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# PRODUCT INFORMATION BULLETIN

## AIR-EAGLE® SR 2.4 GHz RF Receiver MODEL 38UL-2000-DC

### DESCRIPTION

The AIR-EAGLE SR is a UL/CSA approved RF system designed for short to medium range wireless remote control of electrical apparatus in a variety of industrial applications. Systems can consist of any number of receivers and handheld or contact input transmitters working together. This receiver is equipped with 4 independent relays that can switch 5 amps @ 120VAC or 30VDC. The relays are user programmable for momentary or toggle/latching operation and can be directly interfaced with the customer's equipment or P.L.C. Eight user selectable frequencies allow multiple systems to be used in the same area. Capable of receiving remote signals transmitted from up to 100 feet away (with the SR transmitter) or up to 600 feet away (with the SR PLUS transmitter), the Air-Eagle SR Receiver utilizes spread-spectrum technology and provides the utmost security and reliability even in the noisiest RF environments.

**Please read through this document in its entirety before proceeding with installation.**

### INSTALLATION

DISCONNECT DC Power from all equipment before installation.

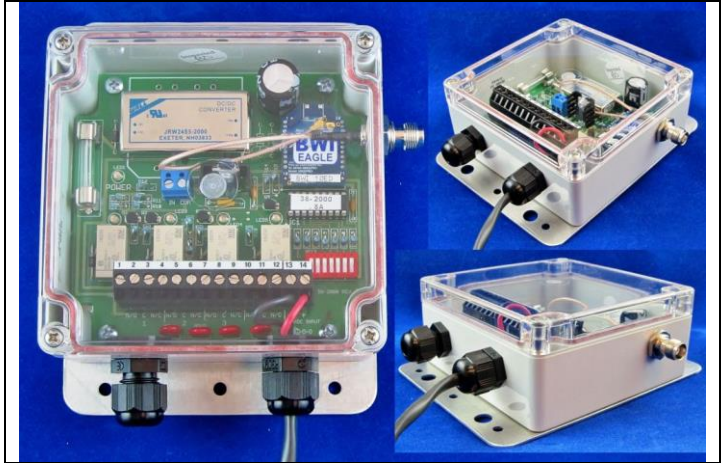
1. Mount the control unit in a suitable location that allows the user to easily remove the lid of the enclosure for wiring access. When possible select a location that is not directly beside high energy transformers or large inductive relay housings. It is recommended to allow for a minimum of 2.0" clearance on all sides of the unit's housing & mounting plate. The power and control wiring exiting thru the provided cord grips should have ample room to bend without excessive stress. It is also important that any coax cable connected to the TNC connector have room to bend without "kinking".
2. Install relay wiring to terminal strip (TER1).
3. Attach supplied rubber duck antenna to TNC connector on the right side of the unit.
4. Connect DC power to the proper terminals in your control circuit.

Note 1: (6) #10 thru holes & (4) 1/4-20 thru holes are provided on the mounted plate to secure the unit)

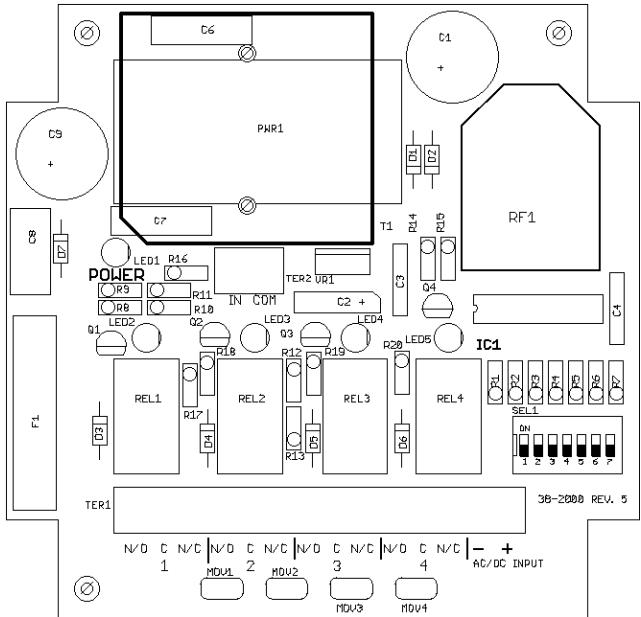
Note 2: The recommended power/control wire sizes to the terminal strip ranges from 24 AWG (0.205mm<sup>2</sup>) (min) to 18 AWG (0.823mm<sup>2</sup>) (max).

