

## FA Wireless SS Terminals WT30

### Construct a Wireless System for ON/OFF Data Collection That Is Ideal for Monitoring Production Site Equipment



- Wireless Slave Station equipped with I/O.
- Height of 90 mm and DIN Rail mounting enables installation in control panels.
- Easily check wireless communications status from indicator display.
- I/O Slave Stations can also be used as Slave Stations in WD30 systems.
- Conforms to radio wave standards for Japan, China (pending), USA, and Europe.



## Ordering Information

### List of Models

| Wireless Unit model | Type          | Specifications/No. of I/O points                   |
|---------------------|---------------|--|
| WT30-M01-FLK        | Serial master | RS-232C  |
| WT30-SID16          | I/O slaves    | 16 DC inputs (NPN/PNP)                             |
| WT30-SMD16          |               | 8 DC inputs (NPN/PNP) + 8 transistor outputs (NPN) |
| WT30-SMD16-1        |               | 8 DC inputs (NPN/PNP) + 8 transistor outputs (PNP) |

Note: An Antenna and Mounting Brackets are not included with the Wireless SS Terminal.

### Accessories

#### Antennas

| Model      | Type                                     |
|------------|--|
| WT30-AT001 | Magnet-base Antenna (2 antennas per set) |
| WT30-AT002 | Flat Diversity Antenna (1 antenna)       |
| WT30-AT003 | Pencil Antenna (2 antennas per set)      |

#### Communications Cables

| Model        | Length | Application           |
|--------------|--------|-----------------------|
| XW2Z-0100U-3 | 1 m    | For personal computer |
| XW2Z-0200U-3 | 2 m    |                       |
| XW2Z-0500U-3 | 5 m    |                       |
| XW2Z-0200U-5 | 2 m    | Cross cable for PLC   |
| XW2Z-0500U-5 | 5 m    |                       |

#### Other

| Model      | Type   |
|------------|--|
| WT30-FT001 | DIN Rail Mounting Bracket (for TH35-7.5)                       |
| WT30-FT002 | DIN Rail Mounting Bracket (for TH35-15)                        |
| WT30-FT003 | Surface Mounting Bracket (screw-mounting) (2 brackets per set) |
| WT30-FT011 | Flat Diversity Antenna Mounting Brackets (with magnets)        |
| WT30-CA2M  | Antenna Extension Cable (1 cable, 2 m)                         |

### Applicable Standards

- FCC part 15.247 (USA)
- EN 300 440-2 (Europe)
- ARIB STD-T66 (Japan)
- 信部無[2002] 353号 (China) (approval pending)

### Conformity to Safety Standards

Always use a Class 2 power supply to conform to UL standards.

### Main Class 2 Power Supplies

#### OMRON Switching Power Supplies

- S8VS (15 W, 30 W, 60 W type)
- S82K (15 W, 30 W, 50 W, 90 W type)

### Conformity to EN Standards

Use a DC power line less than 3 m to conform to EN standards. If a power line of 3 m or longer is required, extend the length at the Switching Power Supply's primary side (i.e., the AC power line).

### Applicable Countries

Wireless standards have been met for the following countries. The product cannot be used in any other countries.

Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK, USA

# Specifications

## ■ Ratings

| Item   |                         | WT30-M01-FLK Serial Master   | WT30-SID16/SMD16/SMD16-1 I/O Slaves  |
|--|-------------------------|--|--|
| Power supply (wireless communications power supply)    | Rated voltage           | 24 V DC  |  |
|  | Allowable voltage range | 20.4 to 26.4 V DC  |  |
|  | Power consumption       | 3 W max. (See note 1.)   |  |
| Error output/output power supply (for output circuits) | Rated voltage           | ---  | 24 V DC  |
|  | Allowable voltage range | ---  | 20.4 to 26.4 V DC  |
| Insulation resistance                                  |                         | 20 M $\Omega$ min. (at 100 V DC) between the power supply and chassis  | 20 M $\Omega$ min. (at 100 V DC) between the power supply and all I/O and I/O power supply and between the power supply and chassis  |
| Dielectric strength                                    |                         | 1,500 V AC for 1 min between power supply and chassis  | 1,500 V AC for 1 min between the power supply and all I/O and I/O power supply and between the power supply and chassis  |
| Noise immunity   |                         | IEC61000-4-4. 1 kV (power supply line)   |  |
| Vibration resistance (See note 2.)                     |                         | JIS C0040<br>Frequency: 10 to 55 Hz; Amplitude of 0.35 mm or acceleration of 50 m/s <sup>2</sup> , whichever is smaller (DIN Rail mounting: single amplitude of 0.1 mm or acceleration of 15 m/s <sup>2</sup> )<br>10 sweeps of 8 min each (i.e., 80 min in total) in X, Y, Z directions |  |
| Shock resistance                                       |                         | Conforms to JIS C0041: 300 m/s <sup>2</sup> 3 times each in X, Y, and Z directions   |  |
| Ambient operating temperature                          |                         | -10 to 55°C (with no condensation or icing) (with the Terminal mounted with the dust-proof label facing up)  | Number of simultaneously ON I/O points<br>10 max.: -10 to 55°C (with no condensation or icing)<br>16 max.: -10 to 50°C (with no condensation or icing) (with the Terminal mounted with the dust-proof label facing up) |
| Ambient operating humidity                             |                         | 25% to 85% (with no condensation or icing)   |  |
| Ambient environment                                    |                         | No corrosive gases   |  |
| Storage temperature                                    |                         | -25 to 65°C (with no condensation or icing)  |  |
| Protective structure                                   |                         | IP20   |  |
| Terminal construction                                  | Power supply and I/O    | Screwless terminal block (Phoenix Contact FFKDS/V1-5.08 or equivalent)   |  |
|  | Serial                  | D-sub, 9-pin (female) Inch screws (OMRON XM2F-0910-132 or equivalent), Master station only   | ---  |
| Safety standards                                       |                         | UL: UL508 (Listing)  |  |
| Weight   |                         | 330 g max.   |  |

Note: 1. Provide a power supply of at least 15 W, considering the inrush current generated at startup.

2. Use the WT30-FT003 Surface Mounting Bracket when installing the WT30 in environments subject to vibration.

## ■ Wireless Interface Specifications

| Item                                    | Specifications  |
|---|---|
| Wave type                               | Spread Spectrum (direct sequence; DS-SS)  |
| Communication method                    | Simplex   |
| Frequency band                          | 2,401 to 2,480.2 MHz  |
| Number of channels                      | 67 channels (based on switching)  |
| Transmitter output power                | 10 mW/MHz   |
| Baud rate between wireless stations     | 100 kbps  |
| Communications distance (See note.)     | Indoors: 60 m min. (approx. 50 m min. with Magnet-base Antennas and Flat Diversity Antennas)<br>Outdoors: Approx. 300 m min. (anticipated distances) (without using relay stations) |
| Error detection method                  | CRC-CCITT (16 bits)   |
| Relay functions                         | One stage using I/O slave for the serial master configuration.  |
| Number of stations per area (See note.) | 10 sets max. (recommended)  |
| Number of I/O Slaves connected          | 64 max.   |

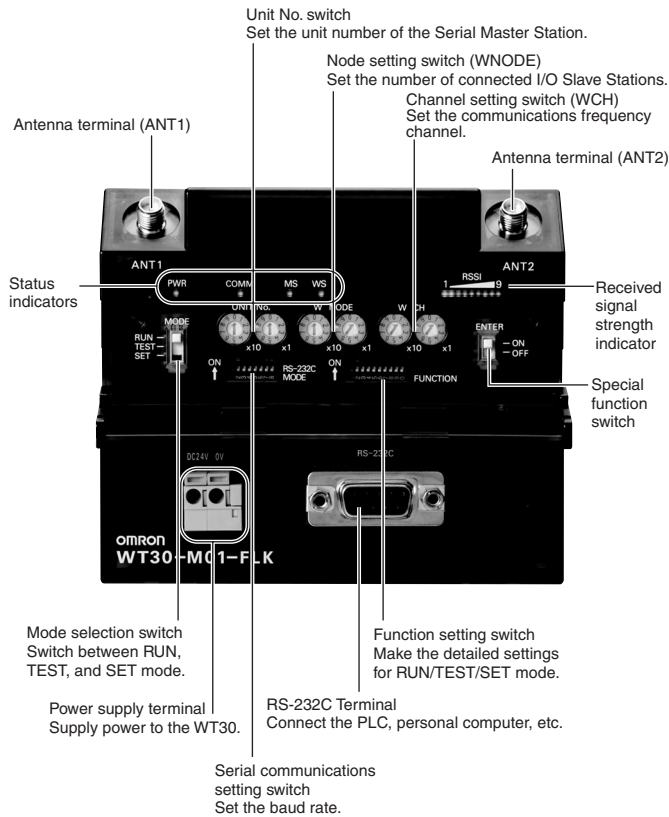
Note: Varies according to the installation environment.

