# QS30H2O Series Water Sensor

Original Instructions
p/n: 136166 Rev. F
02-Jun-26
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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

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# Chapter 1 Features



- Special emitter/receiver infrared wavelength tuned to the absorption band of water
- Powerful enough to burn through many types of plastic and glass containers
- Water-based liquids will attenuate the signal; this enhances contrast on difficult sensing applications found on bottle-filling lines
- Excellent noise immunity and crosstalk avoidance
- Easy-to-read operating status indicators
- Bipolar discrete outputs, PNP and NPN; analog model also available
- Light Operate and Dark Operate models are available
- Models available with 2 m or 9 m (6.5 ft or 30 ft) cable, or 150 mm (6 in) pigtail with quick-disconnect fitting
- Rugged IP67 (NEMA 6) housing for harsh environments; 1200 psi washdown rated per NEMA PW12
- Compact housing, mounting versatility — 30 mm threaded barrel- or side-mount

**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.

# Models

*Standard models (standard emitters will only work with standard receivers)*

| Model | Description | Sensing Beam and Range | Supply Voltage | Output |
|---|---|---|---|---|
| **QS30EXH2O** | Emitter | 1450 nm infrared 3 mm effective beam dia. | 10-30 V DC | -- |
| **QS30ARH2O** | Receiver, light operate | 2 m (6.5 ft) range | | Bipolar (NPN and PNP) |
| **QS30RRH2O** | Receiver, dark operate | | | |
| **QS30ARXH2OQ5** | High-gain receiver, light operate | 4 m (13 ft) range | 10-30 V DC | Bipolar (NPN and PNP) |
| **QS30RRXH2O** | High-gain receiver, dark operate | | 10-30 V DC | Bipolar (NPN and PNP) |
| **QS30RXH2OUQ5** | High-gain receiver, analog | | 15-30 V DC | 0-10 V Analog |


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*Super high-power models (super high-power emitters will only work with super high-power receivers)*

| Model | Description | Sensing Beam and Range | Output |
|---|---|---|---|
| **QS30EXSH2O** | Super high-power emitter | 1450 nm infrared 13 mm effective beam dia. | -- |
| **QS30ARXSH2O** | Super high-power receiver, light operate | 8 m (26 ft) range | Bipolar (NPN and PNP) |
| **QS30RRXSH2O** | Super high-power receiver, dark operate | | |

Sensors can be used at ranges greater than listed for applications that require less excess gain. Please contact Banner for assistance with your long-range applications.

2 m (6 ft) cables are listed (except for QS30ARXH2OQ5 and QS30RXH2OUQ5).

- To order 150 mm (6.5 in) cable with a 5-pin M12 male quick disconnect (QD) connector models, add the suffix **Q5** to the model number (for example, **QS30EH2OQ5**).
- Models with a QD connector require a mating cordset (see "Accessories" on page 11).

For a list of discontinued models, see Discontinued Models.

# Overview

The Banner QS30H2O series water sensor was developed to detect the presence of water. Its electro-optical components are tuned to one absorption band of water in the long infrared spectrum. The emitted infrared light penetrates many types of plastic and glass containers, but will not pass through water-based fluids, nor through opaque substances such as wood, metal or cardboard. Accessory apertures are available to attenuate or shape the beam for low-gain applications, for example, clear water in a clear bottle.

Low-gain models are recommended for sensing applications where the liquid container is transparent or when the thickness of liquid being detected is small. Some examples are clear glass test tubes and clear PET beverage bottles. High-gain models are recommended when the liquid container is light-blocking (translucent) and when the thickness of liquid being detected is large. Some examples are HDPE milk containers, colored PET beverage bottles, and etched glass containers. Super High-Power models are recommended for thick, opaque containers that require maximum burn-through power at a slower response speed.

For all applications, the sensors must be installed to maximize the optical contrast between the clear and blocked states. The installer can use apertures and mechanical alignment of the sensors to achieve the best results . The QS30H2O sensor enhances the available contrast by taking advantage of the absorption band of water.

*Features*




1. Emitter power LED (green)
2. Output conducting (amber, discrete models only)
3. Receiver power LED (green)
4. AID™ indicator (amber)

For advanced applications, a 0–10 V analog output is available. The analog output allows the user to directly measure the amount of signal attenuation. The analog output value can be filtered and a switching threshold determined in a PLC or computer as required for the application. Please consult the factory for more information on using the analog output.


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Each discrete output model has two bipolar outputs that switch simultaneously: one each NPN (sinking) and PNP (sourcing). Light Operate and Dark Operate models are available.

In light operate (LO) mode, the output is ON when the target returns the same or more light to the sensor and OFF when the sensor detects less light than the configured/taught target. In dark operate (DO) mode, the output is ON when the target returns less light to the sensor than the configured target and OFF when the sensor detects more light than the configured/taught target. In **opposed** sensing modes, light operate means the output is on when the beam is unblocked and dark operate means the output is on when the beam is blocked.

