QS18 Series

Versatile Sensor for Global Manufacturing Needs

- **All-purpose sensors** solve the widest variety of sensing applications
- Versatile sensor with **many mounting options**
- Meets **IP67** and **NEMA 6** standards for use in harsh environments
- Universal housing for global use
- Cordsets and brackets see page 51

QS18 page 42

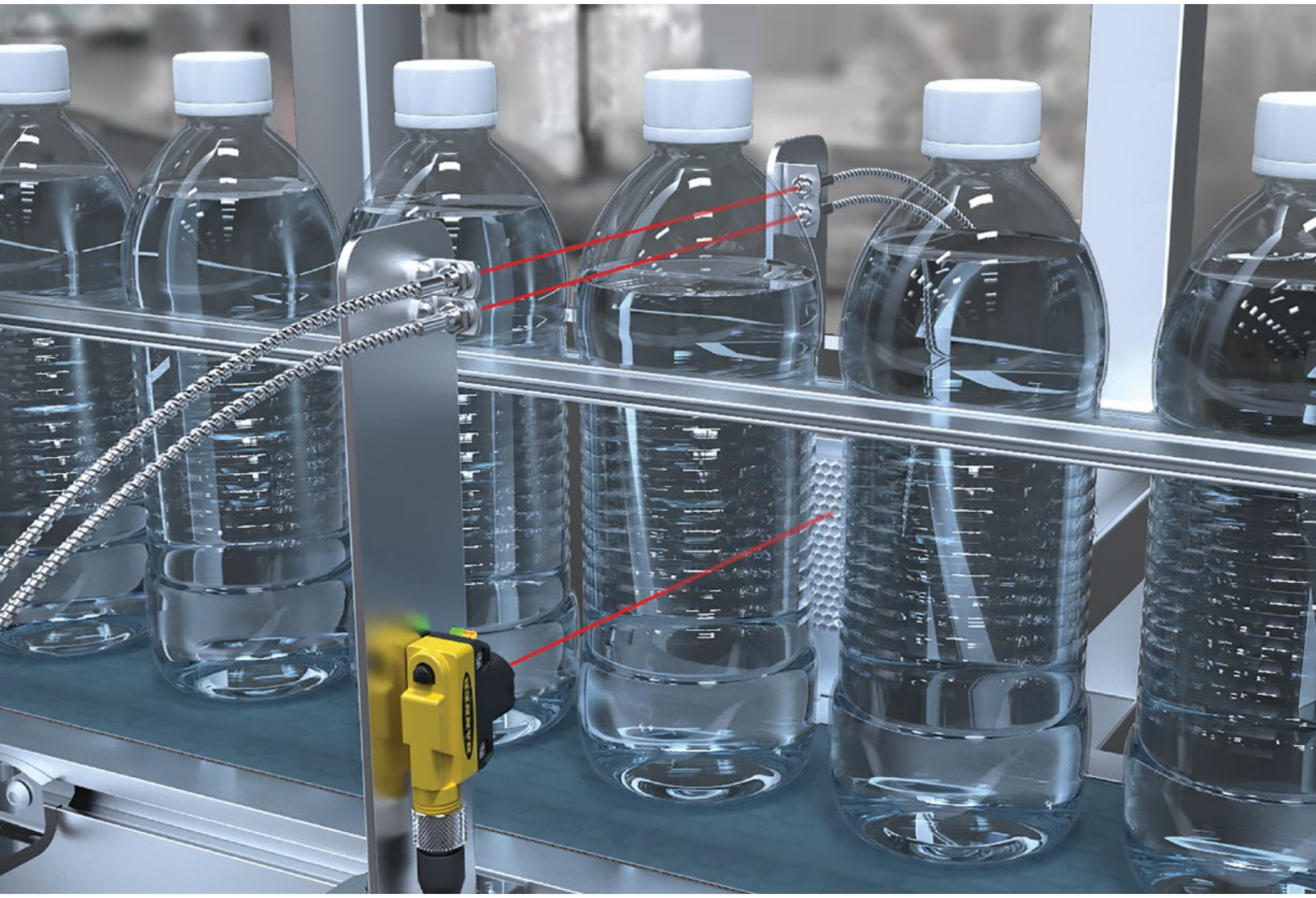
The QS18 Standard Sensor requires little to no adjustment. The sensor is available in multiple sensing modes and has a wide variety of connection options.

QS18 *Expert*™ page 44

The QS18 Expert™ offers advanced sensing with single push-button programming and several sensing modes and configuration options.

