeater.

Slave No	IN	OUT	Addition	Status	Rout	RSSI	RSSI Monitor
17	8	8	○	–	M01	9	○○○○○○○○○
18	16	–	○	–	M01	4	○○○○
19	16	–	○	–	Repeater	–	
20	16	–	○	–	M01	6	○○○○○○
21	8	8	×	–	M01	1	○
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
Repeater	–	–	–	–	M01	7	○○○○○○○

The not-registered number of I/O slave station is displayed gray.

The lowest row shows "Repeater".

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