The versatile housing provides multiple mounting configurations in a minimum of space. These sensors are extremely rugged, powerful and leakproof, with epoxy-encapsulated electronics for maximum resistance to mechanical shock and vibration. They are powerful enough to burn through dust and many types of industrial and process contamination.

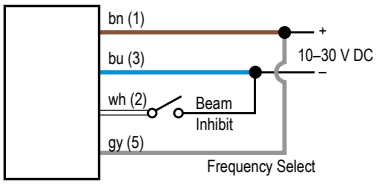
The sensors' innovative circuitry provides excellent EMI/RFI noise immunity. For applications where optical crosstalk between multiple sensor pairs may be a problem, either of two modulation frequencies may be selected. (Set each emitter to the same frequency as its receiver, via the sensor wiring; see "QS30H2O Sensor Configuration" on page 8 or "QS30H2O Wiring" on page 5.)

**Indicators**—Each sensor has a green Power ON/OFF indicator, visible from 360°. Receivers also have an amber AID indicator that flashes to show signal strength. (The higher the flash rate, the more light is received; a solid AID LED indicates an excellent signal.) Discrete models also have a large amber LED that is on when an output is conducting.

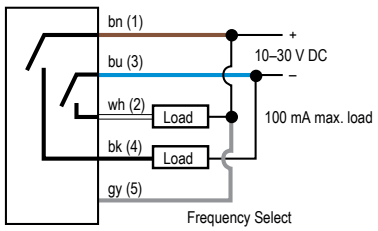
# Wiring

Cable and quick disconnect (QD) connections are functionally identical

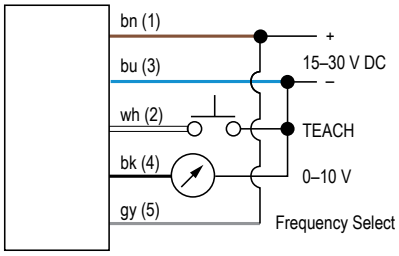
*Emitter - Frequency A*



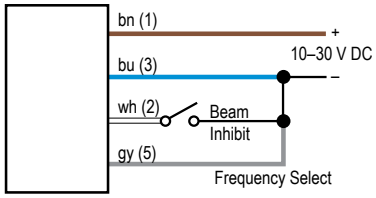

*Receiver Frequency A, Discrete*



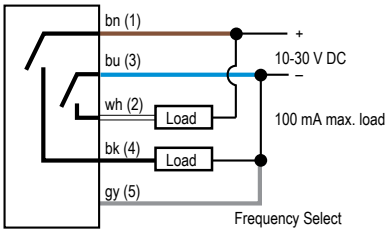

*Receiver Frequency A, Analog*



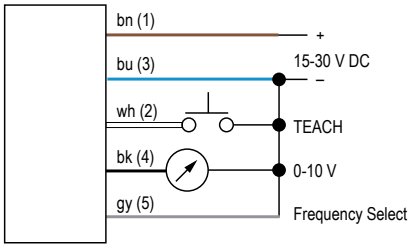

*Emitter - Frequency B*



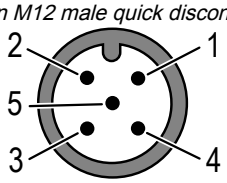

*Receiver Frequency B, Discrete*




*Receiver Frequency B, Analog*




*5-pin M12 male quick disconnect*





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# Specifications

**NOTE:** Specifications are subject to change without notice.

**Supply Voltage**

**Emitter:** 10 to 30 V DC (10% maximum ripple) at less than 80 mA

**Discrete Receiver:** 10 to 30 V DC (10% maximum ripple) at less than 65 mA (exclusive of load)

**Analog Receiver:** 15 to 30 V DC (10% maximum ripple) at less than 65 mA (exclusive of load)

**Beam**

Infrared, 1450 nm , 13 mm effective beam diameter

**Sensing Range**

**Low-gain models**: 2 m (6.5 ft)

**High-gain models:** 4 m (13 ft)

**Super High-Power models:** 8 m (26 ft)

**Output Configuration**

**Discrete models:** Bi-polar current sinking (NPN) white wire; current sourcing (PNP) black wire

**Analog models:** 0–10 V (black wire)

**Output Rating**

**Discrete models:** 100 mA maximum load @ 25° C

**OFF-state leakage current:** less than 10 µA

**ON-state saturation voltage: PNP:** less than 1.2V at 10 mA; less than 2.5V at 100 mA

**NPN:** less than 200 mV at 10 mA; less than 1 V at 100 mA; protected against false pulse on power-up and continuous overload or short circuit

**Analog models:** 2 KΩ minimum impedance

**Output Response**

**Discrete models:**

- **10x excess gain or more**

  **Standard models:** 1 ms ON and OFF response; 500 µs repeatability
  **Super High-Power models:** 10 ms ON and OFF response; 5 ms repeatability

- **2x to 10x excess gain**

  **Standard models:** 3 ms ON and OFF response; 2.5 ms repeatability
  **Super High-Power models:** 30 ms ON and OFF response; 25 ms repeatability