QS18 Clear Object page 45

The QS18 Clear Object sensor is designed for clear object detection in plastic or glass containers.



QS18 Laser page 46

The QS18 Laser Sensor has a narrow visible beam spot for easy alignment and small object detection.

QS18 Adjustable-Field page 48

The QS18 Adjustable-Field Sensor is ideal for background and foreground suppression. The sensor is available in long-range models for sensing up to 300 mm.

QS18 Universal Voltage page 50

The QS18 Universal Voltage Sensor operates on ac or dc voltage and has several sensing modes available, making it an ideal sensor for many manufacturing environments.

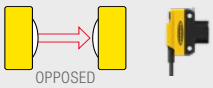
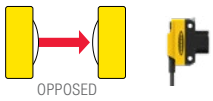
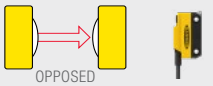
QS18

DC-Operated Sensors

- All-purpose sensor solves widest variety of sensing applications
- Simple set-up with 270 degree potentiometer and fixed sensitivity models
- Versatile sensor with many mounting options
- Meets IP67 and NEMA 6 standards for use in wet environments
- Universal housing for global use
- Cordsets and brackets see page 51

Opposed QS18

⇨ Infrared LED ➡ Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 OPPOSED	20 m	2 m	QS186E Emitter	
		4-pin Euro QD	QS186EQ8 Emitter	
		2 m	QS18VN6R	QS18VP6R
		4-pin Euro QD	QS18VN6RQ8	QS18VP6RQ8
 OPPOSED	20 m	2 m	QS186EV Emitter	
		4-pin Euro QD	QS186EVQ8 Emitter	
 OPPOSED	3 m	2 m	QS186EB Emitter	
		4-pin Euro QD	QS186EBQ8 Emitter	
		2 m	QS18VN6RB	QS18VP6RB
		4-pin Euro QD	QS18VN6RBQ8	QS18VP6RBQ8

Retro & Polar Retro QS18

➡ Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 RETRO	6.5 m†	2 m	QS18VN6LV	QS18VP6LV
		4-pin Euro QD	QS18VN6LVQ8	QS18VP6LVQ8
 POLAR RETRO	3.5 m†	2 m	QS18VN6LP	QS18VP6LP
		4-pin Euro QD	QS18VN6LPQ8	QS18VP6LPQ8

Box Sorting for Size

Three QS18 opposed mode sensors above the roller conveyor detect any passing object, triggering the horizontal QS18 sensor. Boxes are diverted by size as they continue forward.

For more specifications see page 52.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix W/30 to the 2 m model number (example, **QS18VN6LV W/30**).

QD models

- For 4-pin integral Pico-style QD, add suffix **Q7** (example, **QS18VN6LVQ7**).
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS18VN6LVQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18VN6LVQ**).

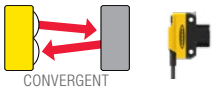
† Retroreflective range is specified using one model BRT-84 retroreflector.

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

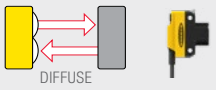
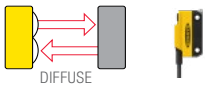
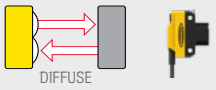
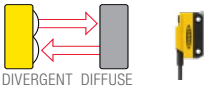
Convergent QS18

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
	16 mm	2 m	QS18VN6CV15	QS18VP6CV15
		4-pin Euro QD	QS18VN6CV15Q8	QS18VP6CV15Q8
	43 mm	2 m	QS18VN6CV45	QS18VP6CV45
		4-pin Euro QD	QS18VN6CV45Q8	QS18VP6CV45Q8

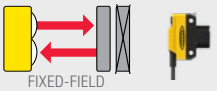
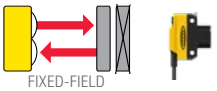
Diffuse QS18

Infrared LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
	450 mm	2 m	QS18VN6D	QS18VP6D
		4-pin Euro QD	QS18VN6DQ8	QS18VP6DQ8
	450 mm	2 m	QS18VN6DB	QS18VP6DB
		4-pin Euro QD	QS18VN6DBQ8	QS18VP6DBQ8
	600 mm	2 m	QS18VN6DL	QS18VP6DL
		4-pin Euro QD	QS18VN6DLQ8	QS18VP6DLQ8
	100 mm	2 m	QS18VN6W	QS18VP6W
		4-pin Euro QD	QS18VN6WQ8	QS18VP6WQ8

