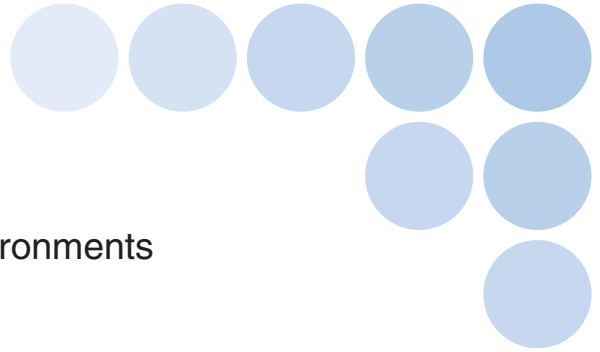


## FA Wireless LAN Unit

# WE70

Reliable Wireless Ethernet for Harsh FA Environments  
Conforms to IEEE 802.11a/b/g



Construct an Ideal Wireless LAN System for FA Applications!



# The FA Wireless LAN Unit manages FA sites with 3 solutions

## *Solution 1* **Wireless LAN systems conforming to global standards.**

**Conforms to IEEE 802.11a/b/g (5 GHz/2.4 GHz)!  
Nominal 54 Mbit/s high-speed communications!**

The WE70 Wireless Unit supports three Wireless LAN standards. The appropriate standard can be selected according to the environment or use of the FA system.

### ● General features of Wireless LAN standards

Standards	IEEE 802.11a	IEEE802.11b	IEEE 802.11g
Maximum speed	54 Mbit/s	11 Mbit/s	54 Mbit/s
Frequency band	5-GHz band	2.4 GHz band	2.4 GHz band
Modulation	OFDM	DS-SS	OFDM
Characteristics	<ul style="list-style-type: none"> <li>• Five times faster than 11b.</li> <li>• Noise resistant.</li> <li>• Less cross talk with other devices.</li> <li>• Multiple 8 channels can be used simultaneously.</li> </ul>	<ul style="list-style-type: none"> <li>• Wide selection of products.</li> <li>• Long communications distance.</li> <li>• Can be used outdoors.</li> </ul>	<ul style="list-style-type: none"> <li>• Five times faster than 11b.</li> <li>• Less vulnerable to obstacles.</li> <li>• Compatible with 11b.</li> <li>• Can be used outdoors</li> </ul>

## **Conformance to Radio Wave Standards**

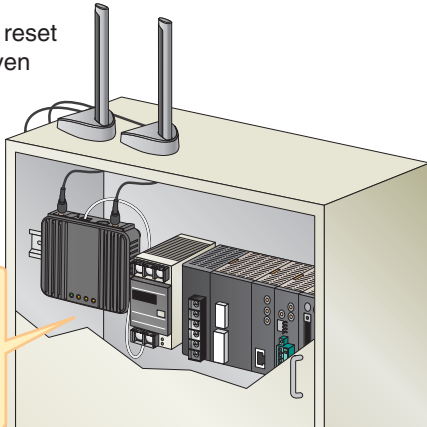
Conforms to radio wave standards for USA, Europe, and China.  
USA: FCC part 15.247, 401-407  
Europe: EN 300 328, EN 301 893  
China: SRCC

# Solution 2 *Secure and easy to implement at FA sites.*

## Stable operation even in harsh FA environments!

The Wireless LAN Unit has the same level of noise and environmental resistance as OMRON FA Devices, such as PLCs and Power Supply Units. It is capable of stable operation when installed within the same control panel as other FA devices.

There is no need to reset the power supply even if the Wireless LAN Unit runs out of control because it will automatically restart itself.



Good noise resistance can be obtained by connecting the Wireless Unit to an OMRON Power Supply Unit.

## OMRON'S original security system prevents important production information from being disclosed.

The latest encryption technology combined with OMRON'S original encryption technology forms a strong security environment.

The FA Wireless LAN contains the following security features.

### ● Type of FA Wireless LAN Security and Effectiveness

Security	Access control	Encryption	Security level
SSID	△	—	Low
MAC Address Filtering	△	—	
WEP	—	△	High
WPA-PSK (TKIP/AES)	○	○	
OCB AES	—	◎	
WOC KEY (OMRON'S original encryption)	◎	◎	

◎: Very good, ○: Good, △: Satisfactory, —: Not very good

Note: Partly quoted from the Wireless Security Guidelines (Ministry of Internal Affairs and Communications).

