

# TAKEX

# MICROWAVE SENSOR

MW-100A

## Instruction Manual

We appreciate your purchase of the TAKEX microwave sensor. This sensor will provide long and dependable service when properly installed. Please read this instruction manual carefully for correct and effective use.

**Please note :** This sensor is designed to detect intrusion and to initiate an alarm; it is not a burglary or a crime preventing device.

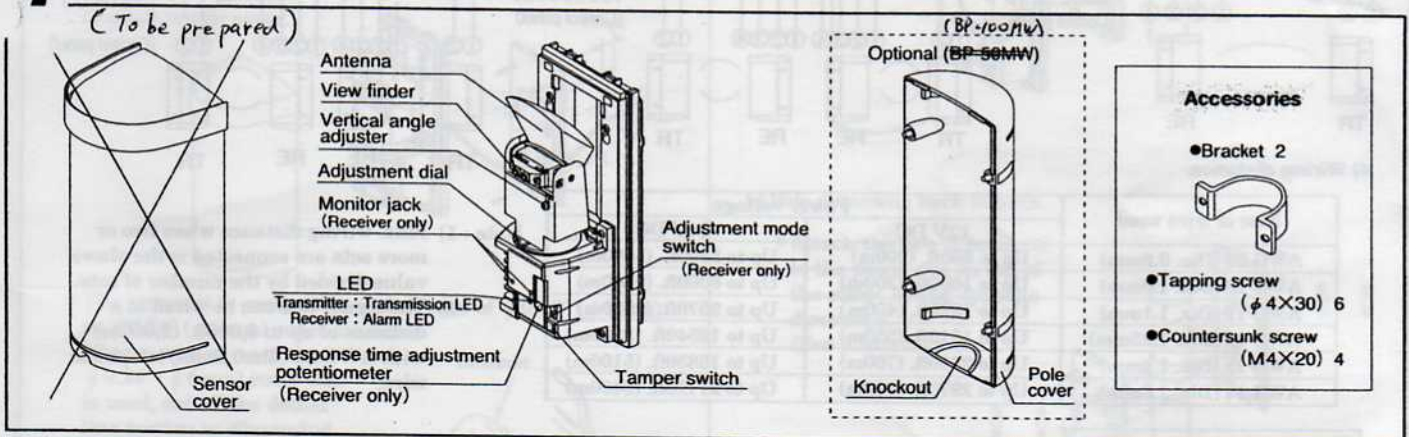
TAKEX is not responsible for damage, injury or loss caused by accident, theft, Acts of God (including inductive by lightning surges), abuse, misuse, abnormal usage faulty installation or improper maintenance.

### PRODUCT DESCRIPTION

This Product consists of a transmitter which sends 24.15GHz of microwave and a receiver which receives the beam. It will initiate an alarm signal when the receiver detects a drop in the beam reception level due to interruption of objects interrupt between the transmitter and receiver. Compared to a photoelectric beam, the wavelength of microwaves is extremely long, which prevent the sensor from being affected by weather such as torrential rainfall, snowfall, fog or frost especially during cold winters. Stable detection performance is possible.

Two types of frequencies, MW-50 (H) and MW-50 (L) are available.

## 1 PARTS DESCRIPTION



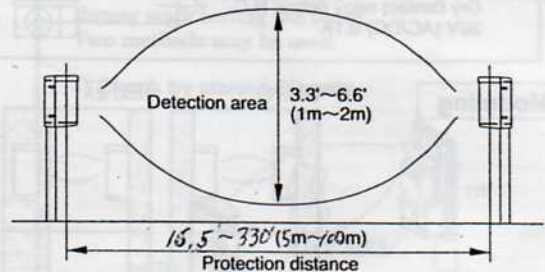
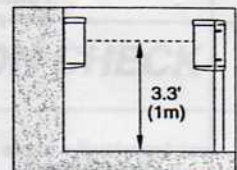
## 2 CAUTIONS ON INSTALLATION

### 1) DO'S AND DON'TS

- Do not install the unit at places where it may be blocked by obstacles such as trees.
- Do not install the unit on unsteady surfaces.
- Do not install the unit a street side or in parking lots where many cars may pass by. Installation must be at 5ft. (1.5m) away from the automobiles traffic.
- When installing the unit along the side of a building or fence, installation must be at least 2ft. (60cm) away from said constructions.

### 2) Height of installation

Install the unit at a height of 39" (1m), ground to center of microwave sensor, to detect human being walking or running through the beam.



The protection distance should be between 3.3ft. (1m) and 165ft. (50m).

