*INSTRUCTION MANUAL*

# ETHERNET TOWER LIGHT
**(small size, 50 mm dia., Modbus/TCP, 1 - 5 layers)**

MODEL **IT50SRE**

## BEFORE USE ....

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact our sales office or representatives.

### ■ PACKAGE INCLUDES:

Tower Light .....(1)

### ■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

### ■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

## POINTS OF CAUTION

### ■ CONFORMITY WITH EU DIRECTIVES

- This equipment is suitable for Pollution Degree 3 and Installation Category III (24V DC power model), or Pollution Degree 2 and Installation Category II (100 – 240V AC power model). Reinforced insulation (network to power: 300V) is maintained. Prior to installation, check that the insulation class of this unit satisfies the system requirements.
- Altitude up to 2000 meters.
- The equipment must be installed such that appropriate clearance and creepage distances are maintained to conform to CE requirements. Failure to observe these requirements may invalidate the CE conformance.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.
- The equipment is intended to be installed in a industrial environment defined by EN 60947-5-1.

### ■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:

  100 – 240 V AC rating: 85 – 264 V, 47 – 66 Hz,
  approx. 5.5 VA at 100 V
  approx. 7 VA at 200 V
  approx. 8 VA at 240 V

  24 V DC rating: 24 V ±10 %, approx. 3 W

### ■ GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply and input signal for safety.
- The unit must not be subjected to external force.
- Do not rub the unit with organic solvent like paint thinner.

### ■ ENVIRONMENT

- Indoor use.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
- Mount the unit on a flat and robust plate.
- Lamps are omnidirectional.
- The buzzer sound is directional in front of the unit.

### ■ INGRESS PROTECTION (IP65)

- The IP code is conformable when the unit is mounted vertically, and the control panel cover is locked. The compartment, where connectors are located, is not protected.
- When opening the control panel cover, avoid humidity and dust penetration. Dry and clean it if condensation is formed, and close the cover locking tightly.
- In order to protect ingress of water or dust into the bottom compartment, mount the unit on the flat plane, and be sure that the gasket does not roll back or dust is not on the gasket.

### ■ WIRING

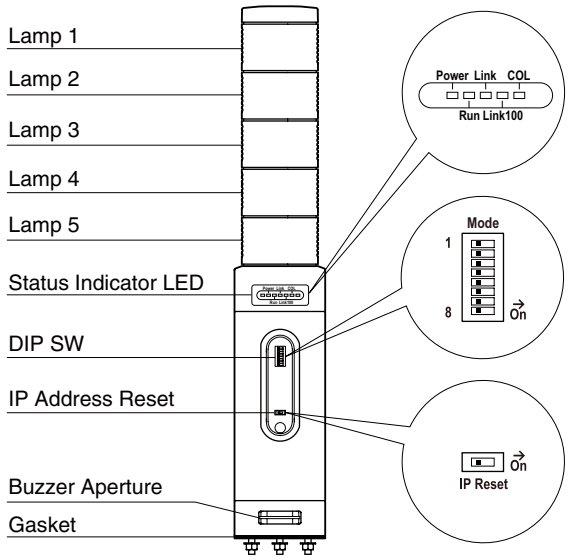
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

### ■ AND ....

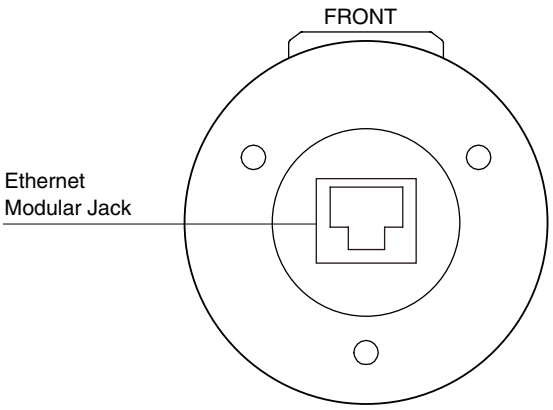
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

# COMPONENT IDENTIFICATION

■ **FRONT VIEW (with the cover open)**




■ **BOTTOM VIEW**




## ■ STATUS INDICATOR

| ID | COLOR | FUNCTION |
|---|---|---|
| Power | Green | Turns on when the power is supplied normally. |
| Run | Green | Turns on in normal communications conditions. |
| Link | Green | Turns on in Link status. |
| Link100 | Green | Blinks when the module is transmitting/receiving. *1 |
| COL | Green | Blinks in case of collisions. |

*1. Used only in 100BASE link. Dark in 10BASE link.

