

Banner QS30AFQ

Banner QS30AFQ World Beam Expert Universal Sensor

Instruction Manual

Model: QS30AFQ

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the Banner QS30AFQ World Beam Expert Universal Sensor. The QS30AFQ is an advanced photoelectric sensor designed for industrial automation applications, featuring adjustable-field background-suppression mode and a visible red LED sensing beam. It is equipped with both automatic-teaching and manual tuning modes, and provides bipolar (NPN and PNP) output. Its robust design ensures reliable performance in various environments, including those with moisture and dust.

2. SAFETY INFORMATION

Please read and understand all instructions before installing or operating the sensor. Failure to follow these instructions could result in serious injury or damage to the equipment.

- **Electrical Safety:** Ensure power is disconnected before wiring or performing any maintenance. Only qualified personnel should perform electrical connections.
- **Environmental Conditions:** Do not expose the sensor to conditions outside its specified operating temperature or IP rating.
- **Mounting:** Securely mount the sensor to prevent accidental dislodgement during operation.
- **Intended Use:** This sensor is designed for industrial automation applications. Do not use it for safety-critical applications unless specifically certified for such use.

3. PRODUCT OVERVIEW

The Banner QS30AFQ sensor is a compact and versatile photoelectric sensor. Key features include:

- Adjustable-field background-suppression mode for reliable detection up to 300 mm.
- Visible red LED sensing beam (660 nm wavelength) for easy alignment.
- 5-pin Euro-style Quick Disconnect (QD) connector for convenient wiring.
- Automatic tuning with pushbutton manual fine tuning options.
- 10-30 VDC supply voltage.
- Bipolar (NPN and PNP) output.

- IP 67 rated thermoplastic housing for protection against water and dust.
- 8-segment bar graph display for operating status indication.



Figure 3.1: Front view of the QS30AFQ sensor, highlighting the visible red LED lens and the labels for setting background and object detection thresholds. This view shows the primary sensing face of the unit.



Figure 3.2: Side view of the QS30AFQ sensor, displaying the wiring diagram for the 5-pin Euro-style connector, the 8-segment bar graph indicator, and the '+' and '-' control buttons for tuning. This view provides details on electrical connections and operational feedback.

4. SETUP

4.1 Mounting

The QS30AFQ sensor can be mounted using standard mounting hardware (not included) through the integrated mounting holes. Ensure the sensor is securely fastened and positioned to provide an unobstructed view of the target area. The sensor's compact design allows for flexible mounting in various industrial setups.

4.2 Wiring

The sensor utilizes a 5-pin Euro-style Quick Disconnect (QD) connector. A compatible Euro-style QD cordset (not included) is required for connection. Refer to the wiring diagram on the sensor body (Figure 3.2) and the table below for proper connections.

Table 4.1: Wiring Connections for QS30AFQ

Pin/Wire Color	Function
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Pin/Wire Color	Function
Brown (bn)	10-30 VDC Supply (+)
Blue (bu)	0 VDC Supply (-)
White (wh)	NPN Output
Black (bk)	PNP Output
Gray (gy)	Remote Teach Input

Ensure all connections are secure and correctly polarized. The sensor supports bipolar (NPN and PNP) output, allowing flexibility in integration with various control systems.

5. OPERATING

5.1 Powering On

Once wired correctly, apply 10-30 VDC power to the sensor. The sensor will power up and the 8-segment bar graph display will illuminate, indicating its operational status.

5.2 Tuning and Configuration

The QS30AFQ offers both automatic-teaching and manual tuning modes to set sensing thresholds.

- **Automatic Teaching:** This mode simplifies setup. To teach the background, ensure no object is in the sensing field and press and hold the '+' button (or activate the remote teach input) until the sensor indicates successful teaching (refer to the bar graph display for feedback). To teach the object, place the object in the desired sensing position and press and hold the '-' button (or activate the remote teach input) until the sensor indicates successful teaching.
- **Manual Fine Tuning:** After automatic teaching, or for precise adjustments, use the '+' and '-' buttons to manually fine-tune the sensing threshold. The 8-segment bar graph display provides visual feedback on the current threshold setting and signal strength.

5.3 Status Indicators

The 8-segment bar graph display on the side of the sensor provides real-time feedback on the sensor's operation:

- **Segments 1-8:** Indicate signal strength. More illuminated segments mean stronger signal.
- **N.O. (Normally Open) / N.C. (Normally Closed) Indicators:** Show the current state of the NPN and PNP outputs.
- **Object / Background Indicators:** Help visualize the taught thresholds for object and background detection.

6. MAINTENANCE

The Banner QS30AFQ sensor is designed for low maintenance. However, periodic checks can ensure optimal performance and longevity.

- **Cleaning:** Regularly clean the sensor lens and housing with a soft, damp cloth. Avoid abrasive cleaners or solvents that could damage the thermoplastic material or lens.
- **Inspection:** Periodically inspect the wiring and connector for any signs of wear, corrosion, or damage. Ensure the sensor is still securely mounted.
- **Environmental Check:** Verify that the operating environment remains within the specified temperature range (-10 to +55 degrees C) and that the IP67 rating is not compromised by excessive moisture or dust accumulation on the

lens.