## Signal status can be observed!

With the popular Received Signal Strength Indicator (RSSI), the status of invisible radio waves can be easily identified by checking the indicators.

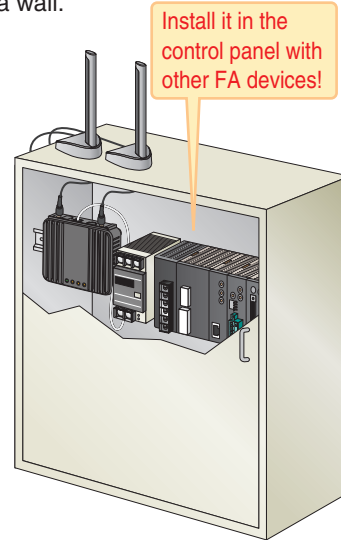
### ● Received Signal Strength Level

Stable	POWER	RSSI	LAN	WIRELESS
Usable	POWER	RSSI	LAN	WIRELESS
Unstable	POWER	RSSI	LAN	WIRELESS
Unable to establish communications	POWER	RSSI	LAN	WIRELESS



## Versatile and easy installation!

This Wireless LAN Unit can be easily installed anywhere on a DIN Rail or a wall.



Install it in the control panel with other FA devices!



Use magnets to mount it on metal surfaces!



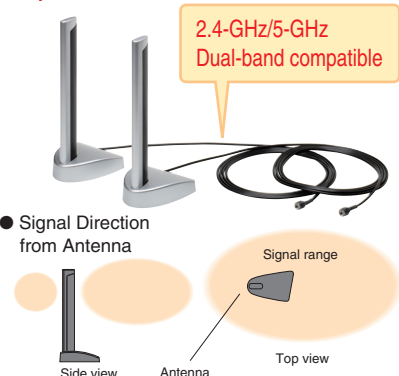
Easy connection to power supplies using the screwless terminal.

## Various antennas are available for different installation locations (optional).

In addition to the included Pencil Antenna, the popular Magnetic-base Antenna is available. The FA Wireless LAN Unit can be installed inside the control panel and the Antenna on the outside of the control panel.

### Directional Magnetic-base Antenna

Easy Installation



2.4-GHz/5-GHz  
Dual-band compatible

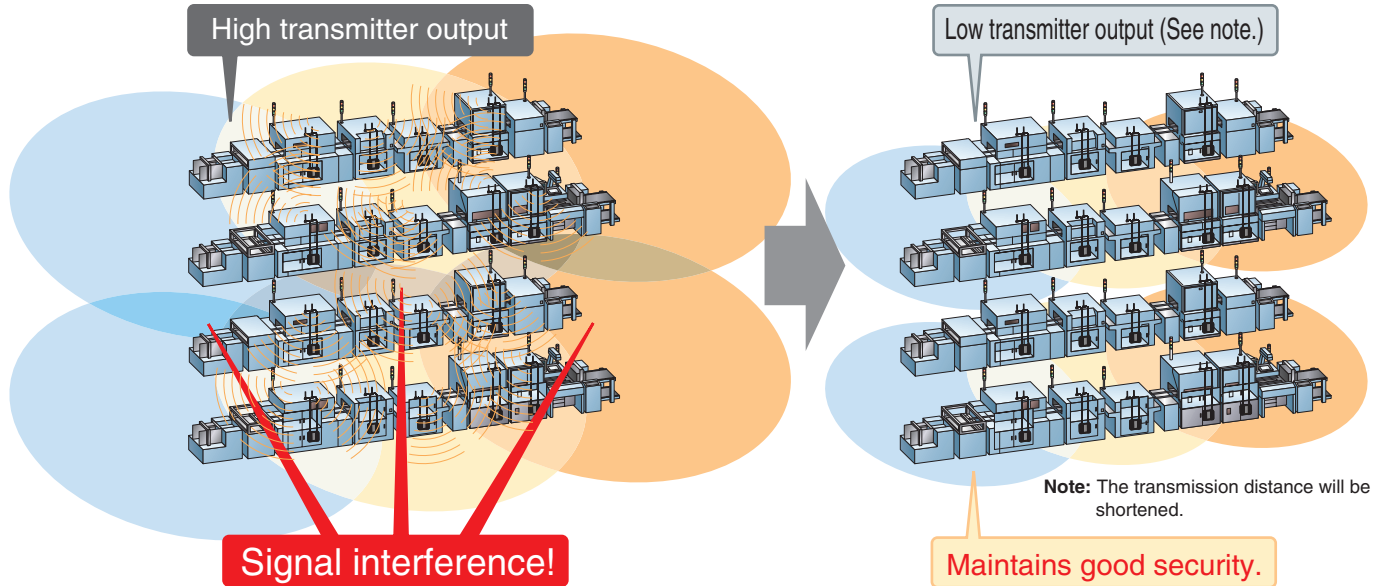
● Signal Direction from Antenna

Note: Cannot be used outdoors.

