T18 Series Sensor (AC Voltage) Product Manual

Original Instructions
p/n: 121525 Rev. E
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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

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Chapter 1 Features



- Featuring EZ-BEAM® technology for reliable sensing without the need for adjustments (most models)
- “T” style plastic housing with 18 mm threaded lens mount
- Models available in opposed, retroreflective, diffuse, and fixed-field modes
- Completely epoxy-encapsulated to provide superior durability, even in harsh sensing environments rated to IP69K
- Innovative dual-indicator system for simple sensor performance monitoring
- 20 V AC to 250 V AC (3-wire connection); SPST solid-state switch output, maximum load 300 mA

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

Opposed mode sensors (require an emitter and receiver)

Models	Device	Range	Output	Connection
T183E	Emitter	20 m (66 ft)	-	2 m (6.5 ft) cable
T183E W/30			-	9 m cable
T183EQ1			-	4-pin Micro-style quick disconnect QD
T18AW3R	Receiver		LO	2 m (6.5 ft) cable
T18AW3RQ1				4-pin Micro-style QD
T18RW3R			DO	2 m (6.5 ft) cable
T18RW3RQ1				4-pin Micro-style QD

Retroreflective mode sensors with gain control

Models	Range	Output	Connection
T18AW3L	2 m (79 in) Use polarized models when shiny objects will be sensed.	LO	2 m (6.5 ft) cable
T18AW3LQ1			4-pin Micro-style QD
T18RW3L		DO	2 m (6.5 ft) cable
T18RW3LQ1			4-pin Micro-style QD

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Polarized retroreflective mode sensors

Models	Range	Output	Connection
T18AW3LP	2 m (79 in) Use polarized models when shiny objects will be sensed.	LO	2 m (6.5 ft) cable
T18AW3LPQ1			4-pin Micro-style QD
T18RW3LP		DO	2 m (6.5 ft) cable
T18RW3LP W/30			9 m cable
T18RW3LPQ1			4-pin Micro-style QD

Diffuse mode sensors with gain control

Models	Range	Output	Connection
T18AW3D	300 mm (12 in)	LO	2 m (6.5 ft) cable
T18AW3DQ1			4-pin Micro-style QD
T18RW3D		DO	2 m (6.5 ft) cable
T18RW3D W/30			9 m cable
T18RW3DQ1			4-pin Micro-style QD

Fixed-field mode sensors

Models	Range	Output	Connection
T18AW3FF25Q1	25 mm (1 in) Cutoff	LO	4-pin Micro-style QD
T18AW3FF50	50 mm (2 in) Cutoff	LO	2 m (6.5 ft) cable
T18AW3FF50 W/30			9 m cable
T18AW3FF50Q1			4-pin Micro-style QD
T18RW3FF50		DO	2 m (6.5 ft) cable
T18RW3FF50Q1			4-pin Micro-style QD
T18AW3FF100	100 mm (4 in) Cutoff	LO	2 m (6.5 ft) cable
T18AW3FF100 W/30			9 m cable
T18AW3FF100Q1			4-pin Micro-style QD
T18RW3FF100		DO	2 m (6.5 ft) cable
T18RW3FF100Q1			4-pin Micro-style QD

A model with a QD connector requires a mating cable.

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 **opposed and retroreflective sensing modes**, light operate is active when the beam is unblocked. In **diffuse, fixed field, and adjustable field sensor modes**, light operate is active when the target is present.

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 and retroreflective sensing modes**, dark operate is active when the beam is blocked. In **diffuse, fixed field, and adjustable field sensor modes**, dark operate is active when the target is absent.

For a list of discontinued models, see Discontinued Models.

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Fixed-Field Mode Overview

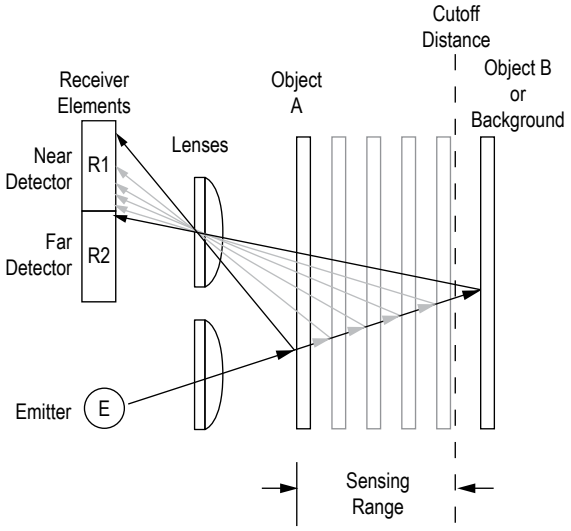
T18 self-contained fixed-field sensors are small, powerful, infrared diffuse mode sensors with far-limit cutoff (a type of background suppression). Their high excess gain and fixed-field technology allow them to detect objects of low reflectivity, while ignoring background surfaces.