**Analog models:** 25 ms for a 95% step change

**Adjustments**

**Light Operate/Dark Operate** — depending on model selected

**Frequency** — selected via gray wire

**A:** Gray (+)
**B:** Gray (–)

**Emitter only:** LED inhibit — selected via white wire; white (–) turns emitter LED OFF (to allow verification of receiver operation)

**Indicators**

**Green LED on housing top:** Power ON

**Receiver only:**

**Yellow AID LED on housing top:** Flashes to indicate signal strength (faster flash = better signal)
**Yellow LED (large oval on housing back):** Discrete output conducting

**Environmental Rating**

Leakproof design rated IEC IP67 (NEMA 6); PW12 1200 psi washdown per NEMA PW12

**Construction**

**Housing:** plastic (PC/ABS blend)

**Front window:** plastic (PMMA -acrylic)

**Cable:** PVC

**Pigtail QD:** PVC and nickel-plated brass

**Connection**

5-wire 2 m or 9 m cable (6 ft or 30 ft) or 150 mm (6 in) pigtail with 5-pin M12 quick-disconnect fitting

**Operating Conditions**

**Temperature:** –20 °C to +60 °C (–4 °F to +140 °F)

**Humidity:** 90% maximum relative humidity (non-condensing)

**Certifications**

CE

## FCC Part 15 Class A for Unintentional 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 ICES-003(A)

This device complies with CAN ICES-3 (A)/NMB-3(A). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

Cet appareil est conforme à la norme NMB-3(A). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.


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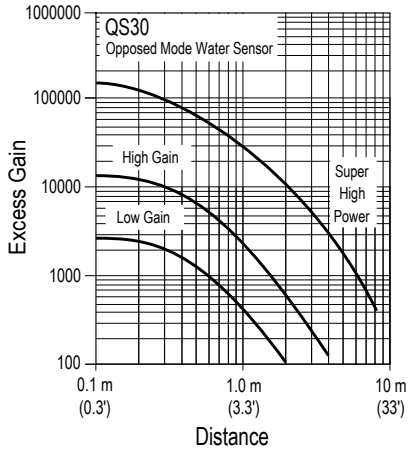
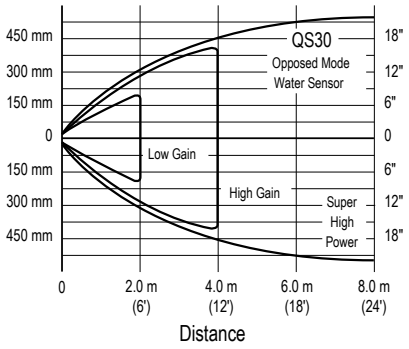
# Performance Curves

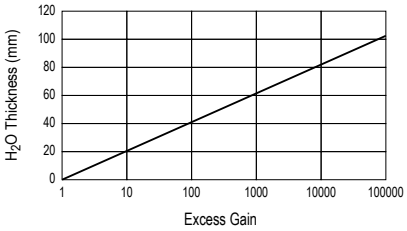
*Excess Gain*




*Beam Pattern*



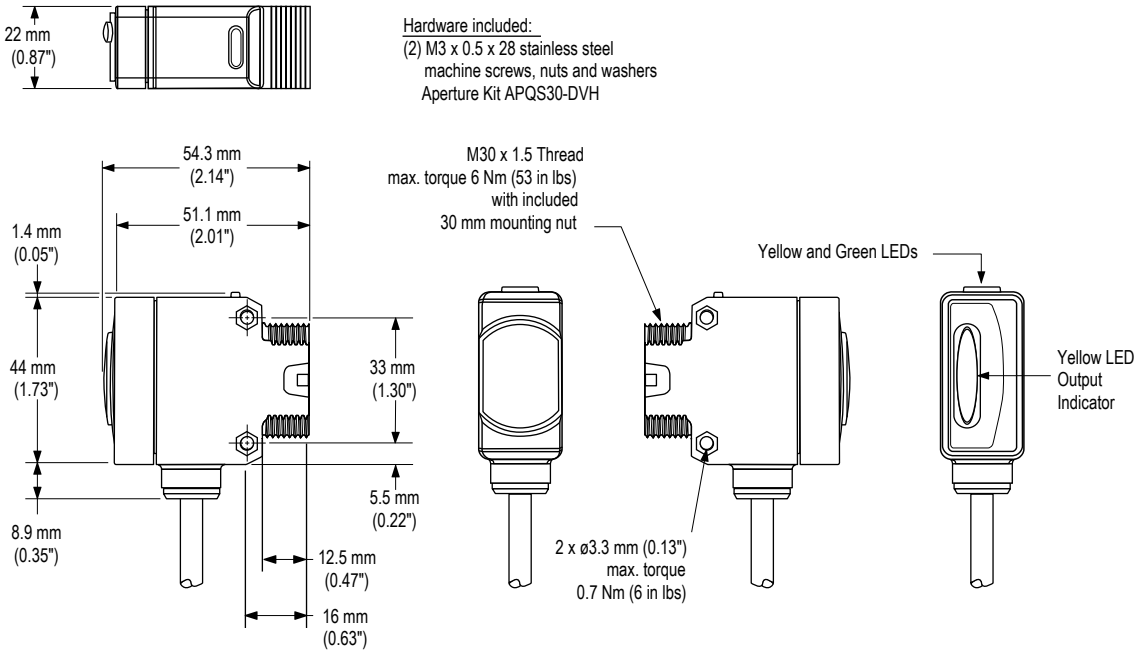

*H2O Thickness vs Excess Gain*




(Typical for Distilled Water, 100% Blocked Condition)