## ■ Package Contents

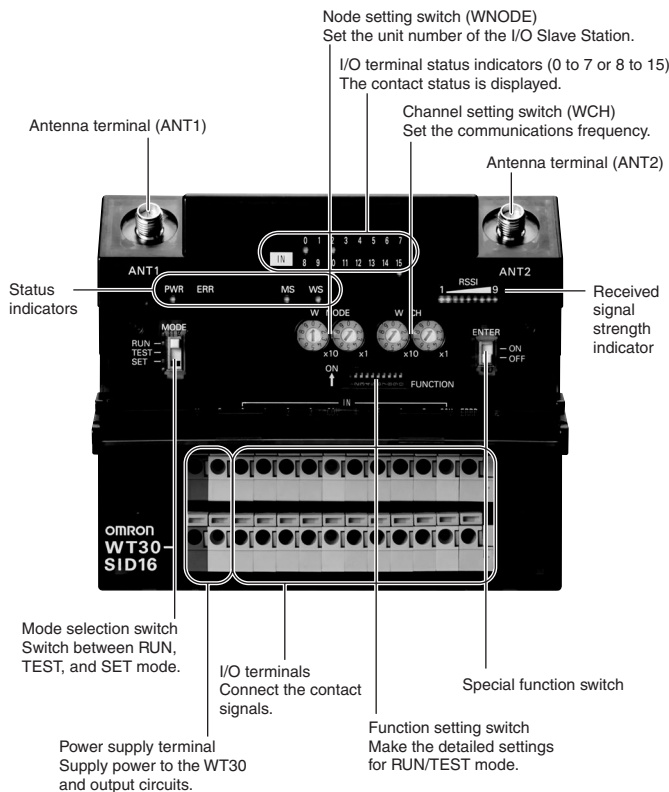
- WT30 FA Wireless SS Terminal
- Terminal labels (I/O Slaves only)
- Instruction Sheet
- Adhesive non-slip feet (Serial Master only)

# Nomenclature

## Serial Master Station



## I/O Slave Station



## Unit No. Switch

Set the unit number of the Serial Master Station

Default: 00

## Node Setting Switch (WNODE)

Set the number of connected I/O Slave Stations.

Set the node number of the Slave Stations being used as I/O Slave Stations. The Slave Station functions as a relay station when the node number is set to 99.

Default: 01

## Channel Setting Switch (WCH)

Set the communications frequency.

Default: 02

## Function Setting Switch

### Serial Master Station

| No. | Applicable mode | ON functions  | OFF functions  |
|-----|-----------------|---|--|
| 1   | RUN mode        | Holds I/O status data when a communications error occurs. | Clears I/O status data when a communications error occurs. |
| 2   |                 | Enable scan list  | Disable scan list  |
| 3   |                 | Relays used   | Relays not used  |
| 4   | TEST mode       | Signal strength monitor disabled                          | Signal strength monitor enabled                            |
| 5   |                 | All channels automatically switched                       | Specified channels   |
| 6   |                 | ---   | ---  |
| 7   | SET mode        | Scan list recognition                                     | Nothing done   |
| 8   |                 | Registers specified I/O slave                             | Registers all I/O slaves automatically                     |
| 9   |                 | Recognizes serial numbers                                 | Ignores serial numbers                                     |
| 10  | Not used        | ---   | ---  |

### I/O Slave Station

| No.     | Applicable mode | ON functions  | OFF functions  |
|---------|-----------------|---|--|
| 1       | RUN mode        | Holds I/O status data when a communications error occurs. | Clears I/O status data when a communications error occurs. |
| 2       |                 | Input hold  | Normal mode  |
| 3       |                 | Input filter: 100 ms                                      | Input filter: 10 ms  |
| 4       | TEST mode       | Signal strength monitor disabled                          | Signal strength monitor enabled                            |
| 5       |                 | All channels automatically switched                       | Specified channels   |
| 6       |                 | Installation test function                                | Nothing done   |
| 7 to 10 | Not used        | ---   | ---  |

## Serial Communications Setting Switch

| No. | Function  | ON   | OFF  |
|-----|---|--|--|
| 1   | Communications setting selection  | Detailed settings (settings for No. 2 to 8 used) | Default settings (baud rate: 9,600 bps; data length: 7 bits; parity: even; stop bits: 2)<br>Settings for No. 2 to 8 are ignored. |
| 2   | Baud rate (bps)   | 1  | 0  |
| 3   | (See note.)   | 2  | 0  |
| 4   | Total value = 0: 1,200<br>= 1: 2,400<br>= 2: 4,800<br>= 3: 9,600<br>= 4: 19,200<br>= 5: 38,400<br>= 6: 57,600<br>= 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   |

**Note:** For example, if pins number 2, 3, and 4 are all ON, the total is 7, which corresponds to a baud rate of 115,200 bps.