The cutoff distance is fixed. Backgrounds and background objects must always be placed beyond the cutoff distance.

The T18FF compares the reflections of its emitted light beam (E) from an object back to the sensor's two differently aimed detectors, R1 and R2. If the near detector (R1) light signal is stronger than the far detector (R2) light signal (see object A, closer than the cutoff distance), the sensor responds to the object. If the far detector (R2) light signal is stronger than the near detector (R1) light signal (see object B, beyond the cutoff distance), the sensor ignores the object.

The cutoff distance for model T18FF sensors is fixed at 25, 50, or 100 millimeters (1 in, 2 in, or 4 in). Objects lying beyond the cutoff distance usually are ignored, even if they are highly reflective. However, it is possible to falsely detect a background object, under certain conditions (see Background Reflectivity and Placement).

Fixed-field concept



Object is sensed if amount of light at R1 is greater than the amount of light at R2

In the drawings and discussion on these pages, the letters E, R1, and R2 identify how the sensor's three optical elements (Emitter "E", Near Detector "R1", and Far Detector "R2") line up across the face of the sensor. The location of these elements defines the sensing axis (see "Sensor Setup" on page 9). The sensing axis becomes important in certain situations, such as those illustrated in "Figure: Object Beyond Cutoff - Problem" on page 10 and "Figure: Object Beyond Cutoff - Solution" on page 10.

Specifications

Supply Voltage and Current

20 to 250 V AC (50/60 Hz)

Average current: 20 mA

Peak current: 200 mA at 20 V AC, 500 mA at 120 V AC, 750 mA at 250 V AC

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Sensor LED

Opposed models: Infrared, 950 nm

Retroreflective models: Infrared, 950 nm

Polarized Retroreflective models: Visible red, 680 nm

Diffuse models: Infrared, 880 nm

Fixed field models: Infrared, 880 nm

Output Configuration

SPST solid-state AC switch; Three-wire connections; Choose light operate or dark operate models

Light Operate: Output conducts when the sensor sees its own (or the emitter's) modulated light

Dark Operate: Output conducts when the sensor sees dark

Output Rating

300 mA maximum (continuous)

Fixed-field models: derate 5 mA/°C above +50 °C (+122 °F)

Inrush Capability 1 amp for 20 milliseconds, non-repetitive

OFF-state leakage current: < 100 microamps

ON-state saturation voltage: 3 V at 300 mA AC; 2 V at 15 mA AC

Output Protection Circuitry

Protected against false pulse on power-up

Output Response Time

Opposed mode models: 16 ms ON, 8 ms OFF

Other models: 16 ms ON and OFF

NOTE: 100 ms delay on power-up

Repeatability

Opposed mode models: 2 ms

Other models: 4 ms

Repeatability and response are independent of signal strength.

Adjustments

Non-polarized retroreflective and diffuse models (only) have a single-turn rear-panel sensitivity control (turn clockwise to increase gain)

Indicators

Two LEDs (green and amber)

Green on: power to sensor is on

Amber on: sensor sees light

Amber flashing: excess gain marginal (1 to 1.5×) in light condition

Construction

Housing: PBT polyester housing

Lens: polycarbonate (opposed-mode) or acrylic (other models)

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Connections

2 m (6.5 ft) integral cable; 9 m (30 ft) integral cable; or 4-pin 1/2"-20UNF quick-disconnect fitting

Environmental Rating

Leakproof design rated NEMA 6P and IEC IP67 per IEC 60529

IP69K per DIN40050 for quick disconnect and cable models when the cables are protected from direct spray

Operating Conditions

–40 °C to +70 °C (–40 °F to +158 °F)

90% at +50 °C maximum relative humidity (non-condensing)

Vibration and Mechanical Shock

All models meet MIL-STD-202F, Method 201A (Vibration: 10 Hz to 60 Hz maximum, 0.06 inch (1.52 mm) double amplitude, 10G acceleration) requirements. Method 213B conditions H&I.