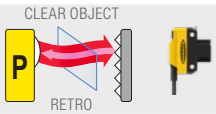
Fixed-Field QS18

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
	0-50 mm Cutoff	2 m	QS18VN6FF50	QS18VP6FF50
		4-pin Euro QD	QS18VN6FF50Q8	QS18VP6FF50Q8
	0-100 mm Cutoff	2 m	QS18VN6FF100	QS18VP6FF100
		4-pin Euro QD	QS18VN6FF100Q8	QS18VP6FF100Q8

Coaxial QS18 Clear Object Detection

Visible Red LED

Sensing Mode	Range**	Connection	Models NPN*	Models PNP*
	0-3 m	2 m	QS18VN6XLP	QS18VP6XLP
		4-pin Euro QD	QS18VN6XLPQ8	QS18VP6XLPQ8

For more specifications see page 52.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix W/30 to the 2 m model number (example, **QS18VN6LV W/30**).

QD models

- For 4-pin integral Pico-style QD, add suffix **Q7** (example, **QS18VN6LVQ7**).
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS18VN6LVQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18VN6LVQ**).

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

** For use with BRT-92X92C

Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

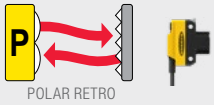
QS18 *Expert*™

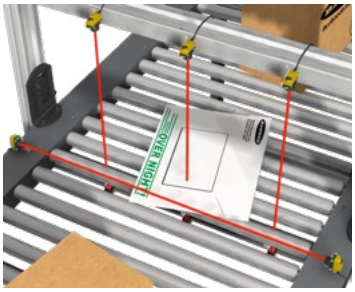
Sensors with Push-Button Programming

- Intuitive push-button lock out to prevent accidental configuration changes
- Bright LED status indicators visible from 360°
- Reliable detection of reflective objects
- Cordsets and brackets see page 51

Polar Retro QS18 *Expert*™

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 POLAR RETRO	3.5 m†	2 m	QS18EN6LP	QS18EP6LP
		4-pin Euro QD	QS18EN6LPQ8	QS18EP6LPQ8

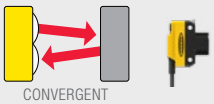
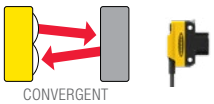


Mail Sorting for Size

Three QS18 opposed mode sensors above the roller conveyor detect any passing object, triggering the horizontal QS18 sensor. Letters pass below the horizontal QS18 undetected and are diverted to the letter conveyor. Parcels are detected and continue forward.

Convergent QS18 *Expert*™

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 CONVERGENT	16 mm	2 m	QS18EN6CV15	QS18EP6CV15
		4-pin Euro QD	QS18EN6CV15Q8	QS18EP6CV15Q8
 CONVERGENT	43 mm	2 m	QS18EN6CV45	QS18EP6CV45
		4-pin Euro QD	QS18EN6CV45Q8	QS18EP6CV45Q8

For more specifications see page 53.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18EN6LP W/30**).

QD models

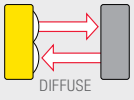
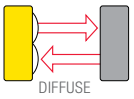
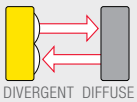
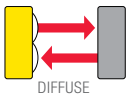
- For 4-pin integral Pico-style QD, add suffix **Q7** (example, **QS18EN6LPQ7**).
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS18EN6LPQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18EN6LPQ**).

† Retroreflective range is specified using one model BRT-84 retroreflector.
Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

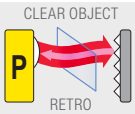
Diffuse QS18 *Expert*™

Infrared LED Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 	800 mm	2 m	QS18EN6D	QS18EP6D
		4-pin Euro QD	QS18EN6DQ8	QS18EP6DQ8
 	500 mm	2 m	QS18EN6DB	QS18EP6DB
		4-pin Euro QD	QS18EN6DBQ8	QS18EP6DBQ8
 	300 mm	2 m	QS18EN6W	QS18EP6W
		4-pin Euro QD	QS18EN6WQ8	QS18EP6WQ8
 	600 mm	2 m	QS18EN6DV	QS18EP6DV
		4-pin Euro QD	QS18EN6DVQ8	QS18EP6DVQ8

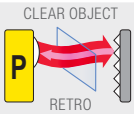
Coaxial QS18 *Expert*™ Clear Object Detection

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 	0-3 m	2 m	QS18EN6XLPC	QS18EP6XLPC
		4-pin Euro QD	QS18EN6XLPCQ8	QS18EP6XLPCQ8

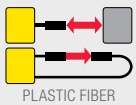
Coaxial QS18 *Expert*™ Clear Object Detection with IO-Link

Visible Red LED

Sensing Mode	Range	Connection	Models
 	0-3 m	2 m	QS18EK6XLPC
		4-pin Euro QD	QS18EK6XLPCQ8

Plastic Fiber QS18 *Expert*™

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
	Range varies by sensing mode and fiber optics used	2 m	QS18EN6FP	QS18EP6FP
		4-pin Euro QD	QS18EN6FPQ8	QS18EP6FPQ8

For more specifications see page 53.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18EN6D W/30**).

