# BR-1001
# User Manual

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## Important Safety Instructions

1. Carefully read all of the instructions provided and save them for later use. Read all warnings and instructions marked on the BR-1001.

2. Do not place the BR-1001 on an unstable stand or surface as it may fall resulting in serious damage.

3. The radar antenna should be handled with great care at all time to avoid damaging the antenna radome. Radome damage can result in performance reduction.

4. The BR-1001 must be operated from a 115Vac 60Hz power source for the North America model, or from a 230Vac 50Hz power source for the European model. The equipment is factory set for either 115Vac or 230Vac, as marked on the equipment. Ensure that the supply voltage available at the installation site meets the factory set voltage range marking, as provided on the equipment.

5. The BR-1001 power cord is equipped with a three-prong grounding plug that will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified person to replace the obsolete outlet. Do not tamper with the grounding prong to force fit into the outlet.

6. Do not allow any objects to rest on the power cord or place the BR-1001 where the power cord will be trampled on.

7. If an extension cord is used with the BR-1001, make sure that the total ampere ratings of the devices plugged into the extension cord do not exceed the extension cord ampere rating.

8. Do NOT plug in, turn on or attempt to operate an obviously damaged unit.

9. **Warning: No operator serviceable parts inside the BR-1001 radar unit. Please refer servicing to service qualified personnel.**

## 1. General

The BR-1001 radar can be used to measure the radial velocity of any moving object located in the radar beam coverage. The output of the radar is an analog signal with a frequency and amplitude proportional to the radial velocity and distance of the moving object.

## 2. Microwave Safety Warning

**Based on limits specified by the Federal Communication Commission (FCC) on Radio Frequency (RF) emissions in a general population environment, continued exposure to radiation should be avoided within 2.0 meter in front of the radar. Radiation levels outside this region fall within regulations of 1 mW/cm$^2$ and are not considered safety hazards. When setting up the antenna, special care should be taken to avoid situations where the antenna radiates towards individuals. The antenna should be positioned such that bystanders are located behind the antenna. During antenna setup, the antenna power cord should be unplugged to avoid accidental hazardous exposures to radiations. Always turn the antenna transmitter off during periods of inactivity. Direct visual contact with the radar when transmitting should be avoided at all times.**

## 3. Specifications

| Description | Specification |
|---|---|
| Power Requirement | 115Vac 60Hz 1.0 Amps, or 230Vac 50Hz 0.5 Amps (factory set) |
| Nominal Frequency | 10.500 GHz |
| Nominal Transmitting Power | 2.0 W – 0.2 W, selectable |
| Antenna Gain | 23 dBi |
| Transmitter Stability | ±15 ppm |
| Beamwidth | 9° x 12° |
| Dimension (without yoke) | 19.50” x 10.75” x 5.00” |

## 4. Installation

The BR-1001 is mounted on a yoke. The yoke can be mounted with an adapter on a Velbon Carmagne 830 or 840 tripods or equivalent. The yoke provides the flexibility for radar alignment in both azimuth and elevation.

## 5. Operation

The BR-1001 is powered on 115Vac 60Hz for the U.S. model, or 230Vac 50Hz for the European model. The operation line voltage is factory set. A power cord is provided for connection in

standard power outlet. The radar is interfaced to a Doppler processor a single four-wire cable equipped with military connectors. This cable is used to carry out the radar Doppler signal to the processing unit and the antenna transmission control. You should connect your radar cable from this connector to the appropriate radar input on your processing unit.

The radar head has an override transmitter control switch that can be used to activate the transmitter locally at the antenna.

In addition, the radar has a transmitter power control switch that can be used to select between low or high output power. At the low setting, the transmitter output power is 0.2 Watt and at the high setting, the output is 2.0 Watts.

The BR-1001 has three LED indicators, one green for the main power, one red for the transmitter on/off status and one red for the transmitter output power selection (off for low and on for high).

Also, the BR-1001 has a provision for connecting a 12 VDC (2 amperes maximum) warning device. The warning device is automatically enabled when the radar transmitter is switched on. This safety feature is useful to warn bystanders when the radar is radiating. The warning device is not mandatory and is therefore not provided as a standard equipment with the radar. Depending on the environment in which the radar is going to be used, it is the responsibility of the operator to install such device to provide additional safety for the personnel.

## 6. Maintenance

The BR-1001 radar does not require much maintenance. Attention should however be paid to a few points:

- Keep the connectors clean from dirt and moisture to avoid corrosion and bad connections.
- Now and then wipe the radar enclosure and antenna panels with a soft and wet cloth.
- The radar radiating elements are protected by a plastic radome. Special attention should be paid when handling the radar antenna to avoid damaging the radome as it could result in performance degradation.

The radar fuses are located inside the radar unit. To replace them, refer the radar system to qualified personnel.


Warning: No operator serviceable parts inside the radar unit. Please refer servicing to service qualified personnel

## 7. Power Connector Specification

Connector type: Amphenol T3110-000

| Pin | Description |
|---|---|
| 1 | AC Neutral |
| 2 | 115/230Vac (factory set) |
| 3 | n/c |
| 4 | Protective ground |

## 8. Antenna Connector Specification

Connector type: ITT CANNON MS3124E16-8P

| Pin | Description |
|---|---|
| A | Not Connected |
| B | Not Connected |
| C | Not Connected |
| D | Remote Make for Antenna Transmitter Control (+ 5 Vdc Output, 1.5kOhm current limiting resistor) |
| E | Make return |
| F | Doppler Signal + (5 Vpp max.) |
| G | Doppler Signal - (5 Vpp max.) |
| H | Ground |

The processor does the remote activation of the transmitter by short circuiting pins D and E.

## 9. Antenna Warning Device Connector Specification

Connector type: ITT CANNON MS3124E12-3S

| Pin | Description |
|---|---|
| A | 12 Vdc, 2 amperes maximum (fuse protected) |
| B | Not Connected |
| C | Ground |

## 10. Antenna Optional I/O Connector Specification

Connector type: ITT CANNON MS3124E10-6SW

| Pin | Description |
|---|---|
| A | Not Connected |
| B | Not Connected |
| C | Not Connected |
| D | Not Connected |

| | |
|---|---|
| E | Not Connected |
| F | Not Connected |

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