

AIR-EAGLE SR PLUS

38-2000-VBR-AC

2.4 GHz RF Receiver



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Product Rev: 10

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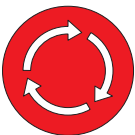
38-2000-VBR-AC

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.

SIGNAL RANGE

Max range statements are estimates based on a clear line of sight with few interferences. Actual range will vary based on transmitting power, orientation of transmitter and receiver, height of transmitting and receiving antennas, weather conditions, electronic interference, terrain, and physical obstacles, including but not limited to; walls, building structures, trees (foliage), metal objects, and landscape (hills, mountains).



WIRELESS STOP, ASTOP, and E-STOP SYSTEMS

Wireless E-STOP systems should never be considered a primary life-saving device. At least one hard-wired switch must be available in the event the wireless system is not operational. Failure to comply may result in serious injury or death to personnel and damage to equipment.

Wireless STOP and ASTOP transmitters are not failsafe emergency stop controls. They are NOT to be used as a life-saving device. They are designed for wireless control of equipment or vehicle remote operation. Failure to use as intended may result in serious injury or death to personnel and damage to equipment.



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INTRODUCTION

The Air-Eagle SR Plus is an 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 to create a short to medium range radio frequency system that operates hazardous or hard-to-reach equipment from safe, convenient locations.

Eight user selectable frequencies allow multiple systems to be used in the same area without interference.

This receiver is equipped with four 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. It is capable of receiving remote signals from an Air-Eagle SR Plus transmitter up to 600 feet away. Longer ranges can be achieved with external antennas (See ACCESSORIES section). The Air-Eagle SR Plus receiver utilizes spread-spectrum technology and provides the utmost in security and reliability.

Receiver model 38-2000-VBR-AC is designed to work with Air-Eagle SR Plus "VBR" transmitters. This receiver features a confirmation signal that is sent back to the transmitter after receiving a command. The signal causes the transmitter to vibrate, confirming the transmission was received.

INSTALLATION

1. **DISCONNECT** power from all equipment before proceeding with installation.
2. Mount the receiver in a convenient location.
3. Install relay control wiring to the terminal strip.
4. Attach rubber duck antenna or coax from external antenna to connector on side of enclosure.
5. Connect supplied power input cable to external power source.

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TERMINAL STRIP WIRING

Terminal 1	100-250 VAC Power Input	
Terminal 2	100-250 VAC Power Input	
Terminal 3	CH1 Dry Contact Input (Common)	Not used on this model
Terminal 4	CH1 Dry Contact Input	
Terminal 5	CH2 Dry Contact Input (Common)	
Terminal 6	CH2 Dry Contact Input	
Terminal 7	N/O Relay 1	
Terminal 8	C Relay 1	
Terminal 9	N/C Relay 1	
Terminal 10	N/O Relay 2	
Terminal 11	C Relay 2	
Terminal 12	N/C Relay 2	
Terminal 13	N/O Relay 3	
Terminal 14	C Relay 3	
Terminal 15	N/C Relay 3	
Terminal 16	N/O Relay 4	
Terminal 17	C Relay 4	
Terminal 18	N/C Relay 4	

RELAY OPERATION

Relays energize and de-energize based on commands received from the transmitter. See below for relay mode configuration for this receiver.

Transmitter Button Pressed or Input Activated	Receiver Relay Action
1	Relay 1 Energizes, Maintained Momentary
2	Relay 2 Energizes, Maintained Momentary
3	Relay 3 Energizes, Maintained Momentary
4	Relay 4 Energizes, Maintained Momentary