QD models

- For 4-pin integral Pico-style QD, add suffix **Q7** (example, **QS18EN6DQ7**).
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS18EN6DQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18EN6DQ**).

Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

** For use with BRT-92X92C

QS18 Laser

DC-Operated Long-Range Laser Sensors

- The QS18 Laser Emitter has a narrow visible beam spot for easy alignment and small object detection.
- Long sensing ranges
- Available in opposed, diffuse and retroreflective mode (see page 48 for adjustable-field models)
- Cordsets and brackets see page 51

Class 1 Laser QS18

Visible Red Laser

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
CLASS 1 LASER EMITTER	15 m (4500 x excess gain)	2 m	QS186LE Emitter**	
		4-pin Euro QD	QS186LEQ8 Emitter**	
CLASS 1 LASER SPOT	See datasheet for more information.	2 m	QS186LE10	
		4-pin Euro QD	QS186LE10Q8	
CLASS 1 LASER SPOT	See datasheet for more information.	2 m	QS186LE11	
		4-pin Euro QD	QS186LE11Q8	
CLASS 1 LASER SPOT	See datasheet for more information.	2 m	QS186LE12	
		4-pin Euro QD	QS186LE12Q8	
CLASS 1 LASER SPOT	See datasheet for more information.	2 m	QS186LE14	
		4-pin Euro QD	QS186LE14Q8	
CLASS 1 P LASER POLAR RETRO	0.1-10 m†	2 m	QS18VN6LLP	QS18VP6LLP
		4-pin Euro QD	QS18VN6LLPQ8	QS18VP6LLPQ8
CLASS 1 DIFFUSE LASER	300 mm	2 m	QS18VN6LD	QS18VP6LD
		4-pin Euro QD	QS18VN6LDQ8	QS18VP6LDQ8

For more specifications see page 52.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS186LE W/30**).

QD models

- For 4-pin integral Euro-style QD, add suffix **Q7** (example, **QS186LEQ7**).
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS186LEQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS186LEQ**).

† Retroreflective range is specified using one model BRT-51X51BM or BRT-TVHG-2X2 retroreflector.
Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

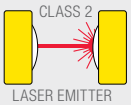
** Specified with QS18 threaded lens receiver. Not recommended for dusty or dirty envirmonments; the scattered light would greatly reduce excess gain.
For use with standard QS18 opposed mode receivers

Package Inspection Using Diffuse-Mode Laser Sensors

When packaging medical supplies, error-proofing and quality control are of the utmost importance. In this application, it's necessary to inspect each package of gauze pads to ensure that the lid has been closed and that tape has been applied to seal the package. Automating this process means greater efficiency and less chance of error.

Class 2 Laser QS18

Visible Red Laser

Sensing Mode	Range	Connection	Models*
	15 m (7000 X excess gain)	2 m 4-pin Euro QD	QS186LE2 Emitter** QS186LE2Q8 Emitter**
CLASS 2 LASER SPOT	See datasheet for more information	2 m 4-pin Euro QD	QS186LE210 QS186LE210Q8
CLASS 2 LASER SPOT	See datasheet for more information	2 m 4-pin Euro QD	QS186LE211 QS186LE211Q8
CLASS 2 LASER SPOT	See datasheet for more information	2 m 4-pin Euro QD	QS186LE212 QS186LE212Q8
CLASS 2 LASER SPOT	See datasheet for more information	2 m 4-pin Euro QD	QS186LE214 QS186LE214Q8

Class 1 Laser Sensors

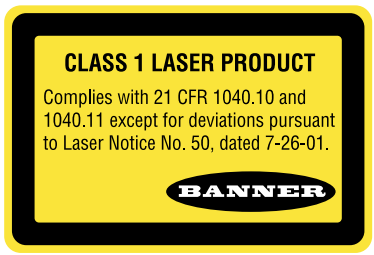
Lasers that are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing. Reference IEC 60825-1: 2001, section 8.2.

