

# WR-300 SERIES

## Wireless Receivers



## Installation Instructions

### 1. INTRODUCTION

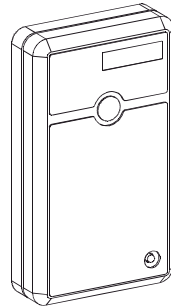
The WR-300 UHF receiver series is designed to operate with a wide range of wireless transmitters and passive infrared detectors manufactured by Visonic Ltd.

Each wireless transmitter compatible with the WR-300 series is equipped with an 8-position DIP switch, for selecting one of 256 possible SYSTEM codes (passwords). Each receiver is equipped with a similar 8-position DIP switch, which must be set to the same code as that of the transmitter.

In addition to the system code, transmitters are programmed to send out one of four CHANNEL codes. The various receivers provide from one to four outputs (see Section 2). Upon reception of the CHANNEL code, the receiver activates the corresponding output for as long as the code is being received.

When used with alarm control panels, the multiple-output receiver models allow flexible zoning of the remote transmitters - instant, delayed, fire, silent alarm etc.

The single output model - WR-300 has a 4-position jumper for CHANNEL selection. The jumper is set in the factory to activate the



on-board relay upon reception of the CHANNEL 1 code. However, the jumper can be mounted in other positions to determine which CHANNEL code will activate the relay (Para. 3.2 A).

Model WR-300A is equipped with a 4-position DIP switch instead of the jumper. This model is compatible with systems that use 12-bit codes. The 12-bit code (4096 combinations) is selected with the 8-position and 4-position DIP switches together (Para. 3.2 B).

Both multi-output models (WR-300/2B and WR-300/4B) provide an open-collector buzzer output for low battery supervision in companion transmitters with "low battery" reporting capability. The buzzer output of the receiver is activated whenever a transmitter sends out an automatic "low battery" alert signal (Para. 3.4).

A detector LED visible through a hole in the case indicates the level of the radio frequency energy detected by the receiver (Para. 3.3).

Although the standard receiver version requires a 12 VDC or AC power source, a "universal" version may be supplied that operates from 12 - 35 VDC or 12 - 30 VAC.

An important advantage of the WR-300 series is its modular construction. The motherboard accommodates the digital circuitry, the output relays and the terminal block. The Ultra-High Frequency (UHF) section is built into a separate module mounted on the motherboard.

