

**TOWER LIGHT SERIES**  
**PC CONFIGURATOR SOFTWARE**  
**Model: ITCFG Ver. 1.5**

**Users Manual**

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# 1. INTRODUCTION

## 1.1 GENERAL DESCRIPTION

M-System ITCFG is used to program parameters for Tower Light Series (referred to hereinafter as 'device') with PC. The following major functions are available:

- Edit parameters
- Download parameters to the device, upload parameters from the device
- Save parameters as files, read parameters from files
- On the screen, operate lamp status and buzzer, confirm input signal status

## 1.2 APPLICABLE DEVICES

The ITCFG is applicable to the following products:

FUNCTION	MODEL	ITCFG VERSION
Ethernet Tower Light	IT60RE	1.0
	IT40SRE	1.2
	IT50SRE	
	IT60SRE	
Wireless LAN Tower Light	IT60W1	1.1
	IT40SW1	1.2
	IT50SW1	
	IT60SW1	
	IT40SW2 (Ver.1.0.x)	1.2
	IT50SW2 (Ver.1.0.x)	
	IT60SW2 (Ver.1.0.x)	
IT40SW2 (Ver.1.1.x)	1.3	
IT50SW2 (Ver.1.1.x)		
IT60SW2 (Ver.1.1.x)		
Short-range Wireless Tower Light	IT40SW6	1.4
	IT50SW6	
	IT60SW6	
Wireless Tower Light	IT40SW6F	1.5
	IT50SW6F	
	IT60SW6F	

The lowest software version applicable to each hardware model is indicated in the above table.

Confirm that the software you have is compatible with the hardware you have.

The firmware version of each device can be checked by the 'Device Property' on the monitor window (see "2.5.1 MONITOR WINDOW" on page 11).

If the firmware version is not properly displayed, the version of the installed ITCFG might not be compatible with the hardware.

In such a case, download and install the latest version of ITCFG.

The latest version of the ITCFG is downloadable at M-System's web site ([www.m-system.co.jp](http://www.m-system.co.jp)).

### 1.3 PC REQUIREMENTS

The following PC performance is required for adequate operation of the ITCFG.

PC	IBM PC COMPATIBLE
OS	Windows 7 (32 bits/ 64 bits) Windows 8.1 (32 bits/ 64 bits) Windows 10 (32 bits/ 64 bits) The software may not operate adequately in certain conditions.
CPU	Must meet the relevant Windows' requirements.
Memory	Must meet the relevant Windows' requirements.
Network port	LAN port or Wireless LAN port. For connection with a PC configurator cable or a USB cable, COM ports (COM1 through COM16) are available.

Connection method of each device is as indicated in the table below.

DEVICE	INTERFACE OF DEVICE	CONNECTION CABLE
IT60W1	Stereo mini-pin jack	PC configurator cable
IT60RE	Stereo mini-pin jack	PC configurator cable
	Ethernet modular jack	Ethernet cable
IT40/50/60SRE IT40/50/60SW1 IT40/50/60SW2	Ethernet modular jack	Ethernet cable
IT40/50/60SW6 IT40/50/60SW6F	mini USB type B	USB cable

When connecting with a PC configurator cable, one of the cables below is required according to the PC side port.

PC SIDE PORT	PC CONFIGURATOR CABLE MODEL NO.
RS-232-C	MCN-CON
USB	COP-US

Prepare a commercially available Ethernet cable or USB cable.

The device can also be connected to a PC using a wireless access point without an Ethernet cable.

An FTDI chip is used for IT40/50/60SW6 and IT40/50/60SW6F.

When connecting these devices to ITCFG, the dedicated driver software needs to be installed on a PC.

A new serial port will be created by the installed driver software.

Select this port as a COM port.

With a PC connected to the Internet, the driver software will be automatically installed with the function of Windows Update when connecting to the device via a USB cable.

## 1.4 INSTALLING & DELETING THE SOFTWARE PROGRAM

### TO INSTALL THE PROGRAM

The program is provided as compressed archive.

Decompress the archive and execute 'setup.exe' to start up the ITCFG installer program.

Follow instructions on the installer.