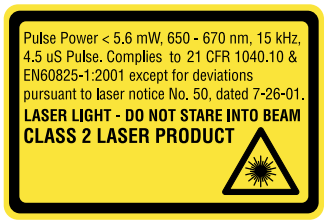
Class 2 Lasers

Lasers that emit visible radiation in the wavelength range from 400 nm to 700 nm, where eye protection is normally afforded by aversion responses, including the blink reflex. This reaction may be expected to provide adequate protection under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing. Reference IEC 60825-1:2001, section 8.2.

For safe laser use (Class 1 or Class 2):

- Do not permit a person to stare at the laser from within the beam.
- Do not point the laser at a person's eye at close range.
- Terminate the beam emitted by a Class 2 laser product at the end of its useful path.
- Locate open laser beam paths either above or below eye level, where practical.





For more specifications see page 52.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS186LE2 W/30**).

QD models

- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS186LE2Q**).

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

** Specified with QS18 threaded lens receiver. Not recommended for dusty or dirty envirmonments; the scattered light would greatly reduce excess gain.

QS18 Adjustable–Field

Foreground and Background Suppression Sensors

- The QS18 Adjustable-Field Sensor is ideal for background and foreground suppression
- The sensor is available in long-range models for sensing up to 300 mm
- Background suppression models for detection of objects when the background condition is not fixed
- Foreground suppression models for detection when background is fixed and object varies in color or shape
- Visible red LED or laser sensing beam
- Cordsets and brackets see page 51

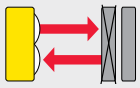
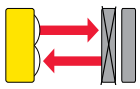
Adjustable-Field Foreground Suppression

Foreground suppression models for reliable detection when a fixed background is present and the object color or shape varies

- Objects detected to the face of the sensor (no dead zone).
- Simple multiturn screw adjustment of cutoff distance
- Enhanced immunity to fluorescent lights
- Crosstalk immunity algorithm allows two sensors to be used in close proximity
- Visible red emitter

Adjustable-Field Foreground QS18

Visible Red LED

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 ADJUSTABLE-FIELD FOREGROUND	Adjustable between 30-200 mm	2 m	QS18AB6AFF200 (Bipolar NPN/PNP)	
		4-pin Euro Pigtail QD	QS18AB6AFF200Q5 (Bipolar NPN/PNP)	
		2 m	QS18VN6AFF200	QS18VP6AFF200
		4-pin Euro Pigtail QD	QS18VN6AFF200Q5	QS18VP6AFF200Q5
 ADJUSTABLE-FIELD FOREGROUND	Adjustable between 15-40 mm	2 m	QS18AB6AFF40 (Bipolar NPN/PNP)	
		4-pin Euro Pigtail QD	QS18AB6AFF40Q5 (Bipolar NPN/PNP)	
		2 m	QS18VN6AFF40	QS18VP6AFF40
		4-pin Euro Pigtail QD	QS18VN6AFF40Q5	QS18VP6AFF40Q5

For more specifications see page 52.

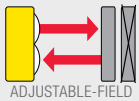
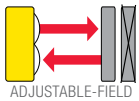
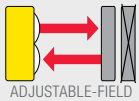
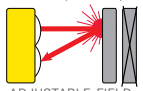
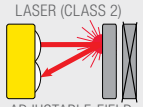
Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18VN6AFF200 W/30**).
QD models
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18EN6LPQ**).

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

Adjustable-Field Background Suppression QS18

Visible Red LED — Visible Red Laser

Sensing Mode	Range	Connection	Models NPN*	Models PNP*
 ADJUSTABLE-FIELD BACKGROUND SUPPRESSION	Adjustable between 30-300 mm	2 m	QS18AB6AF300 (Bipolar NPN/PNP)	
		4-pin Euro Pigtail QD	QS18AB6AF300Q5 (Bipolar NPN/PNP)	
		2 m	QS18VN6AF300	QS18VP6AF300
		4-pin Euro Pigtail QD	QS18VN6AF300Q5	QS18VP6AF300Q5
 ADJUSTABLE-FIELD BACKGROUND SUPPRESSION	Adjustable between 15-40 mm	2 m	QS18AB6AF40 (Bipolar NPN/PNP)	
		4-pin Euro Pigtail QD	QS18AB6AF40Q5 (Bipolar NPN/PNP)	
		2 m	QS18VN6AF40	QS18VP6AF40
		4-pin Euro Pigtail QD	QS18VN6AF40Q5	QS18VP6AF40Q5
 ADJUSTABLE-FIELD BACKGROUND SUPPRESSION	1 mm to cutoff point (adjustable between 20-100 mm)	2 m	QS18VN6AF100	QS18VP6AF100
		4-pin Euro Pigtail QD	QS18VN6AF100Q5	QS18VP6AF100Q5
LASER (CLASS 1)  ADJUSTABLE-FIELD BACKGROUND SUPPRESSION	1 mm to cutoff point (adjustable between 30-150 mm)	2 m	QS18VN6LAF	QS18VP6LAF
		4-pin Euro Pigtail QD	QS18VN6LAFQ5	QS18VP6LAFQ5
LASER (CLASS 2)  ADJUSTABLE-FIELD BACKGROUND SUPPRESSION	20 mm to cutoff point (adjustable between 50-250 mm)	2 m	QS18VN6LAF250	QS18VP6LAF250
		4-pin Euro Pigtail QD	QS18VN6LAF250Q5	QS18VP6LAF250Q5