Shock: 75G with device operating; 100G for non-operation

Certifications

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

Required Overcurrent Protection

WARNING: Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

Supply Wiring (AWG)	Required Overcurrent Protection (A)	Supply Wiring (AWG)	Required Overcurrent Protection (A)
20	5.0	26	1.0
22	3.0	28	0.8
24	2.0	30	0.5

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)

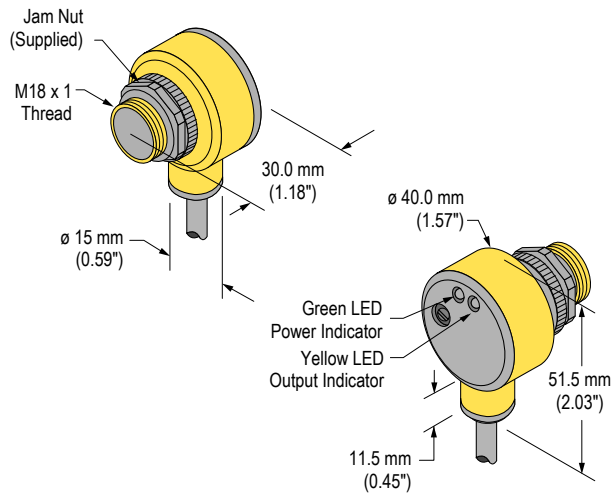
This device complies with CAN ICES-3 (A)/NMB-3(A). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

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.

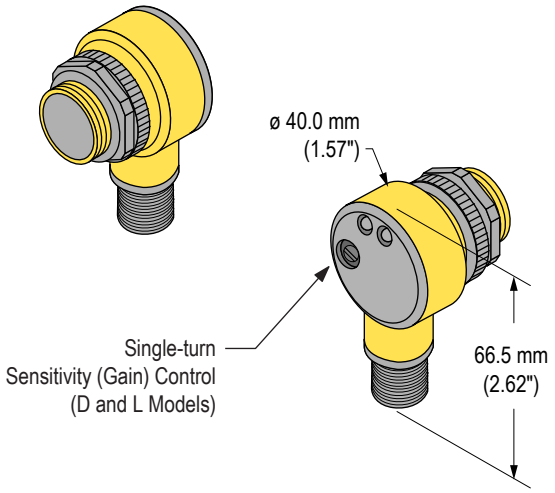
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Dimensions

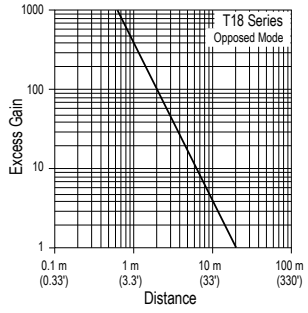
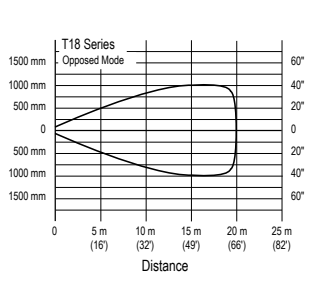
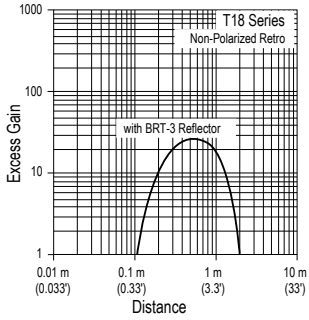
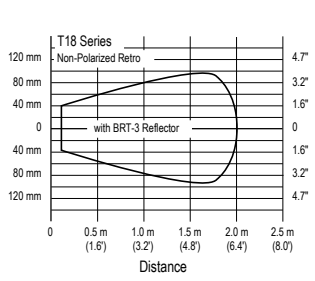
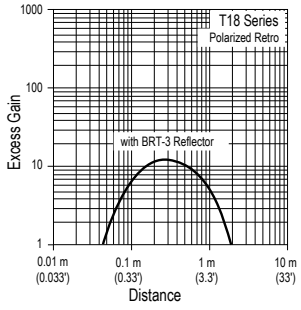
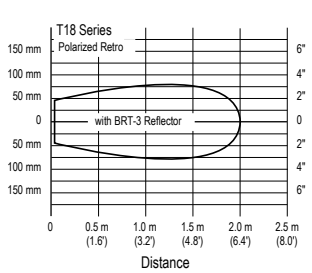
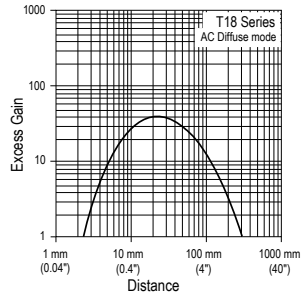
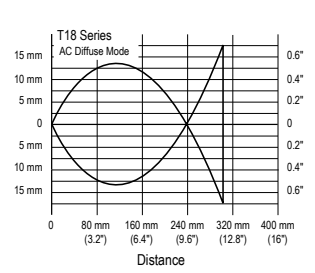
Cabled models