# Dimensions

*QS30H2O dimensions*





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# Chapter 2 Sensor Configuration

### Teaching Limits

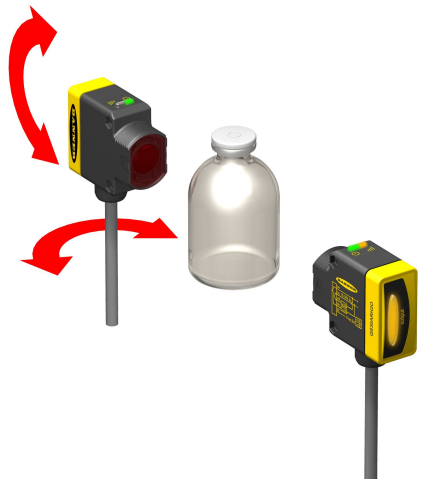
Discrete models require no configuration; simply align the emitter to the receiver to maximize contrast between the clear and blocked conditions.

For analog models in high-contrast applications, alignment may be the only configuration needed. For more challenging applications using analog models, use the TEACH procedure to maximize contrast. This procedure is accomplished by pulsing the receiver's white wire (see "QS30H2O Wiring" on page 5 and "Analog Static TEACH" on page 9). Analog output slope also can be inverted from positive to negative or back.

### Sensor Alignment — When an Empty Container Can Be Presented

1. Position both the emitter and the receiver loosely in their mounting position. See "Figure: Sensor Alignment Procedure" on page 8.
2. Present the "clear" condition for the application (an empty container).
3. Verify that both emitter and receiver are wired for the same modulation frequency (see below).
4. Adjust the emitter first, then the receiver. Adjust the emitter's position until the receiver AID indicator is ON steady, or is flashing at its fastest rate.
5. Tighten the emitter mounting hardware, then repeat step 4 for the receiver.
6. Block the sensor beam with the target and verify that the output changes state.

*Sensor Alignment Procedure*



### Sensor Alignment — When an Empty Container Cannot Be Presented

For this procedure, the clear condition is no container at all.

1. Mount loosely and mechanically align the emitter and the receiver such that their faces are parallel to one another. (The AID indicator should be ON steady.)
2. Rotate the emitter in one direction until the receiver AID indicator begins to flash. Repeat in the other direction. Position the emitter midway between those two positions and tighten the emitter mounting hardware.
3. Repeat step 2 for the receiver.
4. Block the sensor beam with the target and verify that the output changes state.

### Frequency Selection

The modulation frequency (A or B) is selected by the state of the gray wire (on cabled models; pin 5 on QD models — see "QS30H2O Wiring" on page 5). A "+" voltage or no connection selects frequency A; connecting it to "–" selects frequency B. Each emitter must be set to the same frequency as its receiver.

### Emitter Inhibit

To disable (or inhibit) the emitter LED (useful for testing the receiver operation), connect the white wire to "–" voltage.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# Analog Static TEACH

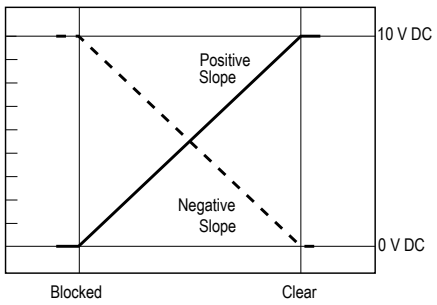
Analog TEACH is performed remotely, by pulsing the white TEACH wire (see "QS30H2O Wiring" on page 5).

**Restore Factory TEACH:** Reverts the sensing limits to the factory default limits (max contrast); output slope is not affected.

**Analog Output Slope:** Toggles the analog output to send a high signal when the object is absent (positive slope) or present (negative slope). Analog slope can be selected based on the TEACH order (first taught condition is always 0V; second taught condition is 10V) or by using the slope select procedure below. If the slope select procedure is used, it must be used *after* teaching the limits. To determine the current slope setting, measure the output signal during object present and absent conditions.

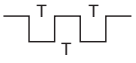
The duration of each button click or remote input pulse is defined as T, where T is: 0.04 s < T < 0.8 s.