- Do not stack the sensors vertically.

### 3) Check the environment of the installation site

The microwaves are affected by electric waves reflected from buildings, fences, and or the ground.  
The beam reception level of the microwaves depends on how the unit is installed in the area, especially by the height of installation.  
Find the position (height) of the sensor for transmitter and receiver respectively where the maximum signal reception level can be obtained before the final.



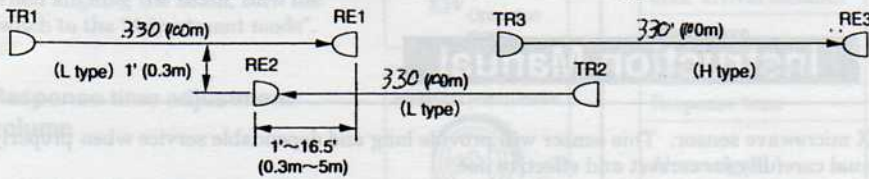


#### 4) Installation example

When two or more sets are used, two frequencies (L and H types) should be used in order to avoid cross talk or interference. Refer to the following example.

##### ● Linear protection

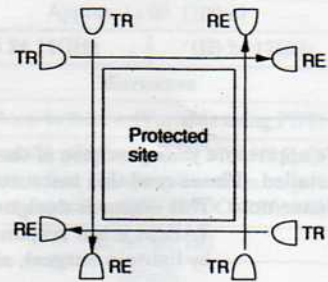
H type should be used for TR3 and RE3 when TR1 and RE1 are L type.



- Do not use different frequencies (H and L) in a detection line.
- Use a pair of same frequency : TR(H) and RE(H) OR TR(L) and RE(L).
- Do not stack the sensors vertically.

##### ● Perimeter protection

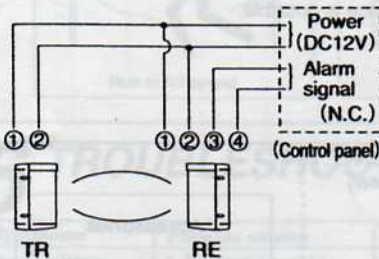
Do not install the transmitter and the receiver at a same corner. Microwave sensor with the same frequency can be used for this case.



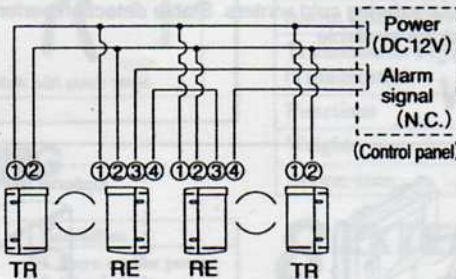
#### Wiring

The equipment must be powered from an LPS in accordance with EN60950-1 : 2001

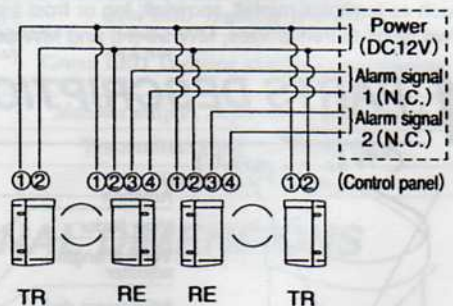
##### 1) Basic connection



##### 2) When two or more sets are connected to the same line.



##### 3) When two or more sets are connected to separate lines.

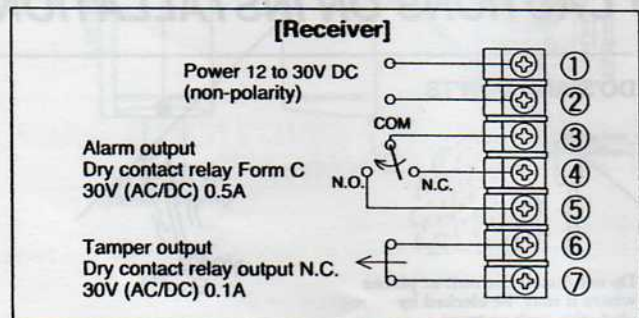
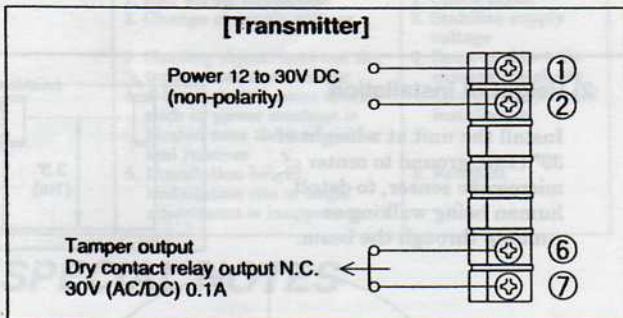