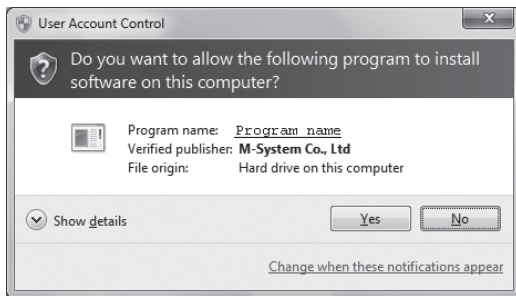
Note that it is required to log on as administrator to install the program.

'User Account Control' window appears to clarify your administrative right before proceeding.

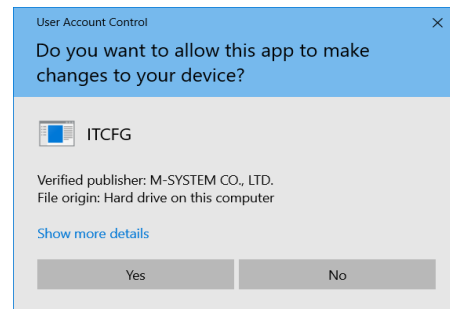
Click 'Yes' to complete installation.

Windows 7 / Windows 8.1

'ITCFG' will be shown as the program name.



Windows10



### TO DELETE THE PROGRAM

Open Control Panel > Add/Remove Programs.

Select the ITCFG from the program list and click Delete button.

## 2. GETTING STARTED

### 2.1 STARTING THE ITCFG

Open Program > M-SYSTEM > Configurator > ITCFG to start up the ITCFG on the Windows PC. The following window shows an example of initial screen when the ITCFG is started.

ITCFG Version 1.5.32	
Upload    Download    Save File    Open File    Monitor    Language	
Model	ITxxxW1 - with Wireless/Ethernet bridge
<b>Device Property</b>	
Tag number	test-tag
<b>TCP/IP Configuration</b>	
IP address	192.168.0.1
Subnet mask	255.255.255.0
Default gateway	0.0.0.0
<b>Modbus-TCP Configuration</b>	
Port	502
Communication timeout	60.0 (sec)
RUN LED timeout	5.0 (sec)
<b>Wireless LAN Configuration</b>	
Mode	Infrastructure mode
Wireless LAN name(SSID)	test-ssid
Channel	11 (ch)
Encryption method	None
WEP key	00000000000000
Pre-shared key(PSK)	00000000000000

### 2.2 CHOOSING THE DEVICE

Choose the model of the device to be connected from the drop-down menu.

## 2.3 MODIFYING PARAMETERS

In order to modify parameters stored in the device, first (1) upload the device parameters, (2) modify a part or all of them on the screen, and then (3) download the new parameters to the device.

### 2.3.1 READING PARAMETERS FROM DEVICE (UPLOAD)

Click [Upload] to open the connection dialog box.

In this dialog, choose the connection method.

#### • Via the COM port

Check [Configurator Cable] and choose the COM port to which the configurator cable is connected. The COM port number varies according to the PC used for the ITCFG.

#### • Via the Ethernet/Wireless LAN

Check [Ethernet/Wireless LAN (TCP/IP)] and enter the IP address of the device to be connected.

When [Ethernet/Wireless LAN (CONFIG)] is checked, the devices are detected automatically (except IT60RE and IT60W1) in the same network segment (no router interposed) and listed.

Choose the device to be connected.

After the COM port or IP address is specified, click [Connect] to start communication connection with the device and read parameters stored in the connected device to show them on the screen.