7. TROUBLESHOOTING

If the sensor is not performing as expected, consider the following common issues and solutions:

- **No Power/No Indication:**
 - Check power supply connections (10-30 VDC).
 - Verify correct wiring of the Euro-style QD cordset.
- **Erratic Sensing/False Triggers:**
 - Clean the sensor lens.
 - Re-perform the automatic teaching procedure for background and object.
 - Adjust the sensor's position or angle to minimize reflections from nearby surfaces.
 - Check for ambient light interference; reposition or shield the sensor if necessary.
- **Sensor Not Detecting Object:**
 - Ensure the object is within the 300 mm sensing range.
 - Verify the object's reflectivity is sufficient for detection by a red LED sensor.
 - Re-teach the object and background thresholds.
 - Check for obstructions in the sensing path.
- **Output Not Switching:**
 - Confirm the load connected to the NPN/PNP output is correctly wired and within the sensor's output current limits.
 - Check the sensor's status indicators to ensure it is detecting the object as expected.

If problems persist, contact Banner Engineering technical support.

8. SPECIFICATIONS

Table 8.1: Banner QS30AFQ Technical Specifications

Parameter	Value
Model Number	QS30AFQ
Sensing Mode	Adjustable-Field Background-Suppression
Sensing Range	Up to 300 mm
Light Source	Visible Red LED (660 nm)
Supply Voltage	10-30 VDC
Output Type	Bipolar (NPN and PNP)
Connector Type	5-pin Euro-style Quick Disconnect (QD)
Operating Temperature	-10°C to +55°C (14°F to 131°F)
Housing Material	Thermoplastic

Parameter	Value
Ingress Protection (IP) Rating	IP67
Dimensions	0.31 x 0.31 x 0.24 inches (approximate)
Weight	0.16 ounces (approximate)
Certifications	UL Listed, CE Compliant

9. WARRANTY AND SUPPORT

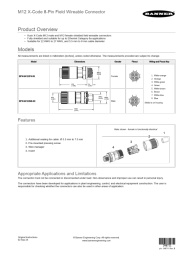

For detailed warranty information, please refer to the official Banner Engineering website or contact your authorized Banner distributor. Warranty terms typically cover defects in materials and workmanship under normal use. For technical support, troubleshooting assistance beyond this manual, or inquiries about replacement parts, please contact Banner Engineering customer service or visit their official support portal. Provide your product model number (QS30AFQ) and a detailed description of the issue when seeking support.


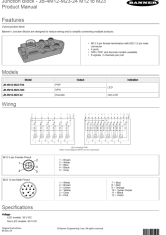
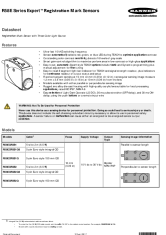

Banner Engineering Contact Information:

Please refer to www.bannerengineering.com for the most current contact details and support resources.

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Related Documents - QS30AFQ

	<p>Banner M12 X-Code 8-Pin Field Wireable Connector Datasheet and Assembly Guide</p> <p>Detailed specifications, product overview, and assembly instructions for the Banner M12 X-Code 8-Pin Field Wireable Connector, designed for industrial Ethernet Category 6a applications. Includes construction details, environmental ratings, and warranty information.</p>
	<p>Banner BCS1 Miniature Slot Sensors: Features, Specifications, and Applications</p> <p>Explore the Banner BCS1 Miniature Slot Sensors. Discover their simple, space-saving design, robust IP64 housing, bright LED indicators, and built-in circuit protection. View specifications, wiring diagrams, and available accessories.</p>

	<p>Banner R58E Expert Registermarkensensoren - Technische Daten und Konfiguration</p> <p>Umfassende Informationen zu den Banner R58E Expert Registermarkensensoren, einschließlich Funktionen, Modellen, Konfigurationsanleitungen (TEACH, SETUP), technischen Spezifikationen und Installationshinweisen für industrielle Anwendungen.</p>
	<p>Banner JB-4M12-M23 Junction Block: Features, Specs, and Wiring Guide</p> <p>Explore the Banner JB-4M12-M23 series junction block, a robust 4-port solution designed to simplify industrial wiring and connectivity. This guide details its features, available models (NPN, PNP, Discrete), essential specifications, and compatible accessories for efficient automation.</p>
	<p>Banner R58E Series Expert Registration Mark Sensor Datasheet</p> <p>Datasheet for the Banner R58E Series Expert Registration Mark Sensor, featuring a tri-color light source, fast 10 kHz switching frequency, advanced TEACH modes (Static and Dynamic), and robust construction for industrial applications.</p>
	<p>Banner B25 Wide Beam Retroreflective Sensor: Product Manual & Specifications</p> <p>Detailed product manual for the Banner B25 Wide Beam Retroreflective Sensor, covering installation, configuration, specifications, accessories, and support. Learn about its features for reliable target detection.</p>