##### 4) Wiring distance

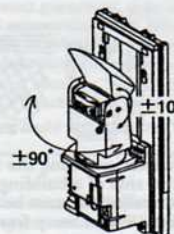
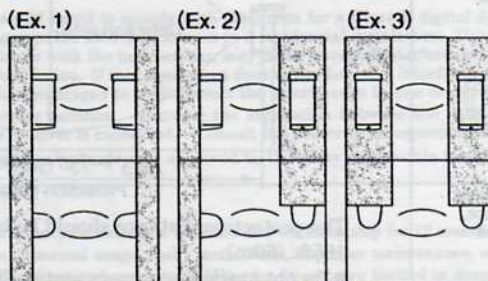
Size of wire used	Power voltage	
	12V DC	24V DC
AWG 20 (Dia. 0.8mm)	Up to 660ft. (200m)	Up to 5400ft. (1600m)
AWG 18 (Dia. 1.0mm)	Up to 1000ft. (300m)	Up to 8000ft. (2400m)
AWG 17 (Dia. 1.1mm)	Up to 1320ft. (400m)	Up to 9570ft. (2900m)
AWG 16 (Dia. 1.25mm)	Up to 1815ft. (550m)	Up to 12540ft. (3800m)
AWG 15 (Dia. 1.4mm)	Up to 2310ft. (700m)	Up to 16830ft. (5100m)
AWG 14 (Dia. 1.6mm)	Up to 2970ft. (900m)	Up to 21120ft. (6400m)

- Note : 1) Max. wiring distance when two or more sets are connected is the above value divided by the number of sets.
- 2) The signal line can be wired to a distance of up to 6,000ft. (2,000m) with AWG 20 (dia.0.8mm) telephone wire.

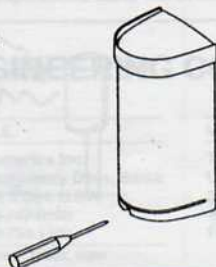
#### Terminal arrangement



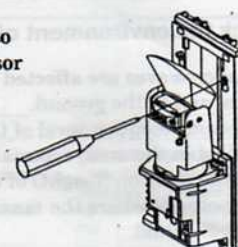
#### Mounting



1) Detach the sensor cover with a screw driver.



2) Detach the mounting plate to loosen 2 screws that fix sensor body to the mounting plate.

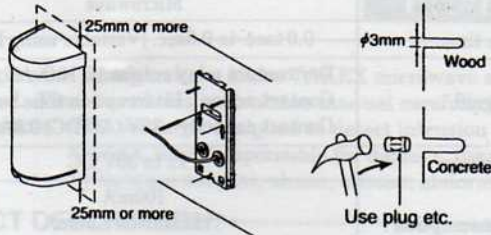




### 3) Wall mount

#### ① Make holes in the wall.

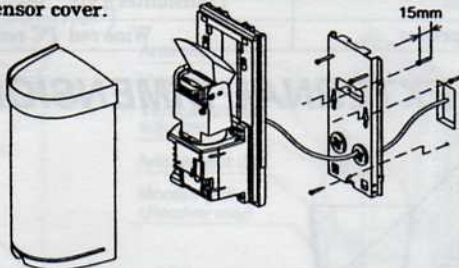
- Place the mounting plate the wall as a template for drilling and mark the screw holes. (Allow a space of 1" (25mm) above and below the plate. This will provide easy detachment of the cover after installation.)



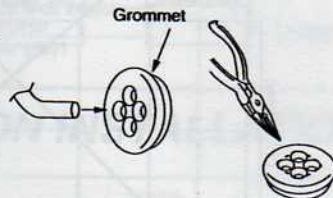
- Pre-drill in wall.  
Concrete wall : Refer to specifications of the securing plug used.  
Wooden wall : 3mm diameter.

#### ② Install the sensor.

- Insert tapping screws to 15mm under the screw head.
- Install the mounting plate on the wall after pulling the wire through it.
- Connect terminals.
- Attach sensor cover.



- The grommet is compatible with a wire of  $\phi 0.12"$  ( $\phi 3\text{mm}$ ) to  $\phi 0.24"$  ( $\phi 6\text{mm}$ ) outer diameter. When a wire of more than  $\phi 0.24"$  ( $\phi 6\text{mm}$ ) outer dia. is used, cut off the dotted line portion as illustrated using pliers or the like. Then use caulking to prevent insects from entering into unit.