# Solution 2 *Secure and easy to implement at FA sites.*

## Prevents signal interference! Variable transmission power function!

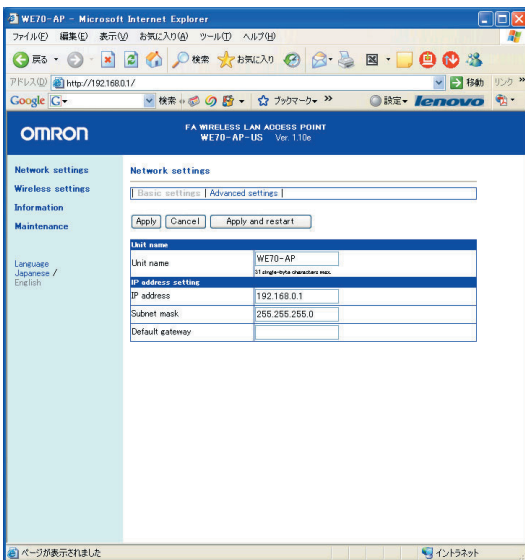
There are three transmitter output levels. By setting the level to low, you can reduce its influence on other systems within the same area, and more systems can be added.



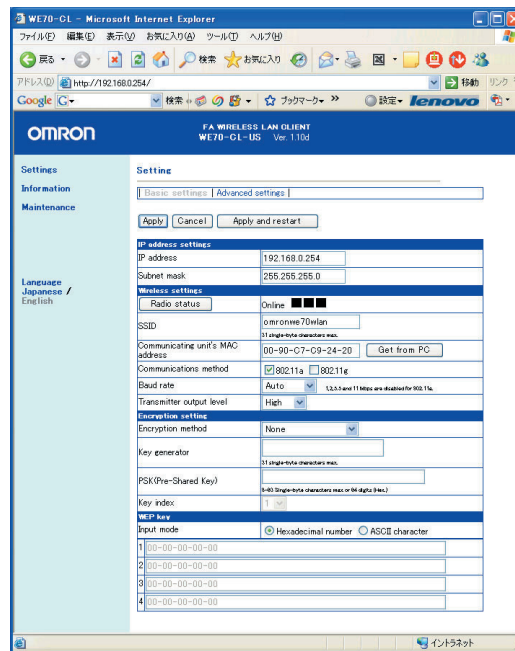
## Setting Tool FA Wireless LAN settings can be made from a remote location!

Settings can be managed from a WEB browser. Specific software tools are not required.  
The status of the FA Wireless LAN can be checked from the control room.