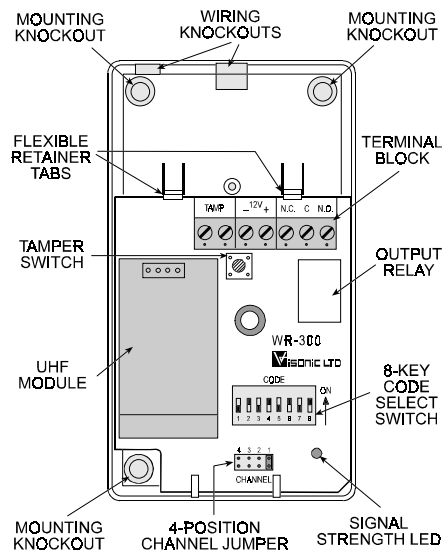


Figure 1. WR-300, Inside View

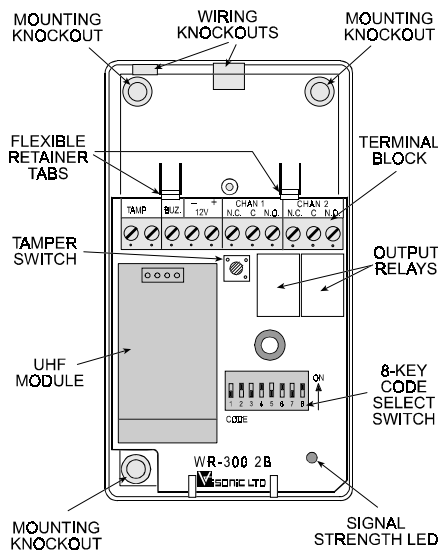


Figure 3. WR-300/2B, Inside View

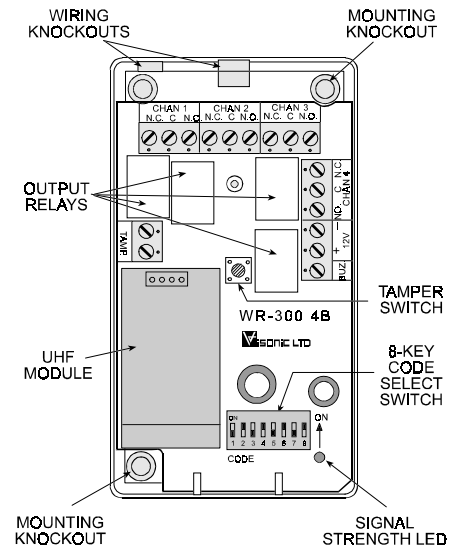


Figure 5. WR-300/4B, Inside

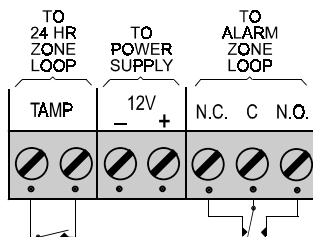


Figure 2. WR-300 Wiring

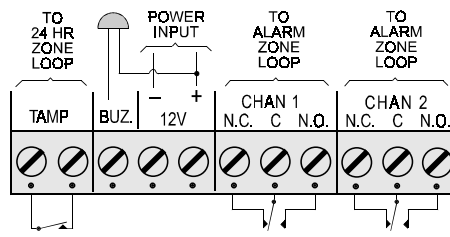


Figure 4. WR-300/2B Wiring

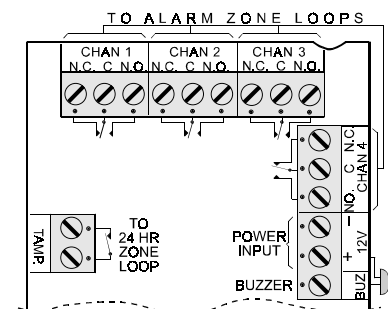


Figure 6. WR-300/4B Wiring

## 2. SPECIFICATIONS

**Receiver Type:** Super-regenerative

**Operating Frequencies:** Any one of 315, 404, 418 or 433.9 MHz, depending upon country of operation.

**System Code:** 8-bit digital word, 256 combinations, pulse width modulation.

**Channel Outputs:** N.C. and N.O. (Form 1C) relay contacts.

**Relay Contact Ratings:** 1A / 48 V AC/DC - resistive load

**Number of Outputs**

WR-300 & 300 A: Single output

WR-300/2B: Two outputs

WR-300/4B: Four outputs

**Power Input:**

Standard: 11 - 15 VDC or 11-14 VAC

"U"-suffix models (optional): 12 - 35 VDC or 12 - 30 VAC

**Current Consumption (@ 12VDC)**

WR-300: 6 mA standby, 40 mA max.

WR-300A: 6 mA standby 40 mA max.

WR-300/2B: 6 mA standby, 70 mA max.

WR-300/4B: 6 mA standby, 120 mA max.

**Operating Temperatures:** 0°C to 49°C (32°F to 120°F).

**Dimensions (H x W x D):** 110 x 63 x 25 mm (4-5/16 x 2-1/2 x 1 in.).

**Weight:**

WR-300 & 300A: 74 gr (2.6 oz)

WR-300/2B: 79 gr (2.8 oz)

WR-300/4B: 95 gr (3.3 oz)

**Color:** White

## 3. INSTALLATION

### 3.1 Mounting and Wiring

- Unpack the unit and save the nylon bag with the round plastic cap for later use (see Figure 10).
- Remove the screw that secures the front cover to the base.
- Punch out the two diagonally opposed mounting knockouts, and one of the wiring knockouts (see Figures 1, 3, 5).
- Select the highest possible mounting location. Locate receiver units at least 10 feet (3 m) apart.
- Position the receiver as shown in figure 1, 3 or 5, depending on the model, and let the short antenna wire dangle down. Use the base as a template to mark the mounting screw locations on the mounting surface.

**Note:** Avoid installing the receiver inside a metal enclosure or on a metal surface. If installation within a metal enclosure can't be avoided, let the antenna wire out through a hole and test the reception ability very carefully (Para. 3.3).

- Drill the mounting holes. Route all wires into the base through the wiring inlet and secure the unit to the mounting surface (use wall inserts if required).
- Connect the wires to the terminal block. Refer to figures 2, 4 or 6, depending on the model used. The type 1C output relays have changeover contacts rated at 1A / 48 Volts DC or AC. The BUZ terminal is suitable for connecting a 12VDC / 25 mA buzzer.