*Analog Static Teach*




| Step | Remote Line | Result |
|---|---|---|
| **Access TEACH Mode/Learn 1st Condition** | Present 1st condition, then single-pulse remote TEACH line.<br> | **Power LED:** OFF **AID LED:** Double-flash |
| **Learn 2nd Condition** | Present 2nd condition, then single-pulse remote TEACH line.<br> | **TEACH Accepted**<br>**Power LED:** Flashes 3 times, then ON **AID LED:** AID mode (flash rate varies depending upon signal strength)Sensor returns to RUN mode. |
| | | **TEACH Not Accepted Power LED:** OFF **AID LED:** Single-flashSensor returns to “Learn 1st Condition.” |

### Restore Factory Default (Maximum Contrast) Setting

| Step | Remote Line | Result |
|---|---|---|
| **Access TEACH Mode** | Single-pulse remote TEACH line<br> | **Power LED:** OFF **AID LED:** Double-flash |
| **Restore Factory Default Setting (Maximum Contrast Setting)** | Double-pulse remote TEACH line<br> | **Power LED:** Flashes 3 times, then ON **AID LED:** AID mode (flash rate varies depending upon signal strength)Sensor returns to RUN mode with maximum contrast setting. |

### Analog Output Slope Invert

Teach sensing limits before inverting the output slope.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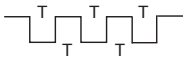
| Step | Remote Line | Result |
| --- | --- | --- |
| **Toggle Analog Output Slope** | Triple-pulse remote TEACH line<br> | Analog output slope toggles between positive and negative. |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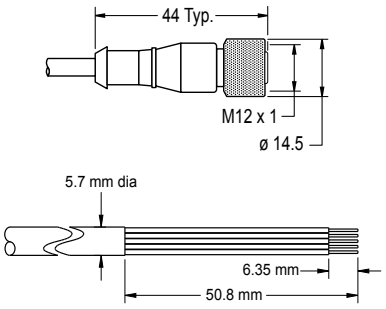
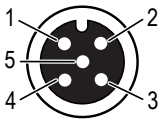
# Chapter 3 Accessories

## Cordsets

| 5-pin A-Code Single-Ended M12 Female Cordsets (datasheet p/n 235936) | | | | |
|---|---|---|---|---|
| **Model** | **Length** | **Dimensions (mm)** | **Pinout (Female)** | |
| **BC-M12F5-22-1** | 1 m (3.28 ft) |  |  | 1 = Brown<br>2 = White<br>3 = Blue<br>4 = Black<br>5 = Gray<br>c UL us LISTED |
| **BC-M12F5-22-2** | 2 m (6.56 ft) | | | |
| **BC-M12F5-22-5** | 5 m (16.4 ft) | | | |
| **BC-M12F5-22-8** | 8 m (26.25 ft) | | | |
| **BC-M12F5-22-10** | 10 m (30.81 ft) | | | |
| **BC-M12F5-22-15** | 15 m (49.2 ft) | | | |

## Brackets

**SMBQS30L**

- Right-angle bracket for cable sensor models
- Clearance for M4 (#8) hardware
- ± 12° tilt adjustment
- 14-gauge stainless steel
- CAD Files: DXF, PDF, IGS, STP

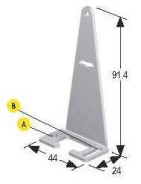
**Hole center spacing:** A to B=35.0
**Hole size:** A=ø 4.3, B=ø 4.25×16.3




**SMBQS30LT**

- Tall right-angle bracket for QD models
- ± 8° tilt adjustment
- 14-gauge stainless steel
- CAD Files: DXF, PDF, IGS, STP

**Hole center spacing:** A to B=35.0
**Hole size:** A=ø 4.3, B=ø 4.25×16.3





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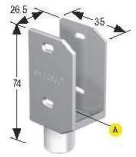
**SMBQS30Y**

- Heavy-duty die-cast bracket
- M18 vertical mount option
- ± 8° tilt adjustment with cabled units
- Includes nuts and lock washer
- CAD Files: DXF, PDF, IGS, STP

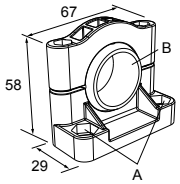
**Hole size:** A=ø 15.3




**SMB30SC**

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included
- CAD Files: DXF, PDF, IGS, STP

**Hole center spacing:** A=ø 50.8
**Hole size:** A=ø 7.0, B=ø 30.0




Other Compatible Mounting Brackets include:

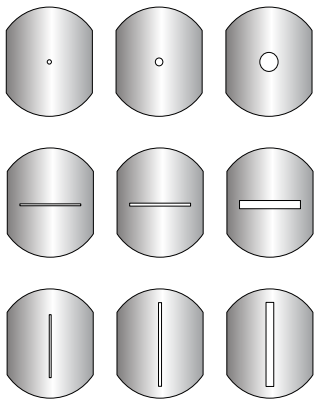
SMB30MM
SMB30A
SMB30FA

# Apertures

Opposed-mode QS30 sensors may be fitted with apertures to narrow or shape the sensor's effective beam to more closely match the size or profile of the containers being sensed. A common example is the use of slot type apertures to detect edges of liquid levels.