AP Settings Window



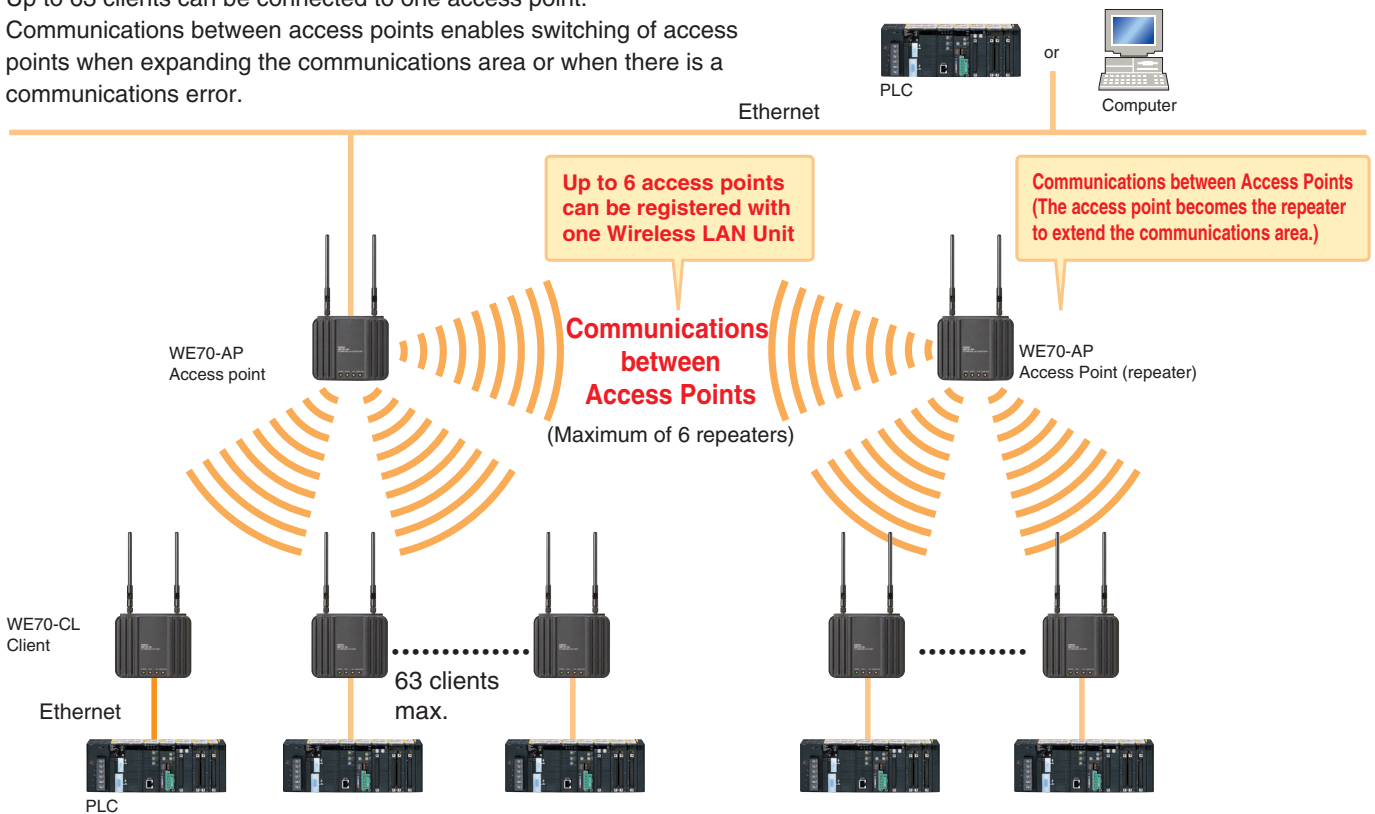
CL Settings Window



# Solution 3 *Diverse systems to match applications.*

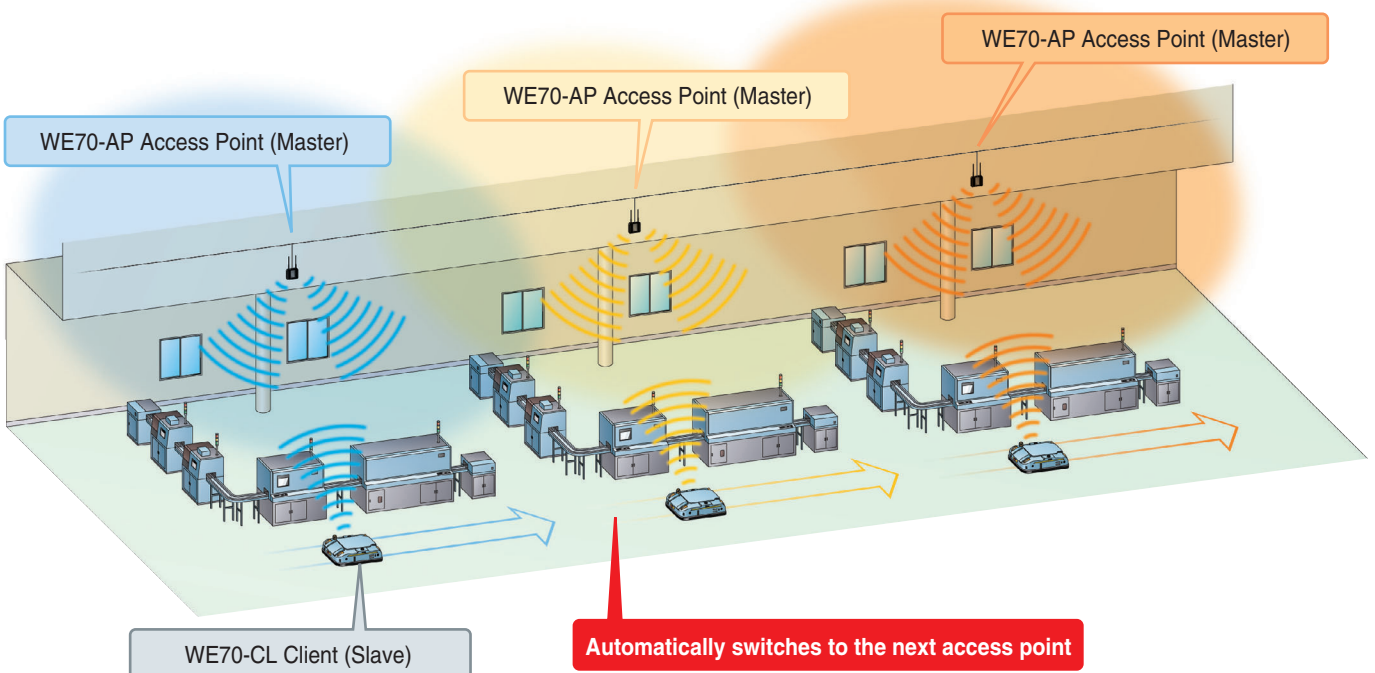
## Large quantities of production data can be managed as a batch.