## ■ OPERATING MODE

(*) Factory setting

**• Lamp Blinking Frequency: Mode-1**

| Mode-1 | LAMP BLINKING FREQUENCY |
|---|---|
| OFF | Approx. 2 Hz (*) |
| ON | Approx. 10 Hz |

**• Buzzer Intermittent Frequency: Mode-2**

| Mode-2 | BUZZER INTERMITTENT FREQUENCY |
|---|---|
| OFF | Approx. 2 Hz (*) |
| ON | Approx. 10 Hz |

**• Buzzer Volume: Mode-3, Mode-4**

| Mode-3 | Mode-4 | BUZZER VOLUME |
|---|---|---|
| OFF | OFF | Quiet (*) |
| OFF | ON | Middle |
| ON | OFF | Loud |
| ON | ON | Maximum |

**• Output at the Loss of Communication: Mode-6**

| Mode-6 | OUTPUT AT THE LOSS OF COMMUNICATION |
|---|---|
| OFF | Reset the output (turned off) (*) |
| ON | Hold the output (maintains the last data received normally) |

Note: Be sure to set unused Mode-5 and 7 through 8 to OFF.

## ■ IP ADDRESS RESET

| IP RESET SW | IP ADDRESS RESET |
|---|---|
| OFF | Operating (*) |
| ON | IP address returns to factory default (after restarting the unit) |

(*) Factory setting

Note: Other network settings are also reset to default.

## ■ CONFIGURATOR SETTING

Some network settings are available using the PC Configurator Software.

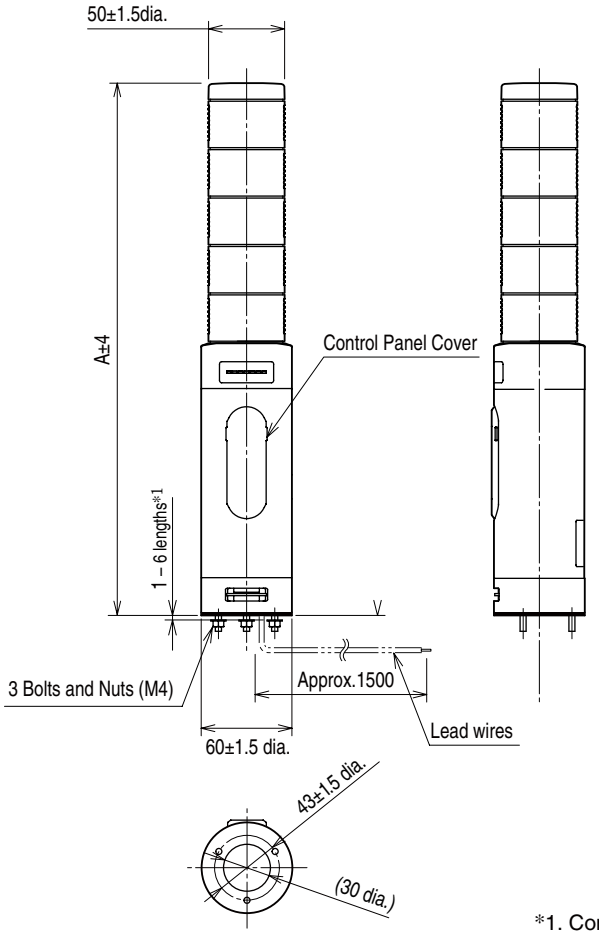
Factory default IP address is 192.168.0.1. IP address is configurable using the ITCFG on a PC. In case that the changed IP address is not able for establishing a connection, reset the IP address to default and try to connect again.