**CAUTION:** If your input is DC, make sure not to reverse the input polarity.

### 3.2 Code Selection

#### A. Model WR-300

The SYSTEM code selector consists of an 8-key DIP switch with levers marked from 1 to 8 (Fig. 7). Each lever can be set either ON or OFF to create unique digital code combinations (256 codes).



Figure 7. System Code Selector

The selected code combination must match the code selected on the companion transmitters. All wireless transmitters and PIR detectors used in the system must share the same digital code.

**CAUTION:** The code combination 2, 4, 5, 6, 7 ON and 1, 3, 8 OFF (Fig. 7) is a factory test code that should be avoided. Also do not select "easy" codes such as all keys ON, all keys OFF or alternating ON/OFF settings.

The WR-300 has a 4-position jumper that acts as a channel selector (Fig. 8).

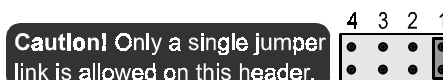


Figure 8. 4-Position Jumper

The jumper link is mounted in the factory across the two pins at position 1, to activate the on-board output relay upon reception of Channel 1 code. However, you may mount the jumper in positions 2, 3 and 4 to activate the relay upon reception of Channel 2, 3 and 4 codes, respectively.

#### B. Model WR-300A

The WR-300A is supplied with a slightly different electronic circuitry and a 4-position DIP switch instead of the 4-position jumper found in model WR-300 (see Fig. 9).

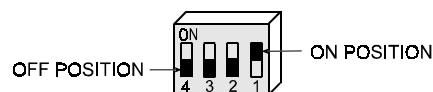


Figure 9. 4-Position DIP Switch

The 8- and 4-position DIP switches must be set ON and OFF to select a 12-bit system code (one of 4096 possible code combinations). The switch settings should match those selected on the transmitter's CODE and CHANNEL switches. As far as the WR-300A is concerned, there is no "channel" code, and the output relay is activated upon reception of the 12-bit system code.

#### C. Models WR-300/2B and WR-300/4B

The system code is selected exactly as described in Paragraph A above. Upon reception of a coded transmission, one (or more than one) of the output relays will be activated, depending on the CHANNEL code programmed by the installer or user of the wireless transmitter.

**Note:** The dual output WR-300/2B responds to Channel 1 and Channel 2 codes only.

### 3.3 Detector LED

A special detector LED serves as a signal strength indicator that monitors the RF energy detected by the receiver. The LED lights when the detected RF signal is above the minimum level required for reliable reception. Optimum reception condition is indicated when the LED lights steadily during transmission, without flickering.

If the LED flickers during transmission, try to improve reception by relocating the receiver and/or the transmitter.

### 3.4 Buzzer Output (BUZ)

The BUZ terminal is an open collector transistor output, activated by the "low battery" warning code, which is automatically transmitted by 9-Volt operated wire-less transmitters and PIR detectors. The low battery warning is transmitted once every 60 seconds when the battery voltage drops below 7.0 Volts. A buzzer

connected across the **BUZ** and **12 V (+)** terminals will therefore emit a short beep once every 60 seconds, until the transmitter "in trouble" is identified and the battery is replaced.

The "low battery" code may be manually generated by setting all four CHANNEL switch levers in the transmitter to OFF. Transmitting with all four channels OFF will cause the receiver's buzzer to beep.

For some applications, contact closure may be necessary in addition to or instead of the sound made by the buzzer. In such a case, the BUZ output may be used to energize a 12 Volt reed relay connected in parallel with or instead of the buzzer. The reed relay's coil resistance must be greater than 1000 ohms.

**CAUTION!** Do not connect a buzzer or a relay to the BUZ terminal when the receiver is operated from an AC power source.

### 3.5 Final Assembly and Testing

A. Carefully position the front cover hole over the LED. Secure the front cover with the screw and the cap (see Fig. 10).

B. Refer to the operating instructions of the transmitter(s) being used and test the receiver with each transmitter in the system for range and reliable reception (see also Section 4).

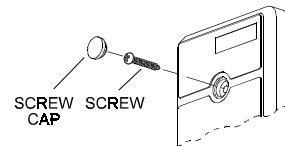


Figure 10. Front Cover Assembly

C. Verify activation of the correct output relay(s) at the receiver. If the transmitter sends **Channel 1** code, **Channel 1** relay should energize. **Channel 2** code should energize **Channel 2** relay and so on.