Up to 63 clients can be connected to one access point.  
Communications between access points enables switching of access points when expanding the communications area or when there is a communications error.



## The roaming function allows systems to be moved and communicate with mobile devices.

**Note:** Make sure that you read the *Wireless LAN Unit Operation Manual* (Cat. No. N153) and check the operating conditions on site before using the roaming function.



## FA Wireless LAN Unit WE70

### Highly reliable performance. Ideal Wireless LAN for FA sites.

- Conforms to IEEE 802.11a/b/g.
- Same noise and environment resistance level as a PLC.
- Features OMRON'S original security system.
- Signals can be observed with LED indicators.
- The Wireless LAN Unit can be installed inside a control panel and the Antenna outside the control panel.
- RoHS-compliant.
- Conforms to radio wave standards for the USA, Europe, and China.



## Ordering Information

### ■ Wireless LAN Unit

Area	Type	Model
Europe	Access Point (Master)	WE70-AP-EU
	Client (Slave)	WE70-CL-EU
USA	Access Point (Master)	WE70-AP-US
	Client (Slave)	WE70-CL-US
China	Access Point (Master)	WE70-AP-CN
	Client (Slave)	WE70-CL-CN

- Note:**
1. Includes a Pencil Antenna, magnets for mounting the Wireless LAN Unit, and a mounting bracket.
  2. Make sure that the correct model for the area is used. For example, the use of the WE70-AP-US in an area other than the USA is illegal as stipulated in laws and regulations.

### ■ Accessories

#### Antenna

Type	Specifications	Model
Directional Magnetic-base Antenna	1 set with two Antennas, 2.4 GHz/5 GHz Dual-band compatible	WE70-AT001H

#### Other

Type	Model
DIN Rail Mounting Bracket (for TH35 7.5)	WT30-FT001
DIN Rail Mounting Bracket (for TH35 15)	WT30-FT002
Antenna Extension Cable (5 m)	WE70-CA5M

#### Accessories

Type	Model	Details
PLC	SYSMAC CS1/CJ1 Series	
Ethernet Unit	CS1/CJ1W-ETN21	100Base-TX type
Switching Hub	Phoenix Contact FL SWITCH 5TX	
Power Supply Unit	S8VS, S8VM Series	24 VDC, 30 W min.

#### Conformity to EN Standards

Use a DC power line less than 3 m in length 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).

#### Conformity to Safety Standards

Always use a Class 2 power supply to conform to UL standards.  
**Main OMRON Class 2 Switching Power Supplies**  
• S8VS (30 W, 60 W type)

# Specification

## ■ Ratings

Model		WE70-AP Access Point (Master)	WE70-CL Client (Slave)
Power supply	Rated voltage	24 V DC	
	Allowable voltage range	20.4 to 26.4 V DC	
	Current consumption	250 mA max. (See note.)	
Insulation resistance		20 MΩ min. (at 100 V DC) between the power supply and mounting bracket	
Dielectric strength		1,500 V AC for 1 min between power supply and mounting bracket	
Noise immunity		IEC 61000-4-4. 1 kV (power supply line)	
Vibration resistance		JIS C0040 Frequency: 10 to 55 Hz; Amplitude of 0.35 mm or acceleration of 50 m/s <sup>2</sup> , whichever is smaller 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		0 to 50°C (with no condensation)	
Ambient operating humidity		25% to 85% (with no condensation or icing)	
Ambient storage temperature range		-20 to 65°C	
Degree of protection		IP20	
Terminal construction	Power terminal	Screwless terminal block (Phoenix Contact AI 0.75-10 or equivalent)	
Applicable Standards		FCC, UL (USA), CE Marking (EU), Chinese Electromagnetic Standards (Mainland China)	
Weight		360 g max. (Wireless LAN Unit only)	

Note: Provide a power supply of at least 30 W, considering the inrush current generated at startup.