Note: Refer to the ITCFG users manual for its instructions.

# TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

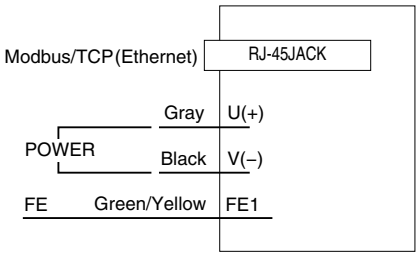
### ■ EXTERNAL DIMENSIONS unit: mm



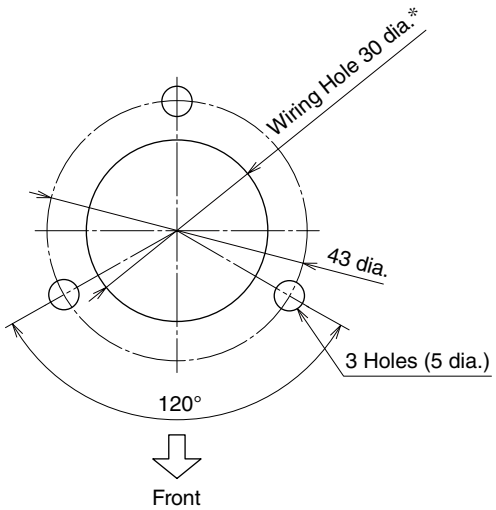

| Lamp Layers | A |
|---|---|
| 1 | 224 |
| 2 | 256 |
| 3 | 288 |
| 4 | 320 |
| 5 | 352 |

*1. Consult us for other bolt length.

### ■ CONNECTION DIAGRAM




### ■ MOUNTING REQUIREMENTS unit: mm




*Protect wires to prevent scratching them at the edge of the compartment.

# CHECKING ETHERNET CONNECTION

### ■ IP ADDRESS

This Tower Light does not support BootP Table Software. The IP Address and Subnet Mask can be configured using the ITCFG Configurator Software.
The Modbus/TCP Port No. is fixed at 502.

### ■ CHECK WIRING

Connect an Ethernet cable to the RJ-45 connector.

### ■ CHECK INDICATOR

When wiring is correct, Link is turned on.

### ■ CHECK TOWER LIGHT CONNECTION

Enter “ping command” on the Windows MS-DOS as follows:
C:¥WINDOWS>ping ***.***.***.***
(***.***.***.***: Enter IP address in decimal.)
ping ***.***.***.*** with 32 bytes of data:
Reply from ***.***.***.*** : bytes = 32 time < 10ms TTL = 64
Reply from ***.***.***.*** : bytes = 32 time < 10ms TTL = 64
Reply from ***.***.***.*** : bytes = 32 time < 10ms TTL = 64
Reply from ***.***.***.*** : bytes = 32 time < 10ms TTL = 64
Ping statistics for ***.***.***.***
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)
Replies in case of normal connection are as shown above. If the connection cannot be established normally due to e.g. wrong IP address, other replies such as ‘timeout’ will be received.

### ■ CHECK CONNECTION TO THE APPLICATION SOFTWARE

**Check Point 1**: Link indicators
When normal connection is established, the front Link is turned on regardless of data sending/receiving status. Check the network in case that the indicator is not on.
**Check Point 2**: Run indicator
A green light turns on at the Run indicator in normal data sending/receiving.
**Check Point 3**: Link100 indicator
A green light blinks at the Link100 indicator in normal data sending/receiving for 100BASE link.