Adjustable-Field Background Suppression

Background suppression models for reliable detection of objects when the background condition is not controlled or fixed

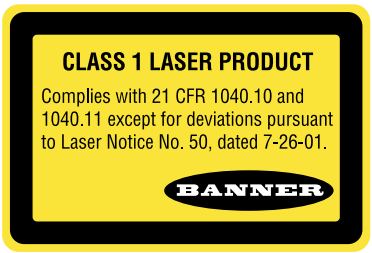
- Simple multiturn screw adjustment of cutoff distance
- Enhanced immunity to fluorescent lights
- Crosstalk immunity algorithm allows two sensors to be used in close proximity
- Visible red emitter

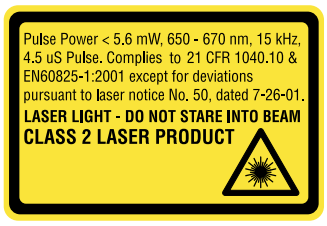
Class 1 Laser Sensors

Lasers that are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing. Reference IEC 60825-1: 2001, section 8.2.

Class 2 Lasers

Lasers that emit visible radiation in the wavelength range from 400 nm to 700 nm, where eye protection is normally afforded by aversion responses, including the blink reflex. This reaction may be expected to provide adequate protection under reasonably foreseeable conditions of operation, including the use of optical instruments for intrabeam viewing. Reference IEC 60825-1:2001, section 8.2.





For safe laser use (Class 1 or Class 2):

- Do not permit a person to stare at the laser from within the beam.
- Do not point the laser at a person's eye at close range.
- Terminate the beam emitted by a Class 2 laser product at the end of its useful path.
- Locate open laser beam paths either above or below eye level, where practical.

For more specifications see page 52.

Connection options: A model with a QD requires a mating cordset (see page 51).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18EN6LP W/30**).
QD models
- For 4-pin 150 mm Euro-style pigtail QD, add suffix **Q5** (example, **QS18EN6LPQ5**).
- For 4-pin 150 mm Pico-style pigtail QD, add suffix **Q** (example, **QS18EN6LPQ**).

* Contact factory at 1-888-373-6767 for Bipolar NPN/PNP output model options.

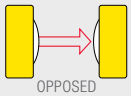
QS18 Universal Voltage

Versatile Sensors Operate on AC or DC Voltage

- The QS18 Universal Voltage Sensor operates on ac or dc voltage
- Versatile sensor with many mounting options
- Ready to hook up out of the box
- Cordsets and brackets see page 51

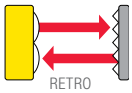
Opposed QS18 Universal Voltage, 20-140 V AC/DC or 20-270 V AC/DC

Infrared LED

Sensing Mode	Range	Output††	Models Light Operate	Models Dark Operate
 OPPOSED	20 m	—	QS18WE Emitter	
		N-MOSFET (Sinking)	QS18ANWR	QS18RNWR
		P-MOSFET (Sourcing)	QS18APWR	QS18RPWR

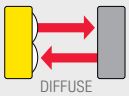
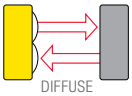
Polar Retro & Retro
QS18 Universal Voltage, 20-140 V AC/DC or 20-270 V AC/DC

Visible Red LED

Sensing Mode	Range	Output††	Models Light Operate	Models Dark Operate
 POLAR RETRO	3.5 m†	N-MOSFET (Sinking)	QS18ANWLP	QS18RNWLP
		P-MOSFET (Sourcing)	QS18APWLP	QS18RPWLP
 RETRO	6.5 m†	N-MOSFET (Sinking)	QS18ANWLV	QS18RNWLV
		P-MOSFET (Sourcing)	QS18APWLV	QS18RPWLV