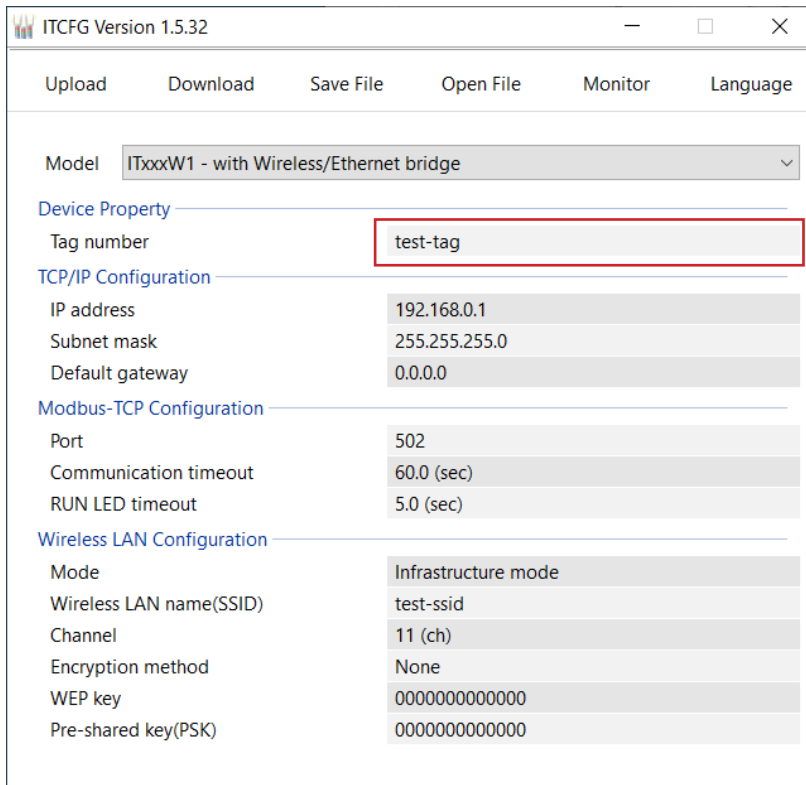
If an error message appears, check the hardware connection and network configuration before retrying.

Once the parameters are read from the device, they are shown on the screen.



### 2.3.2 MODIFYING PARAMETERS ON THE SCREEN

Edit the parameters in the initial window shown below.  
Click the item to edit, then the item changes to edit mode.  
The figure below shows the area for editing TAG number.  
When the item changes to edit mode, the background color changes to white.  
After editing the character string, press Enter to apply the change and return to normal mode.



Click inside the red-boxed area to edit TAG number.

### 2.3.3 WRITING PARAMETERS TO DEVICE (DOWNLOAD)

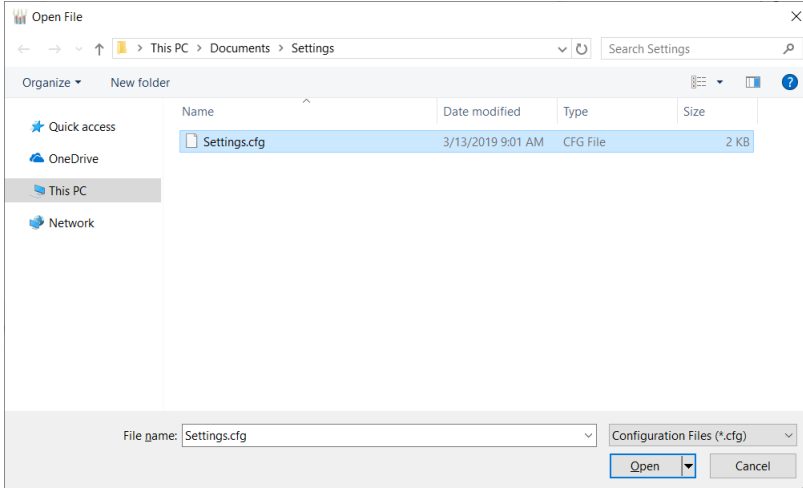
Clicking [Download] opens the Connection dialog box just as [Upload] button did.  
Specify the relevant device address.  
Specify also the COM port and IP address depending upon the network configuration.  
Click [Connect] to start downloading new parameters.  
Once downloading begins, a bargraph appears on the screen to indicate progress.  
When it disappears without any error messages, the new setting becomes valid.  
After writing parameters, turn off and on the power supply to the device.

## 2.4 SAVING FILES

Parameters set on the screen can be saved as a file on the hard disk, and the file can be called up on the screen. You can store backup setting data by utilizing these functions in combination with [Upload] [Download] functions.

