

Quick Start Guide

Radar-Based Sensors for Detection and Measurement of Moving and Stationary Targets. Patent pending.

This guide is designed to help you set up and install the Q90R2 R-GAGE Sensor. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Product Manual at www.bannerengineering.com. Search for part number 240869 to view the Product Manual. Use of this document assumes familiarity with pertinent industry standards and practices.



WARNING:

- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.



WARNING:

- **N'utilisez pas ce dispositif pour la protection du personnel.**
- L'utilisation de ce dispositif pour la protection du personnel pourrait entraîner des blessures graves ou mortelles.
- Ce dispositif n'est pas équipé du circuit redondant d'autodiagnostic nécessaire pour être utilisé dans des applications de protection du personnel. Une panne ou un dysfonctionnement du dispositif peut entraîner l'activation ou la désactivation de la sortie.



WARNING:

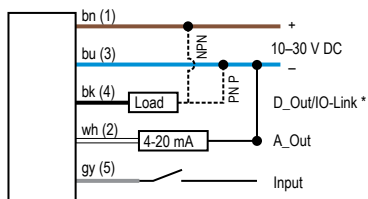
- **Verwenden Sie dieses Gerät nicht zum Schutz des Personals**
- Die Verwendung dieses Geräts zum Schutz des Personals kann zu schweren Verletzungen oder zum Tod führen.
- Dieses Gerät verfügt nicht über die selbstüberwachenden redundanten Schaltungen, die für Personenschutz-Anwendungen erforderlich sind. Ein Geräteausfall oder Defekt kann zu unvorhersehbarem Schaltverhalten des Ausgangs führen.

IMPORTANT: To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 20 cm from all persons.

Wiring

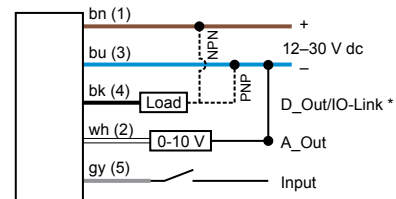
Quick disconnect wiring diagrams are functionally identical.

Push-pull Output and Analog Current Output



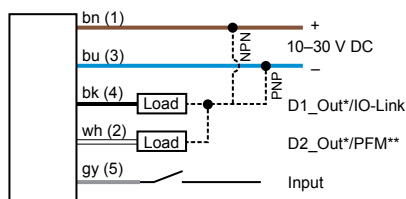
* Push-Pull output. User-configurable PNP/NPN setting.

Push-pull Output and Analog Voltage Output



* Push-Pull output. User-configurable PNP/NPN setting.

Dual Discrete Output

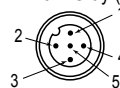


* Push-Pull output. User-configurable PNP/NPN setting.

** Pulse Frequency Modulation

Key:

- 1 = Brown
- 2 = White
- 3 = Blue
- 4 = Black
- 5 = Gray (Connect for use with remote input or Banner Measurement Sensor software)



NOTE: Banner recommends that the shield wire (quick-disconnect cordsets only) be connected to earth ground or DC common. Shielded cordsets are recommended for all quick-disconnect models.

Banner Measurement Sensor Software



Use the Banner Measurement Sensor software to:

- Quickly configure the sensor
- Easily monitor device status via the software
- Visualize the application in real-time
- Make adjustments to sensor settings on the fly

For more information, visit www.bannerengineering.com/us/en/products/sensors/software/banner-measurement-sensor-software.html.

Specifications

Response Speed	Fast	Medium	Slow
Response Time	50 ms	150 ms	250 ms
Maximum Velocity	± 9 m/s	± 9 m/s	± 4.5 m/s
Velocity Resolution	0.5 m/s	0.25 m/s	0.15 m/s

Operating Frequency

77 GHz to 79 GHz

Transmitting Power

< 20 dBm (E.I.R.P.)

Field of View

Horizontal: ±60°

Vertical: ±20°

Distance Linearity

>200mm, ±10 mm

Supply Voltage (Vcc)

TBD

Use only with a suitable Class 2 power supply (UL) or Limited Power Supply (CE)

Power and Current Consumption, exclusive of load

Power Consumption: < 2.4 W

Current Consumption: <100 mA at 24 V DC

Operating Temperature

-40 °C to +65 °C (-40 °F to +149 °F)

Certifications



IND. CONT. EQ. E526767



Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM



Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN



ETSI EN 302 264 V2.1.1

ETSI EN 301 498-1 V2.2.3

FCC ID: UE3Q90R27

IC: 7044A-Q90R27

Install where not accessible by unauthorized personnel.

The device shall only be accessible for adjustment, programming, or maintenance.

The device was evaluated for IK08 impact energy in accordance with IEC 62262.

Representative Beam Pattern



FCC Part 15 Class A for Intentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Statement for Intentional Radiators

This device contains licence-exempt transmitters(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs/récepteurs exemptés de licence conformes à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

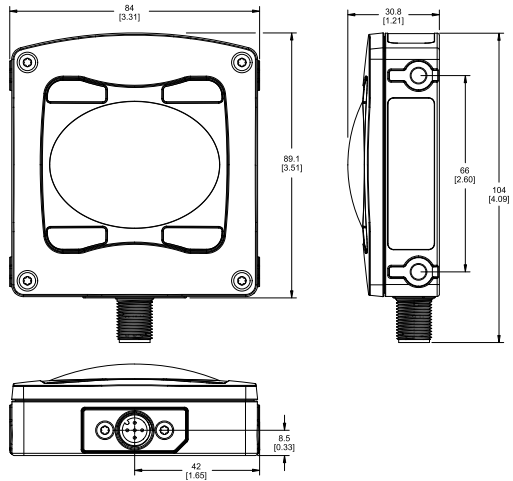
ISED Compliance Aircraft Warning

Devices used on aircraft are permitted under the following conditions:

1. Except as allowed in J.2(b), devices are only to be used when the aircraft is on the ground.
2. Devices used in-flight are subject to the following restrictions:
 - a. they shall be used within closed, exclusive on-board, communication networks within the aircraft
 - b. they shall not be used in wireless avionics intra-communication (WAIC) applications where external structural sensors or external cameras are mounted on the outside of the aircraft structure
 - c. they shall not be used on aircraft equipped with a body/fuselage that provides little or no RF attenuation except when installed on unmanned air vehicles (UAVs) and complying with J.2(d)
 - d. devices operating in the 59.3-71.0 GHz band shall not be used except if they meet all of the following conditions:
 - i. they are FDS
 - ii. they are installed within personal portable electronic devices
 - iii. they comply with the relevant requirements in J.3.2(a), J.3.2(b) and J.3.2(c)

Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.



Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

For patent information, see www.bannerengineering.com/patents.