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RELAY & FREQUENCY SETUP

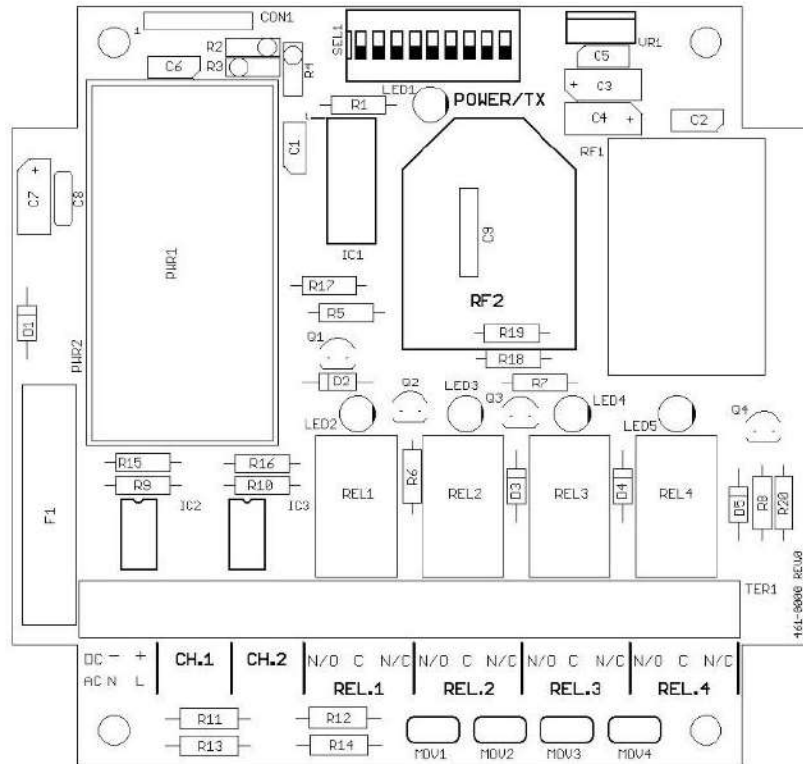
The unit is shipped from the factory with SEL1 switches in the open positions. All four relays will operate as maintained momentary and unit is receiving commands on frequency 1. To change default settings, follow the instructions below:

1. ***IMPORTANT***
Disconnect power from unit.
2. Remove top cover.
3. Select desired relay operation and/or frequency using the table.
4. Reattach cover.
5. Reconnect power to unit.
6. Programming is complete.

RELAY CONFIGURATION			
SEL1 SW#	OPEN (default)	CLOSED	
SW1	Relay #1 momentary	Relay #1 toggle/latch	
SW2	Relay #2 momentary	Relay #2 toggle/latch	
SW3	Relay #3 momentary	Relay #3 toggle/latch	
SW4	Relay #4 momentary	Relay #4 toggle/latch	
<u>Maintained Momentary</u> – Relay mimics button or input – when pressed or closed, relay will be energized; when released, relay de-energizes. <u>Toggle Latch</u> – Relay changes and holds its state each time the corresponding button or input is pressed or closed.			
FREQUENCY SETUP			
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
Note – SW8 & SW9 not used on this model			

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CONTROLS & INDICATORS



POWER/TX LED1	Dual color LED illuminates red while unit is booting up, changes to green when boot-up is successful and unit is ready to operate. If this LED fails to turn green, power unit off for 15-20 seconds, then reapply power.
LED2	Illuminates green while relay 1 is energized
LED3	Illuminates green while relay 2 is energized
LED4	Illuminates green while relay 3 is energized
LED5	Illuminates green while relay 4 is energized
REL1 – REL4	Four SPDT output control relays
RF1	RF Module that transmits/receives data

APPROVALS

United States (FCC)	MCQ-XBEE3
Canada (IC)	1846A-XBEE3
Europe (CE)	ETSI
Australia	RCM
Brazil	ANATEL 06329-18-01209