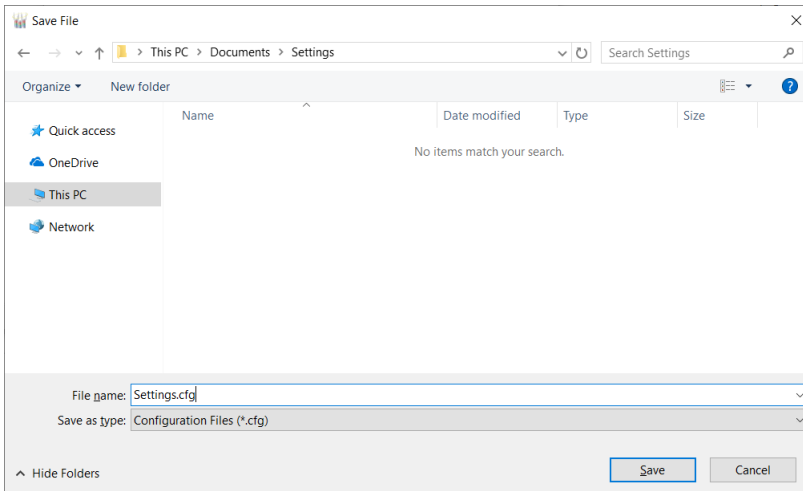
### 2.4.1 READING PARAMETERS SAVED AS FILE

Clicking [Open File] opens the Windows-standard Open File dialog box (in the language of your OS). Select the parameter file and click [Open] to read the stored parameter settings and show them on the screen of ITCFG.



### 2.4.2 SAVING PARAMETERS IN A FILE

Clicking [Save File] opens the Windows-standard Save As dialog box (in the language of your OS). Enter a desired file name to File Name field and click [Save] to store a parameter setting.



## 2.5 MONITOR

### 2.5.1 MONITOR WINDOW

In this window, it is possible to confirm lamp status and buzzer of the connected device.

For the device only with discrete input signal, discrete input signal status can be confirmed.

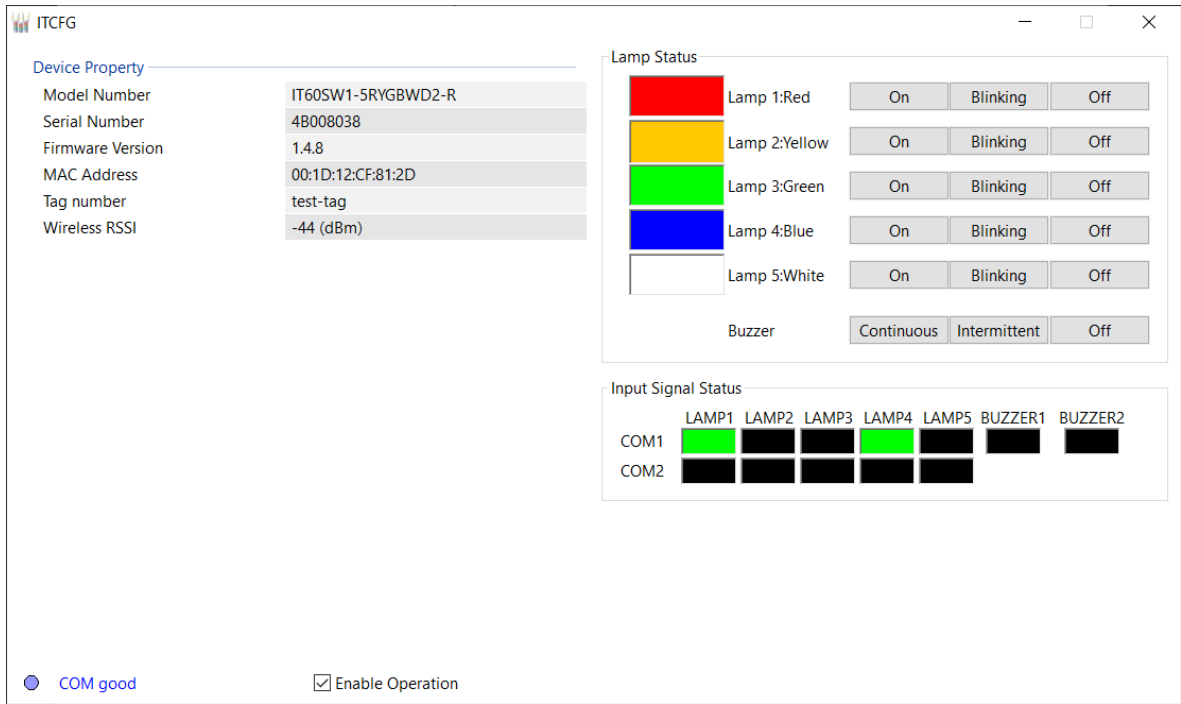
Click [Monitor] in the initial window to show the Connection dialog box in the same manner as when reading parameters from the device (UPLOAD).