D. On one of the transmitters, set all four Channel switches to OFF. Make a short transmission and verify that the receiver's buzzer emits a short beep. When finished, return the transmitter's switches to their original settings.

## 4. MISCELLANEOUS COMMENTS

### 4.1 Product Limitations

Visonic Ltd. wireless systems are very reliable and are tested to high standards. However, due to their low transmitting power and limited range (required by FCC and other regulating authorities), there are some limitations to be considered:

- A. Receivers may be blocked by radio signals occurring on or near their operating frequencies, regardless of the code selected.
- B. A receiver can only respond to one transmitter signal at a time.
- C. Wireless equipment should be tested regularly to determine whether there are sources of interference and to protect against faults.
- D. The user is cautioned that changes or modifications to the unit, not expressly approved by Visonic Ltd., could void the user's FCC authority to operate the equipment.

**The 315 MHz model of this device complies with Part 15 of the FCC Rules and RSS-210 of Industry and Science Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this**

**device must except any interference received, including interference that may cause undesirable operation.**

### 4.2 Special Models

The following notes relate to the following U-suffix models:

- **WR-300/2BU** - two outputs receiver
- **WR-300/4BU** - four outputs receiver

The receivers listed above are designed for **12 to 26 VAC** or **12 to 30 VDC** input. When using these models, the following constraints should be considered carefully:

- A. The BUZ (buzzer) output in both models is unusable.
- B. If a particular application requires simultaneous energizing of 3 output relays (WR-300/4BU) - the pull-in duration must not exceed 20 seconds.
- C. If a particular application requires simultaneous energizing of 4 output relays (WR-300/4BU) - the pull-in duration must not exceed 10 seconds.

### WARRANTY

Visonic Ltd. and/or its subsidiaries and its affiliates ("the Manufacturer") warrants its products hereinafter referred to as "the Product" or "Products" to be in conformance with its own plans and specifications and to be free of defects in materials and workmanship under normal use and service for a period of twelve months from the date of shipment by the Manufacturer. The Manufacturer's obligations shall be limited within the warranty period, at its option, to repair or replace the product or any part thereof. The Manufacturer shall not be responsible for dismantling and/or reinstallation charges. To exercise the warranty the product must be returned to the Manufacturer freight prepaid and insured.

**This warranty does not apply in the following cases:** improper installation, misuse, failure to follow installation and operating instructions, alteration, abuse, accident or tampering, and repair by anyone other than the Manufacturer.

This warranty is exclusive and expressly in lieu of all other warranties, obligations or liabilities, whether written, oral, express or implied, including any warranty of merchantability or fitness for a particular purpose, or otherwise. In no case shall the Manufacturer be liable to anyone for any consequential or incidental damages for breach of this warranty or any other warranties whatsoever, as aforesaid.

This warranty shall not be modified, varied or extended, and the Manufacturer does not authorize any person to act on its behalf in the modification, variation or extension of this warranty. This warranty shall apply to the Product only. All products, accessories or attachments of others used in conjunction with the Product, including batteries, shall be covered solely by their own warranty, if any. The Manufacturer shall not be liable for any damage or loss whatsoever, whether directly, indirectly, incidentally, consequentially or otherwise, caused by the malfunction of the Product due to products, accessories, or attachments of others, including batteries, used in conjunction with the Products.

The Manufacturer does not represent that its Product may not be compromised and/or circumvented, or that the Product will prevent any death, personal and/or bodily injury and/or damage to property resulting from burglary, robbery, fire or otherwise, or that the Product will in all cases provide adequate warning or protection. User understands that a properly installed and maintained alarm may only reduce the risk of events such as burglary, robbery, and fire without warning, but it is not insurance or a guarantee that such will not occur or that there will be no death, personal damage and/or damage to property as a result.

**The Manufacturer shall have no liability for any death, personal and/or bodily injury and/or damage to property or other loss whether direct, indirect, incidental, consequential or otherwise, based on a claim that the Product failed to function.** However, if the Manufacturer is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, the Manufacturer's maximum liability shall not in any case exceed the purchase price of the Product, which shall be fixed as liquidated damages and not as a penalty, and shall be the complete and exclusive remedy against the Manufacturer.

**Warning:** The user should follow the installation and operation instructions and among other things test the Product and the whole system at least once a week. For various reasons, including, but not limited to, changes in environmental conditions, electric or electronic disruptions and tampering, the Product may not perform as expected. The user is advised to take all necessary precautions for his /her safety and the protection of his/her property.



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