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# PRODUCT INFORMATION BULLETIN

## AIR-EAGLE® SR/SR PLUS 2.4 GHz RF Signal Strength Tester MODEL 36-0000

### DESCRIPTION

The AIR-EAGLE SR/SR PLUS SIGNAL STRENGTH TESTER is a portable battery powered unit that allows you to test the strength and reliability of your Air-Eagle SR/SR PLUS 2.4GHz system. An LCD display provides a bar graph to give a display of relative signal strength and a display of total signal count, missed signals, and missed signal time.

Using the UP/DOWN and SET buttons will allow navigation of the LCD menu. Pressing SET when START is highlighted will start the signal counting process. When the first signal is received the TOTAL count will start to increment. It will continue to increment at a steady rate that matches the transmitter transmission time. If a signal is missed, the MISS counter will increment, and the TIME counter will increment if the maximum missed signal time has been exceeded. This will always display the longest time that signals were missed. Press SET when STOP is highlighted to stop the signal count and freeze the values.

### INSTALLATION

1. Install the 2 AA Lithium batteries that were provided.
2. Attach supplied antenna or coax from external high gain antenna to connector on right side of unit.
3. Turn on the power switch below the batteries. Turn the power off when not being used to conserve battery life.



Dimensions (with mounting plate) 6.3" L x 4.8" W x 2.3" H

### CONTROLS & INDICATORS

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| TOTAL      | Total number of signals. This increments when counting has STARTed and the first signal is received. It increments in sync with transmission speed, so it will increment even when a signal is missed                                                                                                                                                                                                                             |
| MISS       | Total number of missed signals. This increments when counting has STARTed and a signal wasn't received in the time that it should have been. You can get missed signal percentage by the formula: (miss/total) * 100                                                                                                                                                                                                              |
| TIME       | The longest period of missed signal time (in seconds). When signals are missed this will increment until signals are received again. The largest missed time value will always be shown. This is useful to determine if the receiver needs a longer relay safety delay time.                                                                                                                                                      |
| START/STOP | Use the UP/DOWN buttons to highlight START. Press SET to start counting signals. It will change to STOP when started. Press SET again to stop signal counting.                                                                                                                                                                                                                                                                    |
| RESET      | Use the UP/DOWN buttons to highlight RESET. Press SET to reset the signal and time counters                                                                                                                                                                                                                                                                                                                                       |
| FRQ        | This is used to change the frequency of the tester to match the transmitter frequency. Use the UP/DOWN buttons to highlight FRQ. Press SET and the number will highlight. Use the UP/DOWN buttons to change the number from 1-7. Press SET to set the frequency. The number will blink and FRQ will be highlighted again. Frequency settings will be held when power is turned off.                                               |
| BAT        | Shows battery level as GOOD or LOW. When battery is LOW then the backlight of the screen will turn RED. The LOW level is set for Lithium batteries.. Alkaline batteries can be used but NOTE that they will show as LOW battery long before they're actually dead. The radio WILL NOT run below 2.7 volts where alkaline's still have a good amount of lifetime left. For this reason it is recommended to use Lithium batteries. |

## INTERPRETING DISPLAY RESULTS

The bar graph on the display shows the relative signal strength being received. All the way full is maximum and all the way clear means no signal is being received. The signal strength can vary greatly due to environmental factors or interference from other RF signals.

A strong level on the meter that frequently drops out and comes back could be an indication of strong nearby interference. Try moving to a new frequency and see if the dropouts still occur. With spread spectrum radios such as these, moving from frequency 1 to 2 doesn't move it very far in the band. It mostly just changes the hopping pattern in the same area. Setting the frequency from 1 to 7 or 8 will move the hopping pattern up further in the band and can help avoid local interference.

If you're at a pretty close range to the transmitter yet have a low signal strength this could be an indication of something blocking the line-of-sight of the antennas or something such as a faulty antenna cable, broken antenna or a weak transmitter module. Situations like getting water in the antenna connector could cause this also.

Low signal where the bar disappears frequently is a sign of being on the fringe of the reception area. Either get closer or try to get the antennas higher up. Antennas close to the ground lose a lot of signal to the ground.

Use the running TOTAL/MISS counter to determine the frequency of missed packets or length of drop out time. Most BWI Eagle receivers have a relay safety delay timer of 5 seconds. This means that if the signal holding the relay on disappears for 5 seconds then the relay will turn off. While running the signal counter you should want your total missed signal time to be below this, otherwise you'll get relay chatter when the relay drops then comes back on when it gets a signal again.

The reasoning for the safety delay timer is so that if an OFF command is transmitted and missed then the relay will shut off in due time. The off command is only sent for a short period so if interference blocks the signal it won't turn off the relay.

In applications where this timing is not critical such as well pump systems, we can extend the safety delay timer to a much longer period. The 'TIME' reading on the display can give you a good idea of how long this time needs to be. At the worst case if the transmitter sends a signal to turn the pump off and it's missed, the pump will stay on for the safety delay period then turn off.

In situations where relays need to respond immediately, the transmitter and receiver will need to be placed so that the missed packets are at a minimum.

# AIR-EAGLE® SR/SR PLUS

## 2.4 GHz RF Signal Strength Tester

### MODEL 36-0000

## SPECIFICATIONS

|                             |                                                                      |
|-----------------------------|----------------------------------------------------------------------|
| Power Requirements          | 3.0 VDC                                                              |
| Battery Type                | (2) 1.5V lithium or alkaline each, size AA, to equal 3.0VDC nominal. |
| Battery Life (Active Usage) | Approximately 3 months                                               |
| Battery Life (Idle)         | Up to 1 Year                                                         |
| Transmitter Channels        | 7 Independent Network Frequencies                                    |
| Enclosure                   | Polycarbonate, IP66 (NEMA 4)                                         |
| Operating Temperature       | -40° F to +185° F                                                    |

## APPROVALS

|                     |               |
|---------------------|---------------|
| United States (FCC) | OUR-XBEEPRO   |
| Canada (IC)         | 4214A-XBEEPRO |
| Europe (CE)         | ETSI          |

## LIMITED WARRANTY STATEMENT

BWI Eagle Inc. warrants the Air-Eagle Remote Control System, if properly used and installed, will be free from defects in material and workmanship for a period of 1 year after date of purchase. Said warranty to include the repair or replacement of defective equipment. This warranty does not cover damage due to external causes, including accident, problems with electrical power, usage not in accordance with product instructions, misuse, neglect, alteration, repair, improper installation, or improper testing. This limited warranty, and any implied warranties that may exist under state law, apply only to the original purchaser of the equipment, and last only for as long as such purchaser continues to own the equipment. This warranty replaces all other warranties, express or implied including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose. BWI Eagle makes no express warranties beyond those stated here. BWI disclaims without limitation, implied warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not allow the exclusion of implied warranties so this limitation may not apply to you. To obtain warranty service, contact BWI Eagle for a return material authorization. When returning equipment to BWI Eagle, the customer assumes the risk of damage or loss during shipping and is responsible for the shipping costs incurred.

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