Specify the relevant COM port or IP address and click [Connect] to start communication with the device and to display the window shown below.

The table below shows contents of the window.

ITEMS	DESCRIPTION
Device Property	Information of the device is shown. In order to activate 'Reboot the device' under Operation, check 'Enable Operation' at the bottom of the window.
Lamp Status	The status of the lamps 1 through 5 and buzzer are shown.
Buttons	Set On, Blinking, or Off for Lamps and set Continuous, Intermittent, or Off for Buzzer. In order to activate button operations, check 'Enable Operation' at the bottom of the window.
Input Signal Status	The status of discrete input signal is shown.

Operational check of the lamps and the buzzer can be done with the buttons.



## 2.6 SWITCHING LANGUAGE

ITFFG supports English and Japanese.

Click [Language] on the initial window to switch the display language between English and Japanese.

### 3. BASIC PARAMETERS

#### 3.1 PARAMETER LIST

		IT60RE IT40/50/60SRE	IT60W1 IT40/50/60SW1	IT40/50/60SW2 Version 1.0 x	IT40/50/60SW2 Version 1.1 x or later	IT40/50/60SW6	IT40/50/60SW6F
DEVICE PROPERTY	TAG number	✓	✓	✓	✓	✓	✓
TCP / IP CONFIGURATION	IP address	✓	✓	✓	✓		
	Subnet mask	✓	✓	✓	✓		
	Default Gateway	✓	✓	✓	✓		
MODBUS / TCP CONFIGURATIONS or MODBUS CONFIGURATION (Own Station)	Port	✓	✓	✓	✓		
	Communication Time Out	✓	✓	✓	✓		
	Run LED Time Out	✓	✓	✓	✓	✓	✓
	Modbus node address (own station)					✓	✓
MODBUS CONFIGURATION (RS-485 side)	Baud rate					✓	✓
	Parity bit					✓	✓
	Stop bit					✓	✓
WIRELESS LAN SETTINGS	Mode		✓	✓	✓		
	Wireless LAN name (SSID)		✓	✓	✓		
	Channel		✓	✓	✓		
	Encryption method		✓	✓	✓		
	WEP key		✓	✓	✓		
	Pre-shared key (PSK)		✓	✓	✓		
	SSID stealth			✓	✓		
	Transmission power			✓	✓		
DHCP SETTINGS	Mode				✓		
	Start of the IP lease block				✓		
	End of the IP lease block				✓		
	DNS address				✓		
920MHz WIRELESS SETTINGS *	Preferred PAN ID (group number)					✓	✓
	Radio channel number					✓	✓
	Short address					✓	✓
	Network name					✓	✓
	Encryption key					✓	✓
	Monitoring unit time of 10% duty (sec.)					✓	
	Transmitter power output					✓	✓
	Low-speed moving mode					✓	✓
	Device type in a network, Number of devices in a network					✓	✓
	Set network quality					✓	✓
	Network join mode					✓	✓
	Fixed route					✓	✓
	Destination short address					✓	✓
	Temporary detour					✓	✓
	Packet filtering					✓	✓
	Filter timeout on polling					✓	✓
920Run timeout					✓	✓	
Retry times before route switching					✓	✓	

\* IT40/50/60SW6F can only set to 900MHz wireless.