## ■ Wireless Interface Specifications

Item	Standards	Conforms to IEEE 802.11a	Conforms to IEEE 802.11b	Conforms to IEEE 802.11g
Wave type		Orthogonal Frequency Division Multiplexing (OFDM), Simplex	Direct Sequence Spectrum Spread, Simplex	Orthogonal Frequency Division Multiplexing (OFDM), Simplex
Frequency band	Refer to the following <i>Frequency Bandwidths and Channels by Area</i> on page 8.			
Number of channels	Refer to the following <i>Frequency Bandwidths and Channels by Area</i> on page 8.			
Baud rate (See note 1.)		Auto or 54, 48, 36, 24, 18, 12, 9, or 6 Mbps	Auto or 11, 5.5, 2, or 1 Mbps	Auto or 54, 48, 36, 24, 18, 12, 9, or 6 Mbps
Maximum Transmission Distance (Line of Site) (See notes 2 and 3.)		Indoors: Approx. 40 m (with enclosed Pencil Antenna at 54 Mbps) (Outdoor use prohibited.)	Indoors: Approx. 60m (with enclosed Pencil Antenna at 54 Mbps)	
Security	OCB AES (128 bit), WEP KEY (OMRON'S original encryption), WEP (64/128/152 bit), WPA-PSK (with AES <128 bit>/TKIP <128 bit> encryption)			
Transmitter output power	10 mW/MHz max.			
No. of connected clients	63 max.			
Variable transmission power	3 levels: (High/Mid/Low) If high communications distance is 100%, medium is 50%, and low is 25%. (See note 2.)			
Roaming function	Provided			
Repeater function	Provided (Communications between access points, 6 repeaters max.)			

Note: 1. Theoretical value of the Wireless LAN Standards, not the actual baud rate.

2. Depends on the installation environment.

3. The distance will be shorter when using a Magnetic-base Antenna or an extension cable.

## LAN Cable Specifications

Item	Parameter
Standards	Conforms to IEEE 802.3 (10Base-T, 100Base-TX)
Interface	RJ-45 × 1

**Note:** Connect to computer using a straight cable.

## Other

Item	Specification
Wireless LAN Unit Setup	Web browser: Microsoft Internet Explorer 6.0, 7.0, or higher OS: Windows Vista, XP, or 2000 (See note.)

**Note:** Not compatible with Windows 98, NT, or Me.

## Frequency Bandwidths and Channels by Area

### 11a (5 GHz band)

Frequency (MHz)				
Area	5150	5350	5470	5725 5825
USA (24 channels total)	8 ch		11 ch	5 ch
Europe (19 channels total)	8 ch		11 ch	
China (5 channels total)				5 ch

### 11b/g (2.4 GHz band)

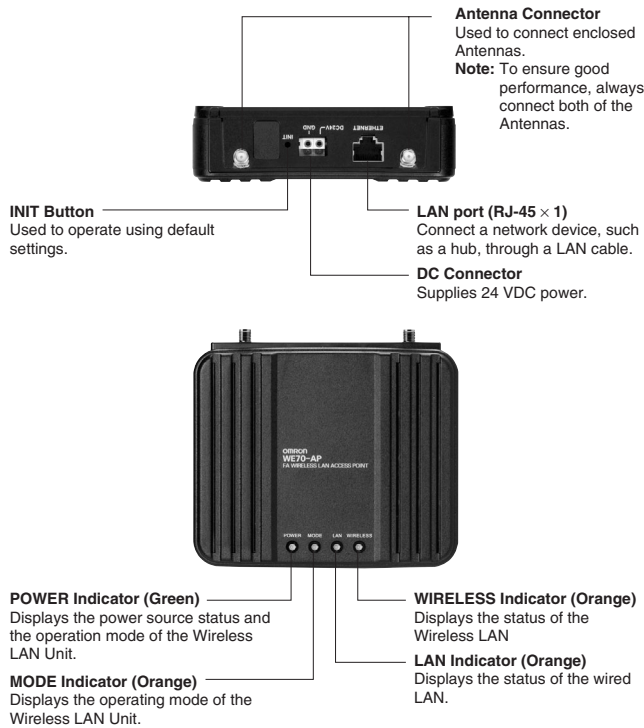
Frequency (MHz)			
Area	2412	2462	2472
USA (11 channels total)	11 ch		
Europe (13 channels total)	13 ch		
China (13 channels total)	13 ch		