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SPECIFICATIONS

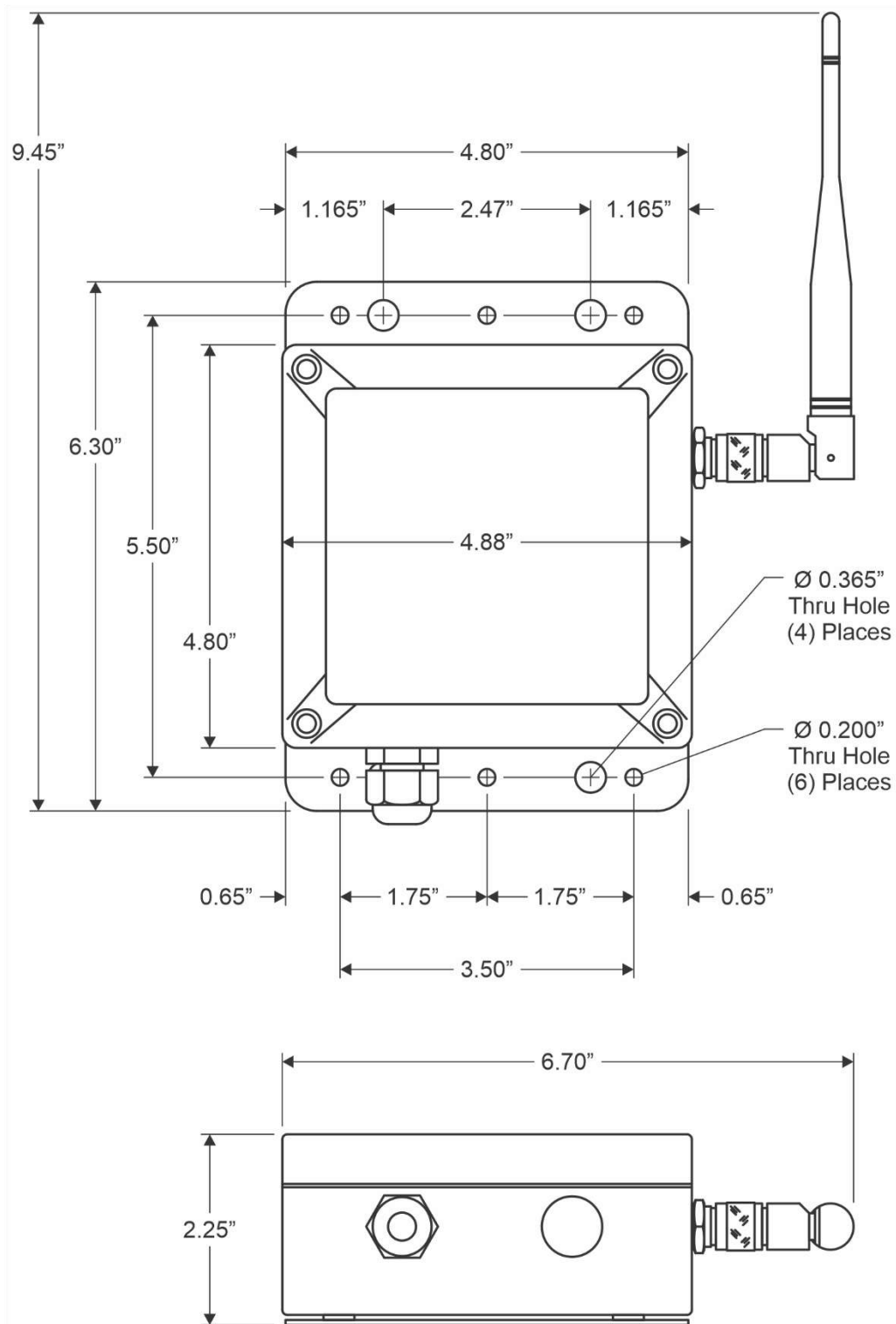
Power Supply	100-250 VAC, 5 W, 50/60 Hz
Relay Contacts	SPDT 5 amp @ 120VAC or 30VDC per channel
Fuse Protected	2 amp
Receiver Frequency	2.4 GHz Spread Spectrum
Receiver Range	Up to 600 feet *
RF Networks	Eight Independent Network Frequencies
Operating Temperature	-40° F to +185° F
Enclosure	Polycarbonate, IP66 (NEMA 4)
*Note: Max range statements are estimates based on a clear line of sight with few interferences. Actual range will vary based on transmitting power, orientation of transmitter and receiver, height of transmitting and receiving antennas, weather conditions, electronic interference, terrain, and physical obstacles, including but not limited to; walls, building structures, trees (foliage), metal objects, and landscape (hills, mountains).	

ACCESSORIES

STANDARD ANTENNA (INCLUDED)	
2.4GHz TNC Portable "Rubber Duck" Antenna	49-1201
MOBILE/BASE ANTENNAS (OPTIONAL) Used to help achieve max range in non-line-of-sight and line-of-sight applications. Contact BWI Eagle for recommendations.	
2.4GHz Thru-Hole/Bracket Mount Mobile Antenna	49-2201
2.4GHz Magnet Mount Mobile Antenna	49-2202
2.4GHz Omni Directional Base Antenna	49-3201
2.4GHz Yagi Directional Base Antenna	49-3202
HIGH QUALITY COAX CABLE Used to connect external antennas to control unit.	
Flex Coax Cable w/Connectors (Available in 5', 15', 25', 30', 40', 60', 80', and 100' lengths)	49-4000-XX (XX = length in feet)
BULKHEAD EXTENSION Used to provide an external antenna connection when mounting control unit inside another enclosure.	
TNC Male to TNC Bulkhead Cable Assembly (Available in 2', 4', and 7' lengths)	49-5004-X-ISO (X = length in feet)

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DIMENSIONS

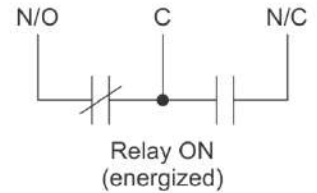
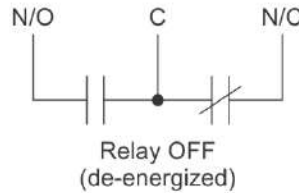