## 3.2 DEVICE PROPERTY

ITEM	FACTORY DEFAULT
TAG Number	test-tag

### 3.2.1 TAG NUMBER

Use for TAG label.

## 3.3 TCP/IP CONFIGURATION

ITEM	FACTORY DEFAULT
IP address	192.168.0.1
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0

### 3.3.1 IP ADDRESS / SUBNET MASK / DEFAULT GATEWAY

Set IP address, Subnet Mask, Default Gateway for Modbus TCP communication.

## 3.4 MODBUS / TCP CONFIGURATION

ITEM	FACTORY DEFAULT
Port	502
Communication Time Out	60.0 (sec.)
Run LED Time Out	5.0 (sec.)
Modbus Node Address (own station)	1

### 3.4.1 PORT

Set TCP port number for Modbus TCP communication. The setting range is 1 to 65535.

### 3.4.2 COMMUNICATION TIME OUT

Set the time-out duration before disconnecting the connection when there is communication loss.  
The setting range is 0.0 to 3200.0 (sec.).

### 3.4.3 RUN LED TIMEOUT

RUN LED turns off to inform an error when there is an interruption of reading query from the master Modbus module and the specified time passes. The setting range is 0.0 to 3200.0 sec. When 'Output at the loss of communication' of DIP switch is OFF, the lamps turn off and the buzzer stops at the same time as Run LED turns off.

### 3.4.4 MODBUS NODE ADDRESS (OWN STATION)

Set the Modbus slave address of the device (own station) having a Modbus slave function.  
The setting range is 1 to 247.

## 3.5 WIRELESS LAN SETTINGS

ITEM	FACTORY DEFAULT	
Mode	ITxxxW1	Infrastructure mode
	ITxxxW2	Access point mode
Wireless LAN Name (SSID)	Test-ssid	
Channel	11 (ch)	
Encryption Method	None	
WEP Key	0000000000000	
Pre-shared Key (PSK)	0000000000000	
SSID Stealth	ITxxxW2 only	OFF
Transmission Power	ITxxxW2 only	100%

### 3.5.1 MODE

ITxxxW1 has two basic modes of operation: 'Infrastructure' mode; and 'ad hoc' mode.

Use 'Infrastructure mode' when the wireless LAN with an access point is formed.

The factory default setting of ITxxxW2 is 'Access point' mode, which makes ITxxxW2 work as an access point for connecting infrastructure mode devices, such as ITxxxW1.

ITxxxW2 is also operated in 'Infrastructure (STA)' mode or 'ad hoc (STA)' mode in the same manner as ITxxxW1 and connects to another access point.

### 3.5.2 WIRELESS LAN NAME (SSID)

SSID is an identifier for specifying the wireless LAN to be connected.

In order to connect to the LAN, designate the same SSID assigned to the access point.

The SSID can consist of up to 32 ASCII characters.

When ITxxxW2 is operated in "Access point" mode, other devices can connect to ITxxxW2 by assigning its ID as SSID.

### 3.5.3 CHANNEL

Specify the channel number used when the device operates in 'ad hoc' mode.

The setting range is 1 to 13.

In 'Infrastructure' mode, the channel to be used is determined according to the channel setting of the access point.

When ITxxxW2 is operated in "Access point" mode, set the channel with which other wireless devices connect to the ITxxxW2. The channel number must be within 1 to 13.

### 3.5.4 ENCRYPTION METHOD

ITCFG supports encryption methods shown below.

METHOD	SETTING RANGE
WEP (Key length: 64 bits)	5 ASCII characters or 10 digits hex number
WEP (Key length: 128 bits)	13 ASCII characters or 26 digits hex number
WPA-PSK (TKIP)	8 to 63 ASCII characters or 64 digits hex number
WPA-PSK (AES)	8 to 63 ASCII characters or 64 digits hex number
WPA2-PSK (TKIP)	8 to 63 ASCII characters or 64 digits hex number
WPA2-PSK (AES)	8 to 63 ASCII characters or 64 digits hex number

### 3.5.5 WEP KEY

Set WEP key when WEP is selected for encryption.

### 3.5.6 PRE-SHARED KEY (PSK)

Set PSK when WPA or WPA2 is selected for encryption.