Diffuse QS18 Universal Voltage, 20-140 V AC/DC or 20-270 V AC/DC

Visible Red LED
Infrared LED

Sensing Mode	Range	Output††	Models Light Operate	Models Dark Operate
 DIFFUSE	450 mm	N-MOSFET (Sinking)	QS18ANWDL	QS18RNWDL
		P-MOSFET (Sourcing)	QS18APWDL	QS18RPWDL
 DIFFUSE	1 m	N-MOSFET (Sinking)	QS18ANWDXL	QS18RNWDXL
		P-MOSFET (Sourcing)	QS18APWDXL	QS18RPWDXL

For more specifications see page 53.

Connection options: A model with a QD requires a mating cordset.

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **QS18WE W/30**).

QD models

- For 4-pin 150 mm Micro-style pigtail QD, add suffix **Q2** to the model number (example, **QS18WEQ2**).

600 V cable models: Standard models are supplied with 300 V cable. For a 600 V cable, add suffix **C1** to the 2 m model number (example, **QS18WEC1**).

† Retroreflective range is specified using one model BRT-84 retroreflector.
Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

††**MOSFET**: Metal oxide semiconductor field-effect transistor.

Conveyor Jam Detection Using Opposed-Mode Sensors

When an object is lodged in front of the sensor an output is triggered, alerting personnel to the presence of the jam. QS18 Universal Voltage sensors can be connected to either ac or dc power, allowing them to operate in applications already using ac power without requiring a separate power supply.

Euro QD
(for ..Q8 or ..Q5 models)
Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDC-406RA)**

4-Pin
MQDC-406
2 m (6')
MQDC-415
5 m (15')
MQDC-430
9 m (30')

Pico QD
(for Q7 models)
Straight snap-on connector

Pico QD (for Q7 models)
Right-angle snap-on connector

4-Pin
PKG4-2
2 m (6')

PKW4Z-2
2 m (6')

Micro QD
(for ..Q2 models)
Straight connector models listed

4-Pin
MQAC-406
2 m (6')
MQAC-415
5 m (15')
MQAC-430
9 m (30')

Euro QD with Shield
(for ..Q8 or ..Q5 models)
Straight connector models listed; for right-angle, add **RA** to the end of the model number (example, **MQDEC2-406RA)**

4-Pin
MQDEC2-406
2 m (6')
MQDEC2-415
5 m (15')
MQDEC2-430
9 m (30')

Pico QD with Shield
(for Q7 models)
Straight snap-on connector

Pico QD (for Q7 models)
Right-angle snap-on connector

4-Pin
PKG4S-2
2 m (6')

PKW4ZS-2
2 m (6')

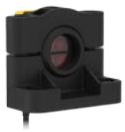
Additional cordset information is available
See page 758

SMBQ4XFA

SMBQS18A

SMB18A

SMBQS18AF



SMB18SF

Additional bracket information is available
See page 722

Reflectors

Additional information is available
See page 790

Apertures

Additional information is available
See page 816

Opposed, Retroreflective,
Laser Retroreflective, Convergent,
Diffuse, Laser Diffuse and Fixed-Field Models
Suffix E, R, LV, LP, LLP, CV15, CV45, D, DV, LD, LE and FF

Opposed, Diffuse and
Divergent Diffuse Models
Suffix EB, RB, DB and W

Adjustable-Field Models
Suffix AFF, AF and LAF

Opposed, Retroreflective,
Polar Retroreflective and Diffuse
Models
Suffix E, R, LP, LV, DL and XL