# Nomenclature

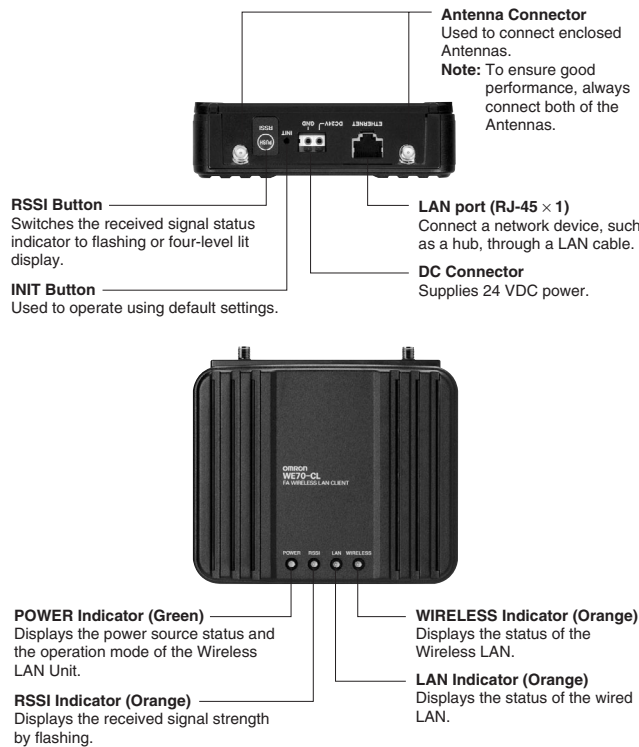
## Access Point (Master)

WE70-AP(-EU/-US/-CN)



## Client (Slave)

WE70-CL(-EU/-US/-CN)



**Note:** When the RSSI Button on the back of the WE70 is pressed, the received signal strength will be indicated using the POWER, RSSI, LAN, and WIRELESS indicators. The POWER indicator will flash. Press the button again or wait for 10 minutes of the indication to pass and then the indication will return to the original status.

## Access Point Indicator

Indicator	Color	Status	Meaning (primary error)
POWER	Green	Lit	Power ON
		Not lit	Power OFF
		Flashing	Simultaneous flashing of MODE and POWER indicators shows that the setup is being initialized. (See note.)
MODE	Orange	Lit	Using IEEE 802.11a
		Not lit	Using IEEE 802.11b/g
		Flashing	Simultaneous flashing of MODE and POWER indicators shows that the setup is being initialized. (See note.)
WIRELESS	Orange	Lit	Radio communications are being established with the Wireless LAN client.
		Not lit	There is no LAN Client communicating with the Wireless Unit, or no radio communication has been made for 5 minutes or more.
LAN	Orange	Lit	LAN connection is normal.
		Not lit	LAN is not connected.
		Flashing	Data is being transmitted.

**Note:** Hold down the initialization switch while the power is OFF and then turn the power ON without releasing the switch. Initialization can also be applied from the settings window using a web browser.

## Client Indicator

Indicator	Color	Status	Meaning (primary error)
POWER	Green	Lit	Power ON
		Not lit	Power OFF
		Flashing	Simultaneous flashing of the RSSI and POWER indicators shows that the setup is being initialized. (See note.)
RSSI	Orange	Not lit	No margin
		Flashing	Level 1, duty 2 (OFF): Flashes for 1 (ON)
		Flashing	Level 2, duty 1 (OFF): Flashes for 2 (ON)
		Lit	Level 3
		Flashing	Simultaneous flashing of MODE and POWER indicators shows that the setup is being initialized. (See note.)
WIRELESS	Orange	Lit	Radio communications are being established with the Wireless LAN Access Point.
		Not lit	There is no wireless LAN Access Point communicating with the Wireless LAN UNIT, or no radio communication has been made for more than 10 seconds.
LAN	Orange	Lit	LAN connection is normal.
		Not lit	LAN is not connected.
		Flashing	Data is being transmitted.

**Note:** Hold down the initialization switch while the power is OFF and then turn the power ON without releasing the switch. Initialization can also be applied from the settings window using a web browser.