### TERMINAL STRIP WIRING

1	N/O Relay #1	7	N/O Relay #3	13	(-) 10 - 24 VDC
2	C Relay #1	8	C Relay #3	14	(+) 10 - 24 VDC
3	N/C Relay #1	9	N/C Relay #3		
4	N/O Relay #2	10	N/O Relay #4		
5	C Relay #2	11	C Relay #4		
6	N/C Relay #2	12	N/C Relay #4		



### CONTROLS AND INDICATORS



POWER LED1	Green LED. Illuminates when power is on
LED2	Illuminated when relay #1 is energized
LED3	Illuminated when relay #2 is energized
LED4	Illuminated when relay #3 is energized
LED5	Illuminated when relay #4 is energized
RF1	RF module that receives data from the remote transmitter
REL1 thru REL4	Four SPDT output control relays
SEL1	Seven dip switches for selecting relay options and operating frequency

# AIR-EAGLE® SR

## 2.4 GHz RF Receiver

### MODEL 38UL-2000-DC

## RELAY MODES OF OPERATION

### Auto Reset (Maintained Momentary)

When signal is received from an authorized transmitter, the relay will energize. The relay will maintain the energized state as long as the transmitter is sending the signal. The relay de-energizes when the transmitted signal stops.

### Toggle Reset (Toggle Latch)

When a signal is received from an authorized transmitter, the relay will energize and latch. The relay stays energized until the same signal is received again, at which time it unlatches and de-energizes.

### Latching Reset (True Latch)

When a signal is received from an authorized transmitter, the relay will energize and latch. The relay stays energized until a different signal is received from the transmitter, at which time it unlatches and de-energizes. i.e. – Transmission from Input 1 of authorized transmitter energizes and latches relay 1. Transmission from Input 2 of an authorized transmitter de-energizes relay 1.

## RELAY & FREQUENCY SET-UP

The unit is shipped from the factory with SEL1 switches in the open positions. All four relays will operate as maintained momentary and unit is receiving commands on frequency one. If you wish to change these default settings, follow the instructions on the table below.

- 1) Remove power from unit.
- 2) Remove top cover.
- 3) Select desired relay operation and/or network frequency using table below.
- 4) Reattach cover and apply power.
- 5) Programming is now complete.

### RELAY CONFIGURATION

SEL1 SWITCH NUMBER	OPEN	CLOSED
SW1	Relay #1 maintained momentary (default)	Relay #1 toggle/latch
SW2	Relay #2 maintained momentary (default)	Relay #2 toggle/latch
SW3	Relay #3 maintained momentary (default)	Relay #3 toggle/latch
SW4	Relay #4 maintained momentary (default)	Relay #4 toggle/latch

### FREQUENCY SET-UP

SEL1 (SW5-7)	Network Frequency	SW5	SW6	SW7
	1 (default)	OPEN	OPEN	OPEN
2	CLOSED	OPEN	OPEN	
3	OPEN	CLOSED	OPEN	
4	CLOSED	CLOSED	OPEN	
5	OPEN	OPEN	CLOSED	
6	CLOSED	OPEN	CLOSED	
7	OPEN	CLOSED	CLOSED	
8	CLOSED	CLOSED	CLOSED	