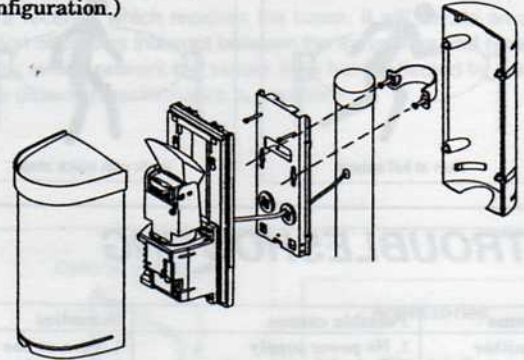
### 4) Pole mount

- Make a wiring hole in the pole. Pull the wire through wire. Place the pole cap on top of the pole.



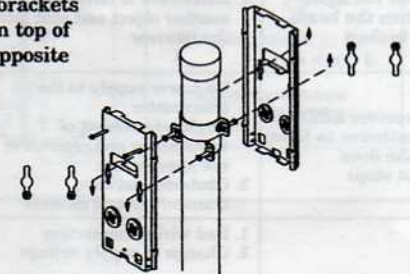
#### ② Install sensor on the pole.

- Attach the U brackets to pole and fix the mounting plate with screws.
- Fix the sensor the body to the mounting plate.
- Connect the terminals.
- Attach the sensor and pole covers.  
(Break the knockouts on the cover and pole cover to adapt to pole's diameter and configuration.)



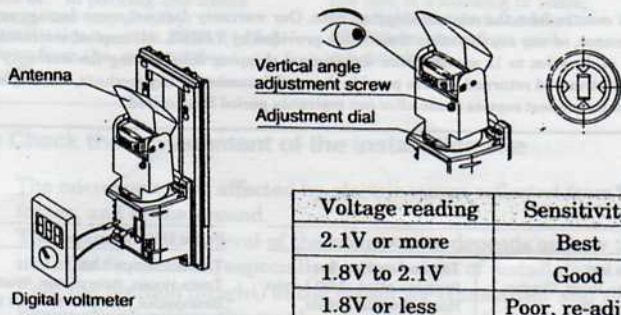
#### 5) Pole mounting back to back.

- Attach the two U brackets to the poles, one on top of the other, facing opposite directions.  
(See illustration.)



## 3 SET-UP OF FUNCTIONS AND BEAM ALIGNMENT

- Supply power with covers off.
- Look through the view finder on the transmitter unit and move it until the receiver unit is visible. Repeat the procedure on the receiver unit.
- Set the adjustment mode switch on the receiver to "adjustment mode". Connect the digital volt meter to the monitor jack and check the monitor output voltage (beam reception level). When the output voltage is low, adjust the installation height of the transmitter and receiver so that the output voltage will reach itttts highest level. (Make sure that the angle of the antenna does not change.)
- After adjustment, make sure that the adjustment switch is set to "Operation mode".

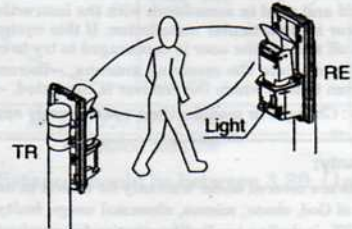


- After adjustment, set the adjustment mode switch to "Operation mode".

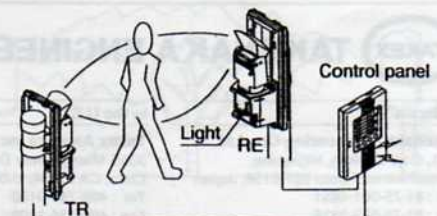
## 4 OPERATION CHECK

After the installation and angle adjustment are finished, test operation by performing a walking test through walk testing the beam. Two methods may be used.

#### 1) Check by alarm LED only.



#### 2) Check by both the alarm LED and control panel

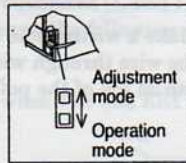




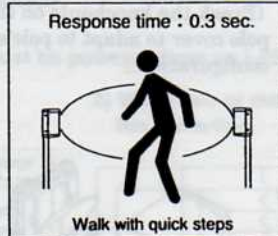
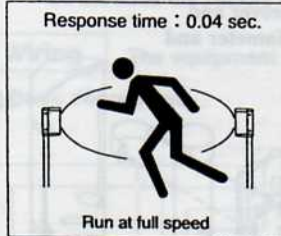
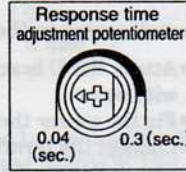
# 5 FUNCTIONS DESCRIPTION

## 1. Adjustment mode switch

With this switch, a speedy check of the beam reception level is possible. When aligning the beam, turn the switch to the "Adjustment mode".