Quick disconnect models



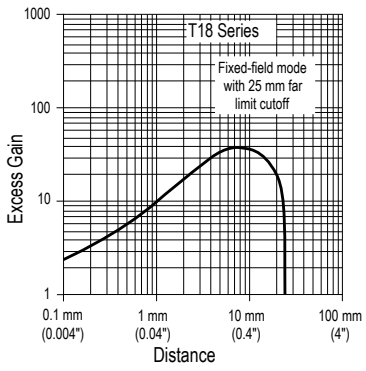
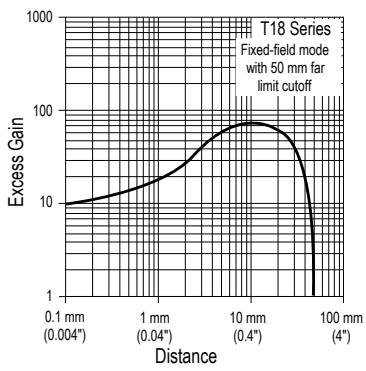
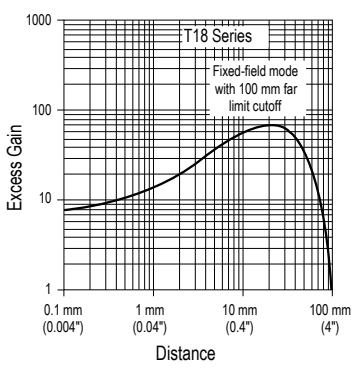
Performance Curves

Excess Gain	Beam Pattern	Excess Gain	Beam Pattern
Opposed Models		**Retroreflective Models**	
			
Polarized Retroreflective		**Diffuse (300 mm)**	
			

For the polarized retroreflective and retroreflective models, the performance is based on a model BRT-3 retroreflector (3 in diameter). The actual sensing range may be more or less than specified, depending on the efficiency and reflective area of the retroreflector used.

For the diffuse models, the performance is based on a 90% reflectance white test card.

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Fixed Field (25 mm)	Fixed Field (50 mm)	Fixed Field (100 mm)
		
10 mm dia spot size at 8 mm focus; 10 mm dia spot size at 25 mm cutoff Using an 18% gray test card, the cutoff distance will be 95% of the value shown. Using a 6% black test card, the cutoff distance will be 90% of the value shown.	10 mm dia spot size at 10 mm focus; 10 mm dia spot size at 50 mm cutoff Using an 18% gray test card, the cutoff distance will be 90% of the value shown. Using a 6% black test card, the cutoff distance will be 85% of the value shown.	10 mm dia spot size at 20 mm focus; 10 mm dia spot size at 100 mm cutoff Using an 18% gray test card, the cutoff distance will be 85% of the value shown. Using a 6% black test card, the cutoff distance will be 75% of the value shown.

For the fixed field models, the performance is based on a 90% reflectance white test card. Focus and spot sizes are typical.

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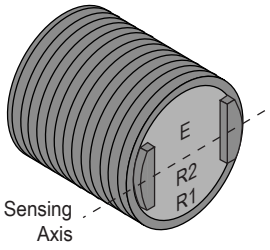
Chapter 2 Configuration Instructions

Sensor Setup

Sensing Reliability

As a general rule, the most reliable sensing of an object approaching from the side occurs when the line of approach is parallel to the sensing axis.

Fixed-field sensing axis



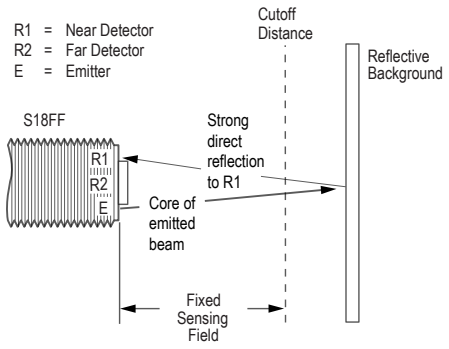
For highest sensitivity, position the target object for sensing at or near the point of maximum excess gain. The excess gain curves for these products are shown. Maximum excess gain for the 25 mm models occurs at a lens-to-object distance of about 7 mm; for 50 mm models, at about 10 mm; and for the 100 mm models, at about 20 mm. Sensing at or near this distance will make maximum use of each sensor's available sensing power. The background must be placed beyond the cutoff distance. (Note that the reflectivity of the background surface also may affect the cutoff distance.) Following these two guidelines will improve sensing reliability.