Plastic Fiber Models
Suffix FP

Glass Fiber Models
Suffix F

QS18, DC, Laser, Adjustable-Field Specifications

Supply Voltage and Current	**Retroreflective, Diffuse and Adjustable-Field Laser:** 10 to 30 V dc (10% max. ripple) at less than 15 mA, exclusive of load **Laser Emitters:** 10 to 30 V dc (10% max. ripple) at less than 35 mA **Adjustable-Field (40, 200 & 300 mm):** 10 to 30 V dc (10% max. ripple) at less than 27 mA **All Others:** 10 to 30 V dc (10% max. ripple) at less than 25 mA, exclusive of load
Laser Characteristics (Laser models only)	**Wavelength: Class 1:** 650 nm visible red **Class 2:** Adjustable-Field—658 nm visible red Laser Emitter—650 nm visible red
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Laser Control (Emitters only)	Apply 0 V dc to white wire to enable beam Apply +10 to 30 V dc to white wire to inhibit beam **Enable Time:** Class 1—240 ms Class 2—8 ms **Disable time:** Class 1—100 ms Class 2—1 ms
Output Configuration*	**Solid-state complementary:** NPN (current sinking), PNP (current sourcing), or bipolar (both sinking and sourcing) depending on model **Rating:** 100 mA total output current **OFF-state leakage current:** Adjustable-Field LED (40, 200 & 300 mm), Retroreflective, Diffuse and Adjustable-Field Laser: **NPN:** less than 200 µA @ 30 V dc (see Application Note 1) **PNP:** less than 10 µA @ 30 V dc **Fixed-Field:** less than 200 µA @ 30 V dc **All others:** less than 50 µA @ 30 V dc **ON-state saturation voltage:** Adjustable-Field LED (40, 200 & 300 mm), Retroreflective, Diffuse and Adjustable-Field Laser: **NPN:** less than 1.6 V @ 100 mA **PNP:** less than 3.0 V @ 100 mA **All others:** less than 1 V @ 10 mA; less than 1.5 V @ 100 mA Protected against false pulse on power-up and continuous overload or short circuit of outputs
Output Response Time*	**Opposed:** 750 microseconds ON; 375 microseconds OFF **Retroreflective Laser, Diffuse Laser and Adjustable-Field (100, 150 & 250 mm):** 700 microseconds ON/OFF **Adjustable-Field (40, 200 & 300 mm):** 2.8 milliseconds ON/OFF **Fixed-Field:** 850 microseconds ON/OFF **All others:** 600 microseconds ON/OFF
Delay at Power-up	**Laser Emitters:** Class 1—250 milliseconds Class 2—10 milliseconds **Adjustable-Field LED (40, 200 & 300 mm), Retroreflective, Diffuse and Adjustable-Field Laser:** 200 milliseconds; outputs do not conduct during this time. **All others:** 100 milliseconds; outputs do not conduct during this time.
Repeatability*	**Opposed:** 100 microseconds **Retroreflective Laser, Diffuse Laser and Adjustable-Field Laser:** 130 microseconds **Adjustable-Field LED (100 mm):** 175 microseconds **Adjustable-Field LED (40, 200 & 300 mm):** 250 microseconds **Fixed-Field:** 160 microseconds **All Others:** 150 microseconds
Adjustments*	**Retro, Retro Laser, Convergent, Diffuse, Diffuse Laser and Glass & Plastic Fiber Optic:** Single-turn sensitivity (Gain) adjustment potentiometer **Adjustable-Field:** Five-turn adjustment screw sets cutoff distance between min. and max. position
Indicators	**Laser Emitters:** Green LED: Power applied **All others, 2 LED indicators:** (**Green:** Power ON **Yellow:** Light sensed) See datasheet for detailed information
Construction	ABS housing; acrylic lens cover (Laser Emitter models have PMMA window) 2.5 mm (adjustable-field only) and 3 mm mounting hardware included
Environmental Rating	Rated IEC IP67; NEMA 6; UL Type 1
Connections	2 m or 9 m 4-wire PVC cable, or 4-pin 150 mm pigtail Pico-style QD (Q), or 4-pin 150 mm pigtail Euro-style QD (Q5), or 4-pin Integral Pico-style QD (Q7), or 4-pin Integral Euro-style QD (Q8), depending on model. QD cordsets are ordered separately. See page 51.
Operating Conditions	**Temperature:** Lasers: -10° to +50° C; Adjustable-Field LED (100 mm): 0° to +55° C; Adjustable-Field LED (40, 200 & 300 mm): -20° to +55° C; All others: -20° to +70° C **Relative humidity:** Lasers: 90% @ 50° C (non-condensing); Adjustable-Field LED (100 mm): 95% @ 50° C (non-condensing); Adjustable-Field LED (40, 200 & 300 mm): 95% @ 50° C (non-condensing); All others: 95% @ 50° C (non-condensing)
Laser Classification (Laser models only)	Class 1 and Class 2 laser product; complies with IEC 60825-1: 2001 and 21 CFR 1040.10, except deviations pursuant to Laser Notice 50, dated 7-26-01.
Application Notes	**AF models**: NPN off-state leakage current is < 200 µA for load resistances > 3 kΩ or optically isolated loads. For load current of 100 mA, leakage is < 1% of load current
Certifications	**All others:** CE c UL us **Laser Emitters:** CE

* Does not apply to laser emitter models.