**NOTE:** The use of apertures will reduce the excess gain (see attenuation table below).

| Model | Description | Pieces | |
|---|---|---|---|
| **Circular** | | | |
| **APQS30-040** | 1 mm (0.04 in) diameter | 6 | |
| **APQS30-100** | 2.5 mm (0.10 in) diameter | 6 | |
| **APQS30-200** | 5 mm (0.20 in) diameter | 6 | |
| **Horizontal Slot** | | | |
| **APQS30-040H** | 1 mm × 12 mm (0.04 in × 0.47 in) | 6 | |
| **APQS30-100H** | 2.5 mm × 12 mm (0.10 in × 0.47 in) | 6 | |
| **APQS30-200H** | 5 mm × 12 mm (0.20 in × 0.47 in) | 6 | |
| **Vertical Slot** | | | |
| **APQS30-040V** | 1 mm × 17 mm (0.04 in x 0.67 in) | 6 | |
| **APQS30-100V** | 2.5 mm × 17 mm (0.10 in × 0.67 in) | 6 | |
| **APQS30-200V** | 5 mm × 17 mm (0.20 in × 0.67 in) | 6 | |
| **APQS30-DVHX2** | Kit containing two of each aperture above | 18 | |
| **APQS30-DVH** | Kit containing one each of aperture models: APQS30-040, APQS30-040H, APQS30-040V | 18 | |



**NOTE:** APQS30-DVH is included with each emitter/receiver.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| Model | Attenuation Factor | |
|---|---|---|
| | Aperture on Both Emitter and Receiver | Aperture on Receiver Only |
| APQS30-040 | 5,000 | 90 |
| APQS30-100 | 300 | 20 |
| APQS30-200 | 20 | 5 |
| APQS30-040H | 60 | 10 |
| APQS30-100H | 13 | 4 |
| APQS30-200H | 4 | 2 |
| APQS30-040V | 60 | 10 |
| APQS30-100V | 13 | 4 |
| APQS30-200V | 4 | 2 |

### Examples for Apertures and Water Thickness vs. Excess Gain

The **QS30EXH2O** / **QS30RXH2O** sensor pair is used with a horizontal aperture model **APQS30-040H** on the receiver at 1 meter sensing distance. The excess gain is reduced to approximately 200; 50 mm of water will completely block the signal.

**When the same aperture is used on both the emitter and receiver** at 1 meter, the excess gain is approximately 40; 35 mm of water will block the signal.

> **NOTE:** This example does not include the attenuation from the container holding the water.


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# Chapter 4 Product Support and Maintenance

## Repairs and Translations (No Field-Replaceable Parts)

**English**

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

```
IMPORTANT: If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.
```

Obtain assistance with product repairs by contacting your local Banner Engineering Corp distributor or by calling Banner directly at (763) 544-3164. Access literature translated into your native language on the Banner website at www.bannerengineering.com or contact Banner directly at (763) 544-3164.

**Deutsch**

Wenden Sie sich zur Fehlerbehebung dieses Geräts an Banner Engineering. **Versuchen Sie nicht, Reparaturen an diesem Banner-Gerät vorzunehmen. Das Gerät enthält keine am Einsatzort auszuwechselnden Teile oder Komponenten.** Wenn ein Banner-Anwendungstechniker zu dem Schluss kommt, dass dieses Gerät, ein Teil oder eine Komponente davon defekt ist, erhalten Sie von dem Techniker Erläuterungen zu Banners RMA-Verfahren (Return Merchandise Authorization) für die Warenrückgabe.

```
WICHTIG: Wenn Sie der Techniker anweist, das Gerät zurückzusenden, verpacken Sie es bitte sorgfältig. Transportschäden bei der Rücksendung werden von der Garantie nicht abgedeckt.
```

Unterstützung bei Produktreparaturen erhalten Sie von Ihrem örtlichen Banner Engineering Corp Händler oder direkt von Banner unter Tel. (763) 544-3164. Die in Ihre Muttersprache übersetzte Literatur finden Sie auf der Banner-Website unter www.bannerengineering.com oder kontaktieren Sie Banner direkt unter Tel. (763) 544-3164.

**Français**

Pour plus d'informations sur le dépannage du produit, contactez Banner Engineering. **Ne tentez pas de réparer ce dispositif Banner. Il ne contient aucun composant ou pièce qui puisse être remplacé sur place.** Si un ingénieur de Banner conclut que le dispositif ou l'une de ses pièces ou composants est défectueux, il vous informera de la procédure à suivre pour le retour des produits (RMA).

```
Important : Si vous devez retourner le dispositif, emballez-le avec soin. Les dégâts occasionnés pendant le transport de retour ne sont pas couverts par la garantie.
```

Pour vous aider lors de la réparation de produits, contactez votre distributeur Banner local our appelez directement Banner au (763) 544-3164. La documentation traduite dans votre langue est disponible sur le site internet de Banner www.bannerengineering.com ou contactez directement Banner au (763) 544-3164.