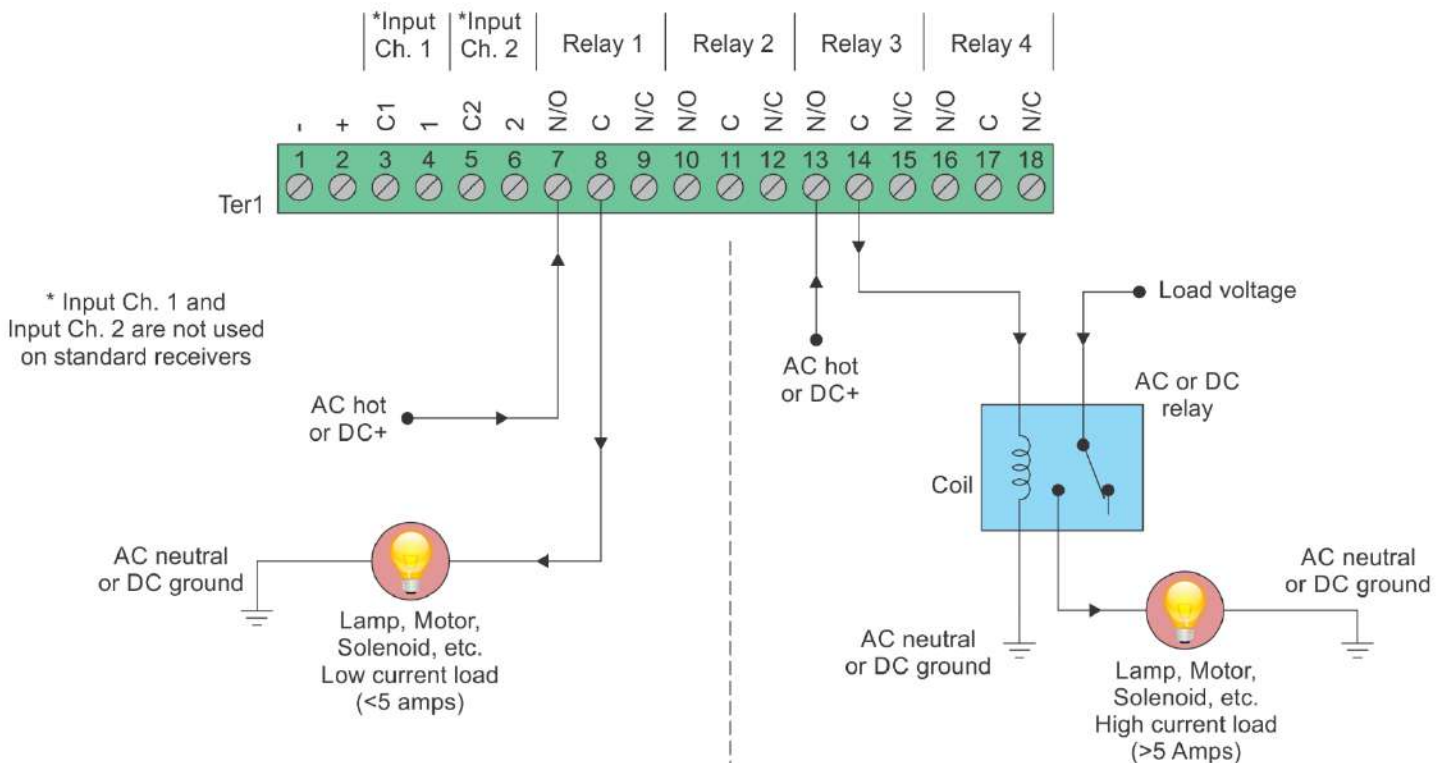
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RELAY OUTPUT WIRING 4-Relay Receiver

Receiver outputs are dry relay contacts, like an SPDT switch. When the relay is in a de-energized state, the N/C (normally closed) contact is connected to C (common). When the relay is energized the N/O (normally open) contact is connected to C (common).



Normally Open Application with Externally Supplied Voltage



Internal Relay - Loads Less Than 5 Amps

Loads up to 5 Amps may be wired directly to the internal relays. Wiring to the N/O contact will cause the load to turn on when the relay is energized (the load is on when the relay is on). Wiring to the N/C contact will cause the load to turn on when the relay is de-energized (the load is on when the relay is off). AC or DC voltages can be switched through the relay.

External Relay - Loads Over 5 Amps

Loads over 5 Amps must use an external high current relay. Diagram shows how to turn on the relay using the lower current internal relay of the receiver. AC or DC voltages can be switched through the relay. Note: A protection diode for DC coils or an MOV for AC coils is recommended to reduce inductive EMI noise.

Wiring configurations shown here are examples. The wiring for your application may differ.
Call BWI Eagle for assistance or consult an electrician.