### 3.5.7 SSID STEALTH

When SSID stealth is available, the device stops SSID broadcasting. That hides the SSID from devices not allowed to connect, and is effective to prevent forbidden access.

This setting is available when the device is operated in "access point" mode.

### 3.5.8 TRANSMISSION POWER

In order to reduce the affection to other wireless communication, the transmission power is adjustable and is shorten the range of the radio wave. The power is adjustable as following.

25%, 35%, 50%, 70% and 100%

It is not necessary to change this setting from the factory default when the device is operated in ordinary condition.

## 3.6 DHCP SETTINGS

ITEM	FACTORY DEFAULT
Mode	Disabled
Start of the IP lease block	192.168.0.50
End of the IP lease block	192.168.0.99
DNS address	0.0.0.0

DHCP server is supported by software version Ver.1.1.x or later of ITxxSW2.  
ITxxW1, ITxxW2, ITxxSW1 and software version Ver.1.0.x of ITxxSW2 do not support DHCP server.

### 3.6.1 MODE

Setting the mode to “Enabled” enables DHCP server to function.

When DHCP server is enabled, addresses shown below are provided to the devices, which are connected wirelessly or with wire, and then settings are automatically configured.

IP address	IP address range from start of the IP lease block to end of the IP lease block
Subnet Mask	Same as subnet mask of the device
Default Gateway	Same as default gateway of the device
DNS Server	Address set with DNS address

The range of provided IP address and DNS address should be the address range where direct communication is available with the device (without default gateway.)

When address range, where direct communication is not available, is set, normal operation is not guaranteed.

When another DHCP server is installed in the same network, DO NOT set the mode to “Enabled”.

Both server functions collide and operation will be abnormal.

### 3.6.2 START OF THE IP LEASE BLOCK / END OF THE IP LEASE BLOCK

Address range provided by DHCP server is specified.

### 3.6.3 DNS ADDRESS

DNS server address provided by DHCP server is specified.



### 3.7 920MHZ WIRELESS SETTINGS / 900MHZ WIRELESS SETTINGS

ITEM	FACTORY DEFAULT
Preferred PAN ID (group number)	0000
Radio channel number	
Short address	0000
Network name	
Encryption key	00000000000000000000000000000000
Monitoring unit time of 10% duty (sec.)	600 (sec.)
Transmitter power output	20 mW
Low-speed moving mode	No
Device type in a network, Number of devices in a network	Child (fixed), 1 to 30 devices
Set network quality	Standard (recommended)
Network join mode	V3-compatible mode
Fixed route	No
Destination short address	0000
Temporary detour	Yes
Packet filtering	Yes (polling type)
Filter timeout on polling	1.0 (sec.)
920Run timeout	3.0 (sec.)
Retry times before route switching	Three times

\* Hereinafter, 920MHz wireless or 900MHz wireless is referred to as '9xxMHz wireless'.

#### 3.7.1 PREFERRED PAN ID (GROUP NUMBER)

Set the PAN ID to be connected preferentially when two or more identical 9xxMHz wireless network names are detected.

When a single 9xxMHz wireless network is in operation or when two or more 9xxMHz wireless networks are in operation and any of them can be connected, set to 0000.

#### 3.7.2 CHANNEL NUMBER

Select the channel number(s) of the 9xxMHz wireless network to be connected.

Maximum 10 channels can be selected from 1 to 28 channels for 920MHz wireless and 1 to 43 channels for 900MHz wireless.

If no channel is selected, 9xxMHz wireless will not operate.

#### 3.7.3 SHORT ADDRESS

Set the short address of the device (own station) used in the 9xxMHz wireless network to be connected.

The address can be set in the range of 000 to FFFD.

When the address is set to 0000, 9xxMHz wireless will not operate.

#### 3.7.4 NETWORK NAME

Set the name of the 9xxMHz wireless network to be connected, using up to 16 one-byte alphanumeric characters (one-byte space, "-", "\_", ";", "@" are usable).

When no network name is set, 9xxMHz wireless will not operate.