## 2. Response time adjustment volume



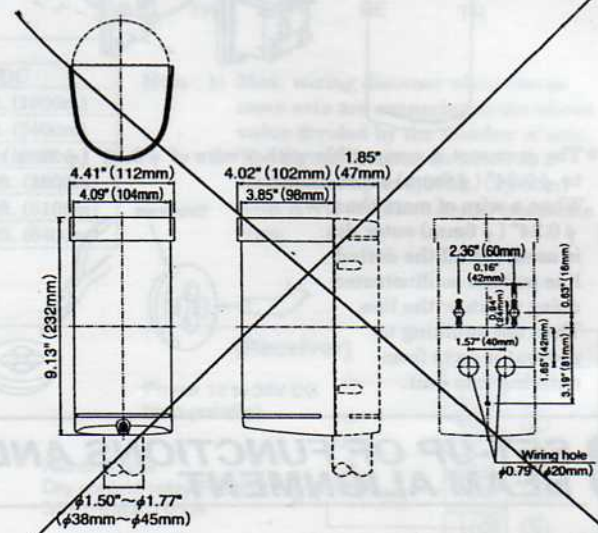
# 7 SPECIFICATION

Type	Microwave sensor
Model	MW-100A
Protection distance	16.5ft.(5m) to 330ft.(100m)
Max. arrival distance	Approx. 660ft. (200m)
Microwave	(L) 24.11GHz (H) 24.17GHz
Detection system	Microwave
Response time	0.04sec. to 0.3sec. (Variable using POT)
Alarm signal	Dry contact relay output 1C N.O. / N.C. COM. Contact action : Interruption time output Contact capacity : 30V (AC/DC) 0.5A or less
Supply voltage	12 to 30V DC
Power consumption	100mA • Transmitter : 50mA • Receiver : 50mA
Tamper signal	Dry contact output N.C. Contact capacity : 30V (AC/DC) 0.1A (Receiver only)
Alarm LED (Receiver)	Red LED Lighting at alarm
Transmission LED (Transmitter)	Green LED Lighting at signal transmission
Functions	Monitor output, Adjustment mode switch
Weight	Transmitter 930g Receiver 780g
Appearance	Wine red PC resin

# 6 TROUBLESHOOTING

Symptoms	Possible causes	Remedies
Transmitter LED does not light	1. No power supply 2. Bad wiring connection or broken wire, short	1. Turn on the power 2. Check wire
Receiver LED does not light when the beam is broken	1. No power supply 2. Bad wiring connection 3. Microwave is reflected off another object and sent into the receiver	1. Turn on the power 2. Check wire 3. Remove the object causing the reflection, or change the place for installation
Receiver LED continues to light (the does not stop)	1. No power supply to the transmitter 2. Angle adjustment of transmitter and receiver is not appropriate. 3. Obstacles between transmitter and receiver	1. Turn on the power on the transmitter 2. Readjust angle 3. Remove obstacles.
Intermittent alarm	1. Bad wiring connection 2. Change of supply voltage 3. Shading objects between the transmitter and receiver 4. A large electric noise source such as power machine is located near the transmitter and receiver 5. Installation height, installation site or angle adjustment is inappropriate	1. Check again 2. Stabilize supply voltage 3. Remove object the causing the shade 4. Change the place of installation 5. Readjust

# 8 EXTERNAL DIMENSIONS



# 9 SPECIAL NOTES

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

—Reorient or relocate the receiving antenna. —Increase the separation between the equipment and receiver. —Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. —Consult the dealer or an experienced radio / TV technician for help.

**WARNING :** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Limited warranty:

TAKEX products are covered under warranty for defects in material and workmanship for 12 months from the original shipping date. Our warranty does not cover damage or failure caused by Acts of God, abuse, misuse, abnormal usage, faulty installation, improper maintenance, or any repairs other than those provided by TAKEX. All implied warranties with respect to TAKEX, including implied warranties for merchantability for fitness, are limited in duration to 12 months from the original shipping date. During the warranty period, TAKEX will repair or replace, at its sole option, free of charge, any defective parts that are defective and returned. Please provide the model number of any products, the original date of shipment, and the nature of the difficulty being experienced. There will be charges rendered for product repairs made after our warranty period has expired.

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# EXTERNAL DIMENSIONS