# MODBUS FUNCTION CODES & SUPPORTED CODES

## ■ Data and Control Functions

| CODE | NAME | | |
|---|---|---|---|
| 01 | Read Coil Status | X | Digital output from the slave (read/write) |
| 02 | Read Input Status | X | Status of digital inputs to the slave (read only) |
| 03 | Read Holding Registers | | General purpose register within the slave (read/write) |
| 04 | Read Input Registers | X | Collected data from the field by the slave (read only) |
| 05 | Force Single Coil | X | Digital output from the slave (read/write) |
| 06 | Preset Single Registers | X | General purpose register within the slave (read/write) |
| 07 | Read Exception Status | | |
| 08 | Diagnostics | | |
| 09 | Program 484 | | |
| 10 | Poll 484 | | |
| 11 | Fetch Comm. Event Counter | | Fetch a status word and an event counter |
| 12 | Fetch Comm. Event Log | | A status word, an event counter, a message count and a field of event bytes |
| 13 | Program Controller | | |
| 14 | Poll Controller | | |
| 15 | Force Multiple Coils | X | Digital output from the slave (read/write) |
| 16 | Preset Multiple Registers | | General purpose register within the slave (read/write) |
| 17 | Report Slave ID | | Slave type / 'RUN' status |
| 18 | Program 884/M84 | | |
| 19 | Reset Comm. Link | | |
| 20 | Read General Reference | | |
| 21 | Write General Reference | | |
| 22 | Mask Write 4X Register | | |
| 23 | Read/Write 4X Register | | |
| 24 | Read FIFO Queue | | |

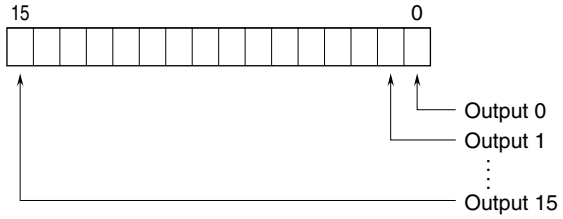
## ■ Exception Codes

| CODE | NAME | | |
|---|---|---|---|
| 01 | Illegal Function | X | Function code is not allowable for the slave |
| 02 | Illegal Data Address | X | Address is not available within the slave |
| 03 | Illegal Data Value | X | Data is not valid for the function |
| 04 | Slave Device Failure | | |
| 05 | Acknowledge | | |
| 06 | Slave Device Busy | | |
| 07 | Negative Acknowledge | | |
| 08 | Memory Parity Error | | |

# MODBUS I/O ASSIGNMENTS

| | ADDRESS | DATA TYPE | DATA |
|---|---|---|---|
| Coils (0X) | 1 – 16 | | Digital Output (lamp, buzzer) |
| | 17 – 32 | | Reserved (unused) |
| Inputs (1X) | 1 – 16 | | Reserved (unused) |
| | 17 – 32 | | Reserved (unused) |
| | 33 – 48 | | Reserved (unused) |
| | 49 – 64 | | Reserved (unused) |
| Input Registers (3X) | 1 – 48 | ---- | Reserved (unused) |
| Holding Registers (4X) | 1 – 48 | ---- | Reserved (unused) |

■ **OUTPUT DATA**




| | | |
|---|---|---|
| Output 0 | Lamp 1 | 0: Off, 1: On |
| Output 1 | Lamp 2 | 0: Off, 1: On |
| Output 2 | Lamp 3 | 0: Off, 1: On |
| Output 3 | Lamp 4 | 0: Off, 1: On |
| Output 4 | Lamp 5 | 0: Off, 1: On |
| Output 5 | Buzzer | 0: Off, 1: Continuous |
| Output 6 | | |
| Output 7 | | |
| Output 8 | Lamp 1 | 0: Off, 1: Blinking |
| Output 9 | Lamp 2 | 0: Off, 1: Blinking |
| Output 10 | Lamp 3 | 0: Off, 1: Blinking |
| Output 11 | Lamp 4 | 0: Off, 1: Blinking |
| Output 12 | Lamp 5 | 0: Off, 1: Blinking |
| Output 13 | Buzzer | 0: Off, 1: Intermittent |
| Output 14 | | |
| Output 15 | | |

Note: If “On” (Continuous) and “Blinking” (Intermittent) are set simultaneously for a single lamp (buzzer), “Blinking” (Intermittent) is disabled.