### 3.7.5 ENCRYPTION KEY

Set the encryption key for connecting to the 9xxMHz wireless network, using 32 hexadecimal digits. The encryption key must be identical to that set in the 9xxMHz parent wireless device.

### 3.7.6 MONITORING UNIT TIME OF 10% DUTY (SEC.)

Set the unit time for monitoring transmission in order to comply with the restriction of transmission time (10% duty restriction) defined by ARIB STD-T108. The setting range is from 10 to 3600 sec.

### 3.7.7 TRANSMITTER POWER OUTPUT

Select the transmitter output level from below.

0.16 mW
1 mW
20 mW

### 3.7.8 LOW-SPEED MOVING MODE

Set 'Yes' or 'No' for 9xxMHz wireless transmission output. Set the low-speed moving mode to 'Yes' when the device is located on a moving equipment.

Yes
No

### 3.7.9 DEVICE TYPE IN A NETWORK, NUMBER OF DEVICES IN A NETWORK

Select the type and the number of child devices to be connected in the 9xxMHz wireless network. This setting is fixed to 'Child (fixed) + child (moving)' when the low-speed moving mode is set to 'Yes'. When there is a child device set to the low-speed mode in the network, "Device type in a network, Number of devices in a network" must be set to 'Child (fixed) + child (moving)'.

Child (fixed), 1 to 30 devices
Child (fixed), 31 to 60 devices
Child (fixed), 61 to 100 devices
Child (fixed) + child (moving)

### 3.7.10 SET NETWORK QUALITY

Set the quality of 9xxMHz wireless network.

Standard (recommended)
Frequency of route switching and delay (higher)
Frequency of route switching and delay (highest)

### 3.7.11 NETWORK JOIN MODE

Set the join mode to 9xxMHz wireless network. Set to 'V3-compatible mode', when there is a 9xxMHz wireless parent device or a child device of the firmware version v3.x in the network. This setting is fixed to 'V3-compatible mode' when 'DEVICE TYPE IN A NETWORK, NUMBER OF DEVICES IN A NETWORK' is set to 'Child (fixed) + child (moving)'.

V3-compatible mode
Fast join mode

### 3.7.12 FIXED ROUTE

Set to 'Enabled' to set an upper device (closer to the parent device from the own station) as the fixed route through which to connect to the 9xxMHz wireless network.

When set to 'Disabled', an upper device which is in a good radio condition is automatically selected.

Disabled
Enabled

### 3.7.13 DESTINATION SHORT ADDRESS

Set the short address of an upper device as the fixed route when 'FIXED ROUTE' is set to 'Enabled'.

The setting range is from 0000 to FFFD.

When set to 0000, the device (own station) connects directly to the parent device.

### 3.7.14 TEMPORARY DETOUR

Set whether or not to detour through another upper device when the upper device set as the fixed route cannot be connected due to temporary poor radio condition.

Yes
No

### 3.7.15 PACKET FILTERING

Set whether or not to perform timeout processing for a Modbus request from the 9xxMHz wireless parent device within the 9xxMHz wireless network.

Yes
No

### 3.7.16 FILTERING TIMEOUT ON POLLING

Enabled only when 'PACKET FILTERING' is set to Yes.

Set the timeout period from when a Modbus request is received until when a response is transmitted.

The setting range is 1.0 to 60.0 sec.

When Modbus response time takes 1.0 sec. or longer, set the timeout period so as to be longer than the response time.

Note that the timeout period for the parent device to be connected must be longer than that of any child device.

There is no need to change this setting from 1.0 sec. for a child device without gateway function.

### 3.7.17 920RUN TIMEOUT

920Run LED turns on when a read/write request is received from the 9xxMHz wireless parent device, and turns off when the 920Run timeout period has elapsed before another request is received.

By setting the timeout period so as to be longer than an interval between requests, disconnection of 9xxMHz wireless communication can be detected based on turning-off of 920Run LED.

The setting range is 0.0 to 3200.0 sec.

### 3.7.18 RETRY TIMES BEFORE ROUTE SWITCHING

Set how many times transmission to a lower child device (farther from the parent device) in the 9xxMHz wireless network is retried.

Once
Two times
Three times