## UL SPECIFICATIONS & CLASSIFICATIONS

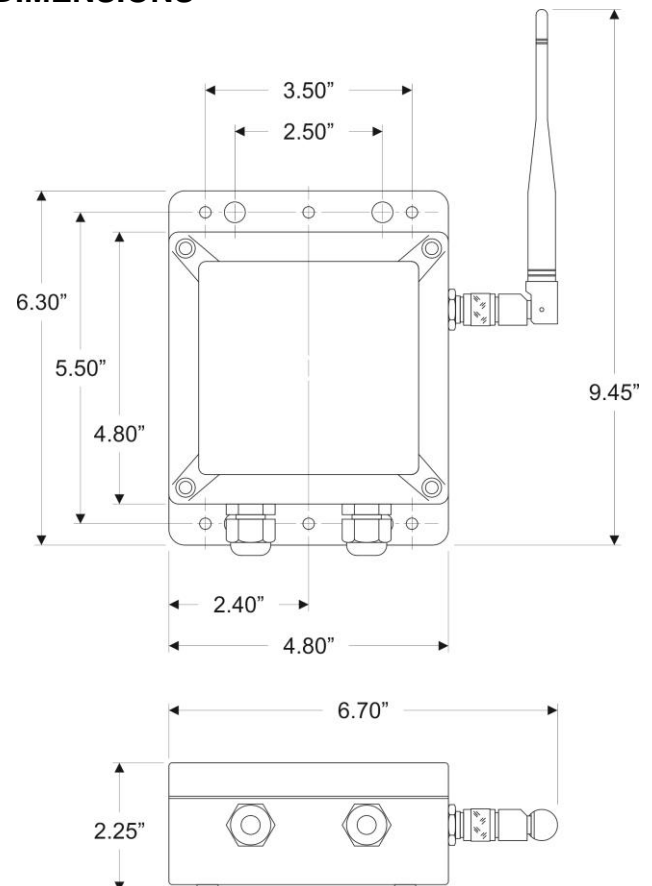
### SPECIFICATIONS

DC Input	10 – 24 VDC @ 10 Watts
Relay Contacts	SPDT 5 amp @ 120VAC or 30VDC
Fuse Protected	1 amp
Receiver Frequency	2.4 GHz Spread Spectrum
Receiver Range – Dependent upon transmitter – see below:	
Using 38 Series TX	Approximately 100 feet
Using 36 Series TX	Approximately 600 feet
Receiver Channels	Eight independent network frequencies
Operating Temperature	-10° C to +55° C
Altitude	Under 2000 meters
Enclosure	Polycarbonate, IP66 Approved
Weight	Approx 2 lbs.

### CLASSIFICATIONS

Automatic Control and Electrically Operated Control
Incorporated Control and an Independently Mounted Control
Type 1.C Action; Micro-Interruption
PTI of Materials Used for Insulation: Material Group IIIb
Electrical Shock Risk: Class II Control
Period of Electrical Stress Across Insulating Parts Supporting Live Parts: Long Period
Pollution Degree 2
Number of Cycles of Activation: 30,000 (Relay)

## DIMENSIONS



# AIR-EAGLE® SR

2.4 GHz RF Receiver

**MODEL 38UL-2000-DC**

## APPROVALS

UL/CSA Approved	
United States (FCC)	OUR-XBEEPRO
Canada (IC)	4214A-XBEEPRO
Europe (CE)	ETSI

## REPLACEMENT PARTS & ACCESSORIES

PC Board (Main)	38UL-2002-DC
Standard Antenna (Included):	
2.4GHz TNC Portable Antenna	49-1201
Optional Antennas and Accessories – Used to increase range in both non line of sight and line of sight applications. - Contact BWI Eagle for recommendations	
2.4GHz Thru-Hole Mount Mobile Antenna	49-2201
2.4GHz Magnetic Mount Mobile Antenna	49-2202
2.4GHz Omni Directional Antenna	49-3201
2.4GHz 13dB Yagi Antenna	49-3202
Flex Coax Cable w/Connectors – Connects external antenna(s) to base unit(s).	49-4000-XX (XX = # of Feet)
2 Ft. Bulkhead Assembly (Used when mounting unit inside another enclosure)	49-5004-2-ISO
* = Line of Sight	

## REPAIR STATEMENT

**NO USER SERVICEABLE PARTS! RETURN TO THE MANUFACTURER FOR SERVICE.**

## 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.

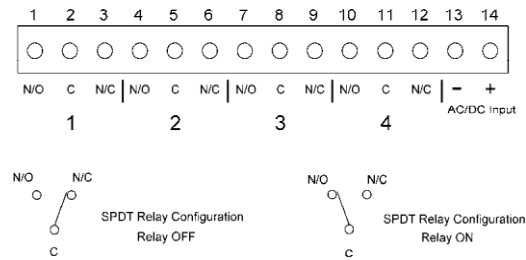
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# Relay Output Wiring

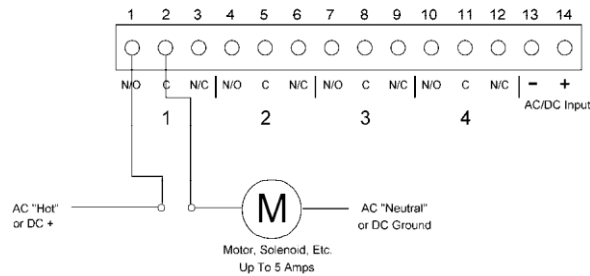
Receiver outputs are dry relay contacts. They are like an SPDT switch. Figure 1 shows that when the relay is off, the N/C (normally closed) contact is shorted to C (common). When the relay is energized the N/O (normally open) contact is shorted to C. The terminology "Normally" refers to the relay in its de-energized (off) state.



**Figure 1**

For loads up to 5 Amps you can wire directly to the internal relays as in Figure 2. Wiring to the N/O contact will cause the load to turn on when the relay turns on. Wiring to the N/C contact will have the opposite effect. The load will be on when the relay is off. AC or DC voltages can be switched through the relay.

## Wiring directly to internal relay



**Figure 2**

For loads over 5 amps an external high current relay should be used. Figure 3 shows how to turn on the relay using the lower current internal relay of the receiver. Again, an AC or DC relay can be controlled in this fashion.

## Wiring an external AC or DC Relay