Background Reflectivity and Placement

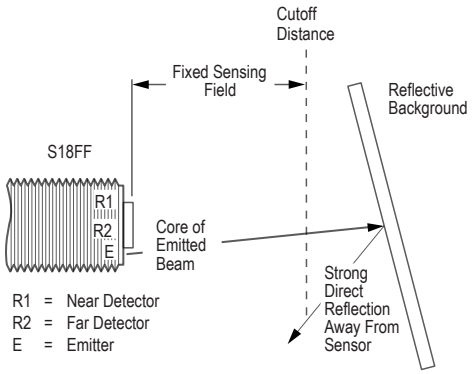
Avoid mirror-like backgrounds that produce specular reflections. False sensor response will occur if a background surface reflects the sensor's light more strongly to the near detector, or "sensing" detector (R1), than to the far detector, or "cutoff" detector (R2). The result is a false ON condition (see "Figure: Reflective Background - Problem" on page 9). To cure this problem, use a diffusely reflective (matte) background, or angle either the sensor or the background (in any plane) so the background does not reflect light back to the sensor (see "Figure: Reflective Background - Solution" on page 9). Position the background as far beyond the cutoff distance as possible.

An object beyond the cutoff distance, either stationary (and when positioned as shown in "Figure: Object Beyond Cutoff - Problem" on page 10), or moving past the face of the sensor in a direction perpendicular to the sensing axis, can cause unwanted triggering of the sensor if more light is reflected to the near detector than to the far detector. The problem is easily remedied by rotating the sensor 90° ("Figure: Object Beyond Cutoff - Solution" on page 10). The object then reflects the R1 and R2 fields equally, resulting in no false triggering. A better solution, if possible, may be to reposition the object or the sensor.

Reflective Background - Problem

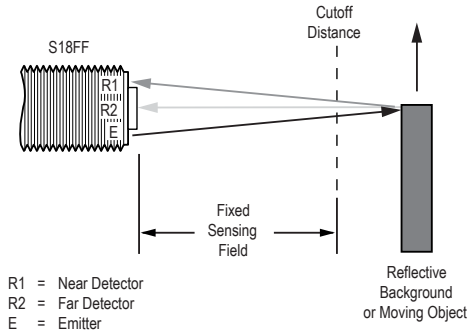


Reflective Background - Solution



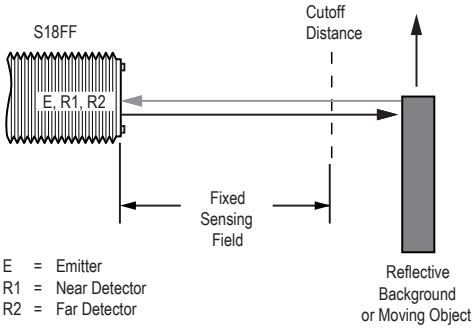
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Object Beyond Cutoff - Problem



A reflective background object in this position or moving across the sensor face in this axis and direction may cause false sensor response.

Object Beyond Cutoff - Solution



A reflective background object in this position or moving across the sensor face in this axis will be ignored.

Color Sensitivity

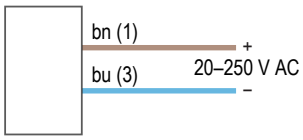
The effects of object reflectivity on cutoff distance, though small, may be important for some applications. It is expected that at any given cutoff setting, the actual cutoff distance for lower reflectance targets will be slightly shorter than for higher reflectance targets (see *Performance Curves*). This behavior is known as color sensitivity.

For example, an excess gain of 1 for an object that reflects 1/10 as much light as the 90% white card is represented by the horizontal graph line at excess gain = 10. An object of this reflectivity results in a far limit cutoff of approximately 20 mm (0.8 inches), for the 25 mm (1 inch) cutoff model for example; thus 20 mm represents the cutoff for this sensor and target.

These excess gain curves were generated using a white test card of 90% reflectance. Objects with reflectivity of less than 90% reflect less light back to the sensor, and thus require proportionately more excess gain to be sensed with the same reliability as more reflective objects. When sensing an object of very low reflectivity, it may be especially important to sense it at or near the distance of maximum excess gain.