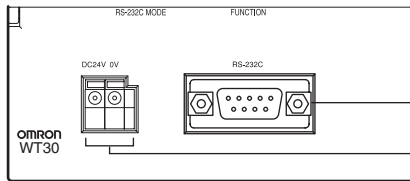
## Display

| Indicator               | Color                    | Status              | Meaning (primary error)   |
|-------------------------|--------------------------|---------------------|---|
| PWR                     | Green                    | Lit                 | Power is being supplied.  |
|                         |                          | Not lit             | Power is not being supplied.  |
| ERR (Slave Station)     | Red                      | Lit                 | Error output is ON: Wireless device error or wireless communications error. (See note)  |
|                         |                          | Not lit             | No wireless device error or wireless communications error.  |
| COMM (Master Station)   | Yellow                   | Lit                 | Serial communications in progress.  |
|                         |                          | Not lit             | No serial communications.   |
| 0 to 15 (Slave Station) | Yellow                   | Lit/Not lit         | ON/OFF status for input or output signals   |
| RSSI                    | Red/<br>Yellow/<br>Green | Lit/<br>All not lit | Receiving Signal Strength Indicator monitor: Number of indicators lit (receiving signal strength 1 to 9)<br>Receiving signal strength less than 0 to 1. |
| MS (Module Status)      | Green                    | Lit                 | Communications are normal.  |
|                         |                          | Flashing            | TEST mode or SET mode has been activated.   |
|                         | Red                      | Lit                 | A fatal error has occurred that cannot be recovered from. Replace the Unit  |
|                         |                          | Flashing            | A non-fatal error has occurred that can be recovered from by resetting the system.  |
|                         | ---                      | Not lit             | Power is not being supplied or the system is resetting.   |
| WS (Wireless Status)    | Green                    | Lit                 | The station has joined the wireless network.  |
|                         |                          | Flashing            | Permission to join wireless network received from Serial Master Station (Slave Station)   |
|                         | Red                      | Lit                 | A fatal error has occurred that cannot be recovered from.   |
|                         |                          | Flashing            | Error from which recovery is possible   |
|                         | ---                      | Not lit             | Wireless communications are not in progress.  |

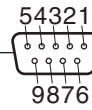
**Note:** When using the WD30 as the Serial Master Station, the ERR indicator will light if normal I/O communications are not possible due to an error in the host network.

# Wiring

## Serial Master Station (WT30-M01-FLK)



RS-232C Connector



Power supply terminal  
Supply power to the Unit

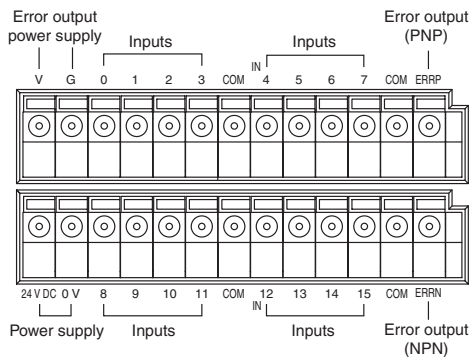
D-sub, 9-pin, Female End at WT30

| Pin No. | Signal | I/O direction |
|---------|--------|---------------|
| 1       | ---    | ---           |
| 2       | RD     | Output        |
| 3       | SD     | Input         |
| 4       | ---    | ---           |
| 5       | SG     | ---           |
| 6       | ---    | ---           |
| 7       | ---    | ---           |
| 8       | ---    | ---           |
| 9       | ---    | ---           |