# Dimensions

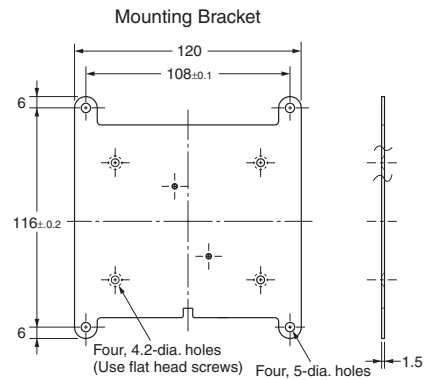
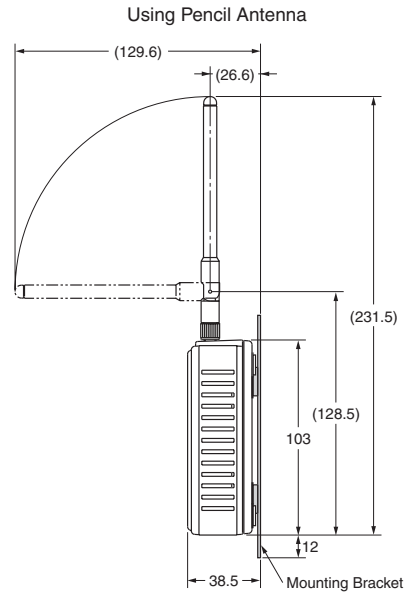
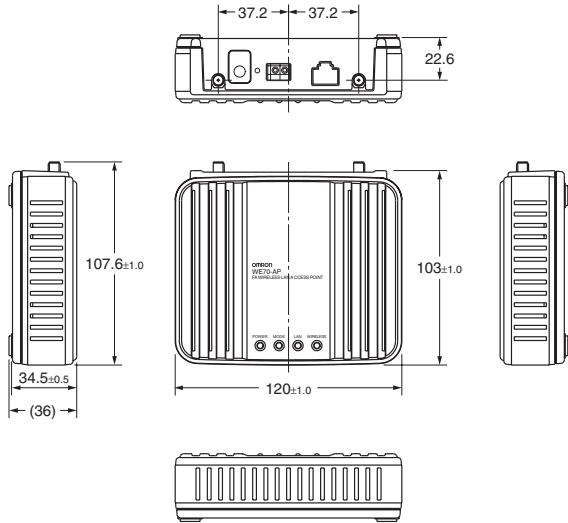
Note: All units are in millimeters unless otherwise indicated.

## Access Point (Master)

WE70-AP(-EU/-US/-CN)

## Client (Slave)

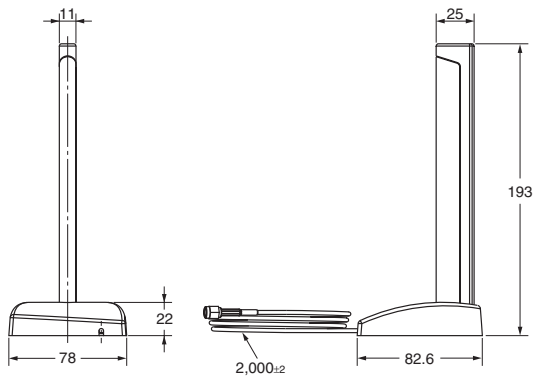
WE70-CL(-EU/-US/-CN)



Note: Leave a gap of approx. 20 mm around the sides of the Wireless LAN Unit for ventilation.

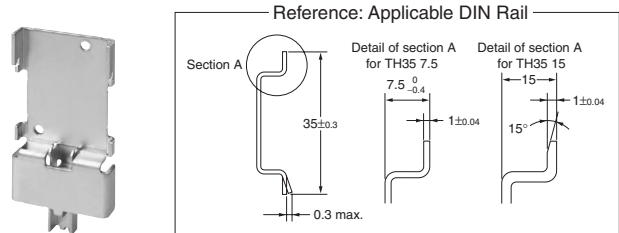
## Directional Magnetic-base Antenna

WE70-AT001H



## DIN Rail Mounting Bracket

WT30-FT001 (for TH35 7.5)  
WT30-FT002 (for TH35 15)



## Read and Understand this Catalog

Please read and understand this catalog before purchasing the product. Please consult your OMRON representative if you have any questions or comments.

## Warranty and Limitations of Liability

### WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

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## Application Considerations

### SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of the product in the customer's application or use of the product.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to the product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

## Disclaimers

### CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

**Note: Do not use this document to operate the Unit.**

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