Wiring

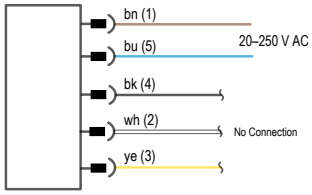
Cabled emitters



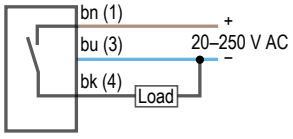
4-pin 1/2"-20UNF QD emitters



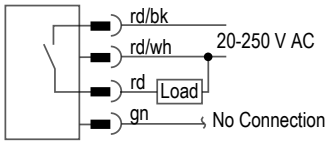
5-pin 1/2"-20UNF QD emitters



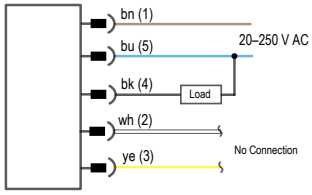
All other cabled models



All other 4-pin 1/2"-20UNF QD Models



All other 5-pin 1/2"-20UNF QD Models

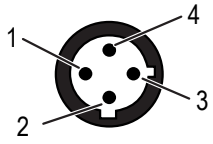


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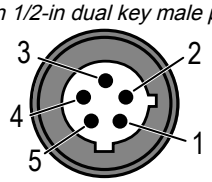
Continued from page 10

4-pin 1/2-in dual key male pinout



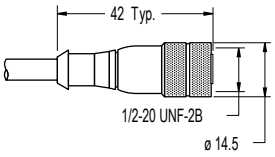
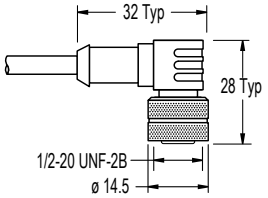
1. Red/black
2. Red/white
3. Red
4. Green

5-pin 1/2-in dual key male pinout



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Chapter 3 Accessories

4-Pin Single-Ended 1/2-in Dual Key Female Cordsets				
Model	**Length**	**Style**	**Dimensions**	**Pinout (Female)**
MQAC-406	2 m (6.56 ft)	Straight		 1 = Red/Black 2 = Red/White 3 = Red 4 = Green
MQAC-415	5 m (16.4 ft)			
MQAC-430	9.14 m (30 ft)			
MQAC-406RA	1.83 m (6 ft)	Right-Angle		
MQAC-415RA	5 m (16.4 ft)			
MQAC-430RA	9.14 m (30 ft)			

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Chapter 4 Product Support and Maintenance

Clean Sensor with Compressed Air Then Isopropyl Alcohol

Handle the sensor with care during installation and operation. Sensor windows soiled by fingerprints, dust, water, oil, etc. create stray light that may degrade the peak performance of the sensor.

Blow dust from the sensor using filtered, compressed air. If the sensor is still dirty, gently wipe the sensor with a dry optical cloth. If the dry optical cloth does not remove all residue, use 70% isopropyl alcohol on a clean optical cloth, then dry with a clean dry optical cloth and blow with filtered, compressed air. Do not use any other chemicals for cleaning.

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.

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

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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.

Opposed mode sensors (required an emitter and receiver

Models	Device	Range	Output	Connection
T18AW3R W/30	Receiver	20 m (66 ft)	LO	9 m cable
T18RW3R W/30			DO	9 m cable

Retroreflective mode sensors with gain control

Models	Range	Output	Connection
T18AW3L W/30	2 m (79 in)	LO	9 m cable
T18RW3L W/30		DO	9 m cable

Polarized retroreflective mode sensors

Models	Range	Output	Connection
T18AW3LP W/30	2 m (79 in)	LO	9 m cable

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Diffuse mode sensors with gain control

Models	Range	Output	Connection
T18AW3D W/30	300 mm (12 in)	LO	9 m cable

Fixed-field mode sensors

Models	Range	Output	Connection
T18AW3FF25	25 mm (1 in) Cutoff	LO	2 m (6.5 ft) cable
T18AW3FF25 W/30			9 m cable
T18RW3FF25		DO	2 m (6.5 ft) cable
T18RW3FF25 W/30			9 m cable
T18RW3FF25Q1			4-pin Micro-style QD
T18RW3FF50 W/30	50 mm (2 in) Cutoff	DO	9 m cable
T18RW3FF100 W/30	100 mm (4 in) Cutoff	DO	9 m cable

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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