# I/O Characteristics

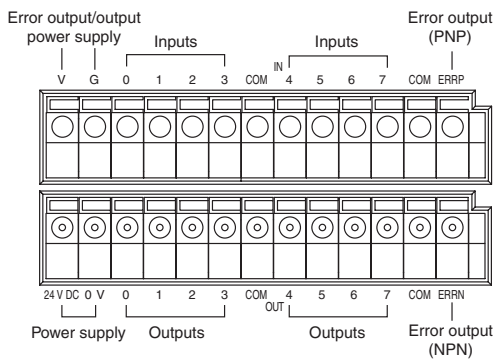
## I/O Slave Station

### WT30-SID16



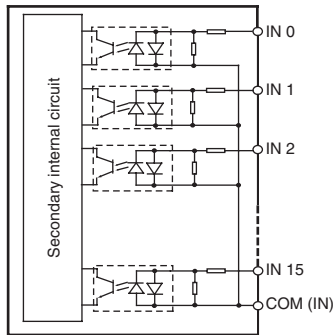
### WT30-SMD16

### WT30-SMD-16-1

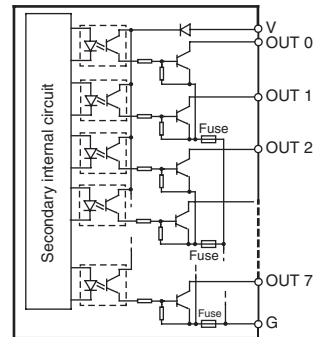


| Item                                | Specifications                             |   |
|-------------------------------------|--|---|
| Input Characteristics               | <b>Input voltage</b>                       | 24 V DC   |
|                                     | <b>Allowable voltage range</b>             | 20.4 to 26.4 V DC   |
|                                     | <b>Input impedance</b>                     | 4.7 kΩ (typical)  |
|                                     | <b>Input current</b>                       | 5 mA (typical)  |
|                                     | <b>ON voltage/current characteristics</b>  | 17.4 V DC, 3.0 mA min.  |
|                                     | <b>OFF voltage/current characteristics</b> | 5.0 V DC, 1.0 mA max.   |
|                                     | <b>Input filter</b>                        | 10 ms/100 ms (Selected using switch.)   |
| Output/Error Output Characteristics | <b>Input voltage</b>                       | 24 V DC   |
|                                     | <b>Allowable voltage</b>                   | 20.4 to 26.4 V DC   |
|                                     | <b>Max. switching current</b>              | 100 mA max. per output (at 20.4 to 26.4 V DC)<br>Simultaneous usage of error output NPN/PNP is not possible.                                  |
|                                     | <b>Leakage current</b>                     | 0.1 mA max.   |
|                                     | <b>Residual voltage</b>                    | 1.0 V max.  |
|                                     | <b>Fuse</b>                                | One for every two outputs except for error output circuits, which have one for every NPN/ PNP output. (No fuses can be replaced by the user.) |

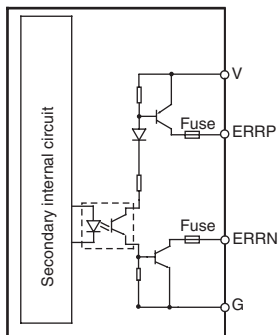
### Input Circuit Diagram



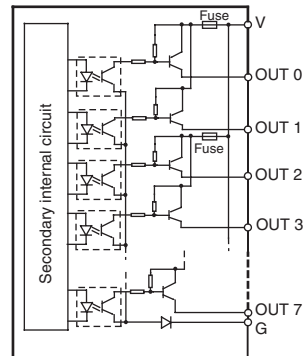
### Output Circuit Diagram (NPN)



### Error Output Circuit Diagram



### Output Circuit Diagram (PNP)

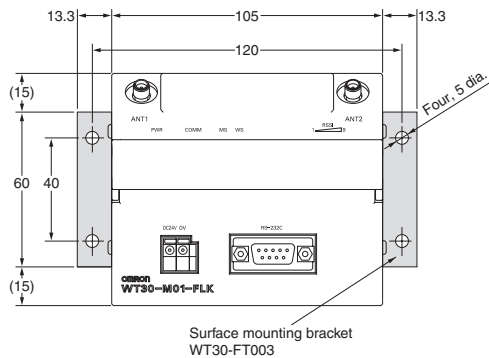


## Dimensions

Note: All units are in millimeters unless otherwise indicated.