**Italiano**

Per le procedure di individuazione e riparazione dei guasti di questo dispositivo, contattare Banner Engineering. **Non tentare di riparare questo dispositivo Banner, in quanto non contiene parti o componenti sostituibili dall'utente.** Se il dispositivo, una parte del dispositivo o un componente del dispositivo viene riscontrato difettoso da un tecnico Banner, il nostro personale vi comunicherà la procedura da seguire per ottenere l'autorizzazione al reso.

```
Importante: Se si ricevono istruzioni di rispedire il dispositivo al produttore, imballarlo con cura. I danni dovuti al trasporto non sono coperti dalla garanzia.
```

Per assistenza nelle riparazioni dei prodotti, contattare il distributore locale Banner Engineering Corp o contattare direttamente Banner al numero (763) 544-3164. È possibile accedere alla documentazione tradotta nella propria lingua madre sul sito Web Banner all'indirizzo www.bannerengineering.com o contattare direttamente Banner al numero (763) 544-3164.


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**Español**

Comuníquese con Banner Engineering para solucionar de problemas de este dispositivo. **No intente ninguna reparación a este dispositivo de Banner, contiene piezas o componente que no se pueden cambiar en terreno.** Si algún ingeniero de aplicaciones de Banner determina que el dispositivo, alguna de las piezas o alguno de los componentes del dispositivo está defectuoso, le informará el procedimiento de autorización de devolución de mercancía (RMA, por sus siglas en inglés) de Banner.

**Importante:** Si se le solicita devolver el dispositivo, empáquelo con cuidado. Puede haber daños durante el envío de devolución que no estén cubiertos por la garantía.

Para reparaciones de productos, por favor contacte a su distribuidor local de Banner Engineering o llame a Banner directamente al 00 1 (763) 544-3164. Vea la literatura traducida en su idioma en el sitio web Banner en www.bannerengineering.com o comuníquese con Banner directamente al 00 1 (763) 544-3164.

**中国人**

如需对本装置进行故障排查，请联系邦纳。**请勿尝试自行维修该邦纳装置；本装置不包含任何可在现场更换的部件或组件。** 若经邦纳应用工程师确认设备、设备部件或组件存在缺陷，他们将告知您邦纳退货授权 (RMA) 流程。

**重要注意事项：** 如被要求退回装置，请妥善包装后寄回。退货运输过程中发生的损坏不在保修范围内。

请联系当地的 Banner Engineering Corp 经销商或直接致电 Banner +1 (763) 544-3164，以获得产品维修帮助。请访问邦纳网站 www.bannerengineering.com 或直接拨打 +1 (763) 544-3164 联系邦纳，获取翻译成您母语的资料。

**한국인**

이 장치의 문제를 해결하려면 Banner Engineering에 문의하십시오. **이 Banner 장치에는 현장에서 교체할 수 있는 부품 또는 구성품이 없으므로 수리를 시도하지 마십시오.** Banner 애플리케이션 엔지니어가 장치, 장치 부품 또는 장치 구성품에 결함이 있는 것으로 판정하면, Banner의 RMA(제품 반송 승인)절차에 대해 안내해 드립니다.

**중요:** 제품을 반송하도록 안내 받으셨다면 잘 포장해주십시오. 반송 도중에 발생한 손상은 보증 서비스가 적용되지 않습니다.

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**日本語**

この装置のトラブルシューティングについては、バナーエンジニアリングにお問い合わせください。**このバナー装置には、現場では交換できない部品またはコンポーネントが含まれているため、修理を試みてはいけません。** バナーのアプリケーションエンジニアが装置、装置の部品、または装置のコンポーネントに欠陥があると判断した場合、バナーのRMA（返品承認）手続きについてお知らせします。

**重要 ：** 返品を指示された場合は、装置を丁寧に梱包してください。返品時に発生した破損は保証の対象外となります。

製品の修理については、最寄りのBanner Engineering Corp代理店にお問い合わせいただくか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。バナーのウェブサイト（www.bannerengineering.com）でお客様の言語に翻訳された資料にアクセスするか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。

**čeština**

Pro řešení problémů se zařízením kontaktujte společnost Banner Engineering. **Neprovádějte žádné opravy zařízení Banner. Neobsahují žádné komponenty nebo části, které by byly vyměnitelné.** Pokud je zařízení, jeho část nebo díl označen technikem společnosti Banner jako poškozený, bude Vám doporučeno vyplnit reklamační RMA protokol.

**Důležité:** Pokud byl vydán požadavek na vrácení zařízení, pečlivě ho zabalte. Poškození vzniklé při dopravě není považováno za záruční opravu.

Pokud produkt potřebuje opravu, vyžádejte si pomoc od místního distributora společnosti Banner Engineering Corp nebo přímo na telefonním čísle (763) 544-3164. Dokumentaci přeloženou do vašeho jazyka si vyhledejte na webových stránkách společnosti Banner na adrese www.bannerengineering.com nebo se obraťte přímo na společnost Banner na telefonním čísle (763) 544-3164.