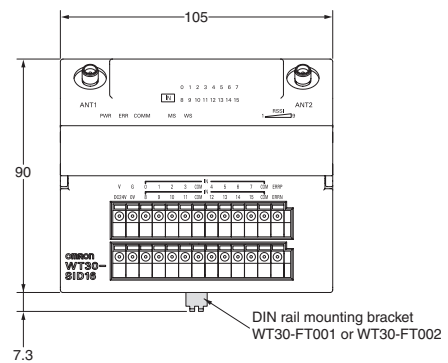
### Serial Master Station

#### WT30-M01-FLK



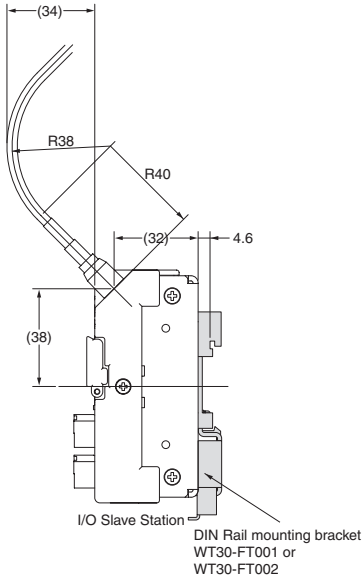
### I/O Slave Station

#### WT30-SID16 WT30-SMD16 WT30-SMD16-1



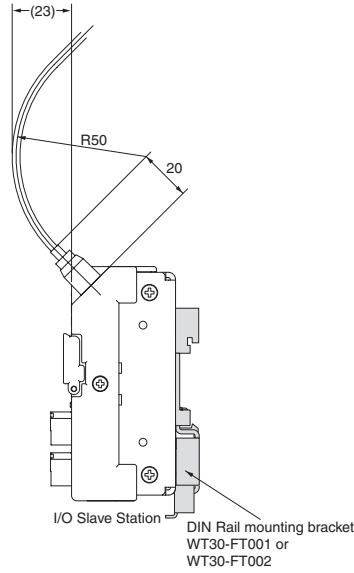
**With Magnet-base Antenna**

**WT30-AT001**



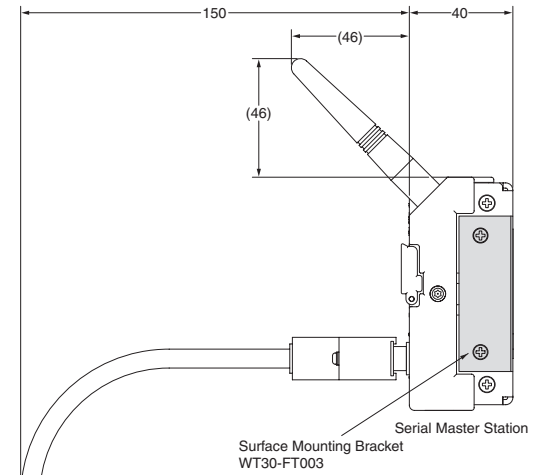
**With Flat Diversity Antenna**

**WT30-AT002**



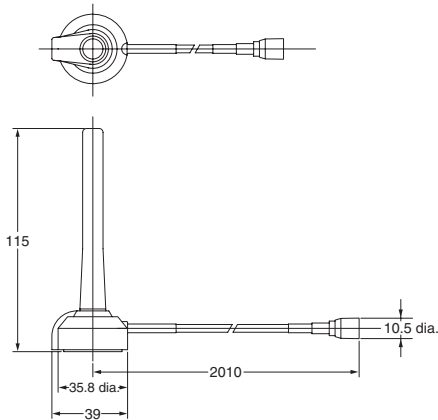
**With Pencil Antenna**

**WT30-AT003**



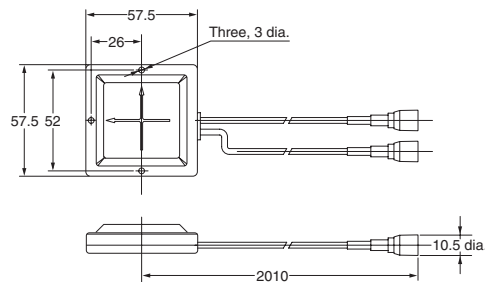
**Magnet-base Antenna**

**WT30-AT001**



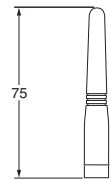
**Flat Diversity Antenna**

**WT30-AT002**



**Pencil Antenna**

**WT30-AT003**



**DIN Rail Mounting Bracket**

**WT30-FT001  
WT30-FT002**



**Surface Mounting Bracket**

**WT30-FT003**



**Flat Diversity Antenna Mounting Brackets (with magnets)**

**WT30-FT011**



**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. N139-E1-01 **In the interest of product improvement, specifications are subject to change without notice.**

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