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**Polski**

W celu rozwiązania problemów z urządzeniem należy skontaktować się z działem technicznym firmy Banner Engineering. **Pod żadnym pozorem nie próbuj naprawiać tego urządzenia firmy Banner; nie zawiera ono części ani elementów, które można wymieniać samodzielnie.** Jeśli urządzenie, jego część lub element zostaną uznane za wadliwe przez inżyniera technicznego Banner, poinformuje on użytkownika o firmowej procedurze zwrotu towaru (RMA) firmy Banner.

**Ważne:** Jeśli urządzenie ma zostać zwrócone, należy je starannie zapakować. Uszkodzenia powstałe podczas odsyłki nie są objęte gwarancją.

Aby uzyskać pomoc w zakresie naprawy produktu, należy skontaktować się z lokalnym dystrybutorem Banner Engineering Corp lub zadzwonić bezpośrednio do firmy Banner pod numer (763) 544-3164. Dostęp do literatury przetłumaczonej na swój język ojczysty można uzyskać na stronie internetowej firmy Banner pod adresem www.bannerengineering.com lub kontaktując się bezpośrednio z firmą Banner pod numerem (763) 544-3164.

**Português**

Entre em contato com a Engenharia da Banner para a solução de problemas deste dispositivo. **Não tente fazer nenhum reparo neste dispositivo Banner; ele não contém peças ou componentes substituíveis em campo.** Se um técnico de aplicações da Banner determinar que o dispositivo, peça ou componente do dispositivo está com defeito, ele o informará sobre o procedimento de RMA (Autorização de Devolução de Mercadoria) da Banner.

**Importante:** Se for instruído a devolver o dispositivo, embale-o com cuidado. Os danos ocorridos no transporte de devolução não são cobertos pela garantia.

Obtenha assistência para reparos do produto entrando em contato com o distribuidor local da Banner Engineering Corp ou ligando diretamente para a Banner no telefone (763) 544-3164. Acesse a literatura traduzida para seu idioma nativo no site da Banner em www.bannerengineering.com ou entre em contato diretamente com a Banner pelo telefone (763) 544-3164.

**Türkçe**

Bu cihazda sorun giderme işlemleri için Banner Engineering ile iletişime geçin. **Bu Banner cihazını onarmaya çalışmayın; cihaz sahada değiştirilebilir parça veya bileşen içermez.** Bir Banner Uygulama Mühendisi tarafından cihazın, cihazın bir parçasının veya bir cihaz bileşeninin kusurlu olduğu tespit edilirse, Banner RMA (İade Mal Yetkilendirme) prosedürü hakkında bilgilendirilirsiniz.

**ÖNEMLİ:** İade etmeniz istenirse, cihazı dikkatli bir şekilde paketleyin. İade nakliyesinde meydana gelecek hasarlar garanti kapsamında değildir.

Yerel Banner Engineering Corp distribütörünüzle iletişime geçerek veya doğrudan (763) 544-3164 numaralı telefondan Banner'ı arayarak ürün onarımlarıyla ilgili yardım alın. Ana dilinize çevrilmiş dokümanlara www.bannerengineering.com adresindeki Banner web sitesinden erişebilir veya (763) 544-3164 numaralı telefondan doğrudan Banner ile iletişime geçebilirsiniz.

# Discontinued Models

The following models are no longer available for order but are still covered by the information in this document.

*Standard models (standard emitters will only work with standard receivers)*

| Model | Description | Sensing Beam and Range | Connection |
|---|---|---|---|
| QS30EXH2O W/30 | Emitter | 1450 nm infrared 3 mm effective beam dia. | 9 m cable |
| QS30ARH2O W/30 | Receiver, light operate | 2 m (6.5 ft) range | 9 m cable |
| QS30ARH2OQ5 | | | 150 mm (6.5 in) cable with a 5-pin M12 male QD |
| QS30RRH2O W/30 | Receiver, dark operate | 2 m (6.5 ft) range | 9 m cable |
| QS30ARXH2O | High-gain receiver, light operate | 4 m (13 ft) range | 2 m (6.5 ft) cable |
| QS30ARXH2O W/30 | | | 9 m cable |
| QS30RRXH2O W/30 | High-gain receiver, dark operate | | 9 m cable |
| QS30RXH2OU | High-gain receiver, analog | | 2 m (6.5 ft) cable |
| QS30RXH2OU W/30 | | | 9 m cable |


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*Super high-power models (super high-power emitters will only work with super high-power receivers)*

| Model | Description | Sensing Beam and Range | Connection |
|---|---|---|---|
| QS30EXSH2O W/30 | Super high-power emitter | 1450 nm infrared 13 mm effective beam dia. | 9 m cable |
| QS30ARXSH2O W/30 | Super high-power receiver, light operate | 8 m (26 ft) range | 9 m cable |
| QS30RRXSH2O W/30 | Super high-power receiver, dark operate | | 9 m cable |

# Contact Us

Banner Engineering Corp. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit www.bannerengineering.com.

# 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.

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