



CE cULus
(some models)



Features

- Exceptional optical performance, comparable to larger sensors
- Simple multi-turn screw adjustment of cutoff distance
- 10 to 30V dc operation, with complementary (SPDT) NPN or PNP outputs, depending on model
- Less than 1 millisecond output response for excellent sensing repeatability

Laser Models:

- Narrow effective beam (approx. 1 mm spot size) for small-object detection and precise position control
- Crosstalk rejection algorithm to avoid optical disturbance from adjacent sensors
- Class 2 models have reduced excess gain within 20 mm of sensor for decreased susceptibility to the effects of lens contamination and to allow use of external lens shield.

Models



Models	Sensing Beam and Range	Cable*	Supply Voltage	Output Type	Excess Gain	
					Performance based on 90% reflectance white test card	
QS18VN6AF100	660 nm Visible Red LED Range: 1 mm (0.04") to cutoff point	2 m (6.5') 4-wire	10 to 30V dc	NPN	Gain at 20 mm Cutoff 	
QS18VP6AF100	Adjustable cutoff point, 20-100 mm (0.8"-4")			PNP	Gain at 100 mm Cutoff 	
QS18VN6LAF	650 nm Visible Red Class 1 Laser Range: 1 mm (0.04") to cutoff point			NPN	Gain at 30 mm Cutoff 	
QS18VP6LAF	Adjustable cutoff point, 30-150 mm (1.2"-6")			PNP	Gain at 150 mm Cutoff 	
QS18VN6LAF250	658 nm Visible Red Class 2 Laser Range: 20 mm (0.8") to cutoff point			NPN	Gain at 50 mm Cutoff 	
QS18VP6LAF250	Adjustable cutoff point, 50-250 mm (2"-10")			PNP	Gain at 250 mm Cutoff 	

*Only standard 2 m (6.5') cable models are listed above. For other cable/connector options:

- 9 m (30') cables: add suffix "W/30" to the model number (e.g., **QS18VN6AF100 W/30**).
- 4-pin Pico-style pigtail QD: add suffix "Q" to the model number (e.g., **QS18VN6AF100Q**); accessory mating cordset required, see page 7.
- 4-pin Euro-style pigtail QD: add suffix "Q5" to the model number (e.g., **QS18VN6AF100Q5**); accessory mating cordset required, see page 7.

WORLD-BEAM® QS18 Adjustable-Field Sensors

Specifications

	QS18AF Models	QS18LAF Models	QS18LAF250 Models
Supply Voltage	10 to 30V dc (10% maximum ripple) at less than 25 mA, exclusive of load; Protected against reverse polarity and transient voltages	10 to 30V dc (10% maximum ripple) at less than 15 mA, exclusive of load; Protected against reverse polarity and transient voltages	
Sensing Beam	Visible red LED, 660 nm	Visible red laser (see below)	
Laser Characteristics	N/A	Wavelength: 650 nm visible red Class 1 laser Pulse Width: 7 microseconds Rep Rate: 130 microseconds Average Output Power: 0.065 mW	Wavelength: 658 nm visible red Class 2 laser Pulse Width: 7 microseconds Rep Rate: 130 microseconds Average Output Power: 0.2 mW
Output Configuration	Solid-state complementary (SPDT); NPN or PNP (current sinking or sourcing), depending on model; Rating: 100 mA maximum each output at 25° C Off-state leakage current: less than 50 µA @ 30V dc ON-state saturation voltage: less than 1V @ 10 mA; less than 1.5V @ 100 mA Protected against false pulse on power-up and continuous overload or short circuit of outputs	Solid-state complementary (SPDT); NPN or PNP (current sinking or sourcing), depending on model; Rating: 100 mA maximum each output at 25° C Off-state leakage current: NPN: less than 200 µA @ 30V dc PNP: less than 10 µA @ 30V dc ON-state saturation voltage: NPN: less than 1.6V @ 100 mA PNP: less than 2.0V @ 100 mA Protected against false pulse on power-up and continuous overload or short circuit of outputs	
Output Response	700 microseconds ON/OFF; 100 ms delay on power-up; outputs do not conduct during this time	700 microseconds ON/OFF; 200 ms delay on power-up; outputs do not conduct during this time	
Repeatability	175 microseconds	130 microseconds	
Sensing Hysteresis	0.5% of range typical at 20 mm cutoff 1% of range typical at 50 mm cutoff 3% of range typical at 100 mm cutoff	1% of range typical at 30 mm cutoff 2% of range typical at 75 mm cutoff 5% of range typical at 150 mm cutoff	1% of range typical at 50 mm cutoff 2% of range typical at 150 mm cutoff 5% of range typical at 250 mm cutoff
Adjustments	Five-turn adjustment screw sets cutoff distance between min. and max. positions, clutched at both ends of travel		
Indicators	2 LED indicators on sensor top: Green ON steady: Power ON Yellow ON steady: Light sensed Green flashing: Output overloaded Yellow flashing: Marginal excess gain (1 to 1.5x excess gain)		
Construction	ABS housing, acrylic lens cover; 2.5 mm and 3 mm mounting hardware included		
Environmental Rating	IEC IP67; NEMA 6		
Connections	2 m (6.5') 4-wire PVC cable, 9 m (30') PVC cable, or 4-pin Pico-style or Euro-style 150 mm (6") pigtail QD, depending on model		
Operating Conditions	Temp: 0° to +55° C (+32° to 131° F)		Temp: -10° to +50° C (+14° to 122° F)
	Relative Humidity: 95% @ 50° C (non-condensing)		
Laser Classification	N/A	Class 1 laser product	Class 2 laser product
		Complies with IEC 60825-1:2001 and 21 CFR 1040.10, except for deviations pursuant to Laser Notice 50, dated 7-26-01	
Certifications	 		approval in process

WORLD-BEAM® QS18 Adjustable-Field Sensors

Description of Laser Classes

Class 1 Lasers

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 1 Laser Characteristics: See specifications on page 5.

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.

Class 2 Laser Characteristics: See specifications on page 5.

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.

CLASS 1 LASER PRODUCT

Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated 7-26-01.

BANNER

Pulse Power < 5.6 mW, 650 - 670 nm, 15 kHz, 4.5 uS Pulse. Complies to 21 CFR 1040.10 & EN60825-1:2001 except for deviations pursuant to laser notice No. 50, dated 7-26-01.
LASER LIGHT - DO NOT STARE INTO BEAM
CLASS 2 LASER PRODUCT

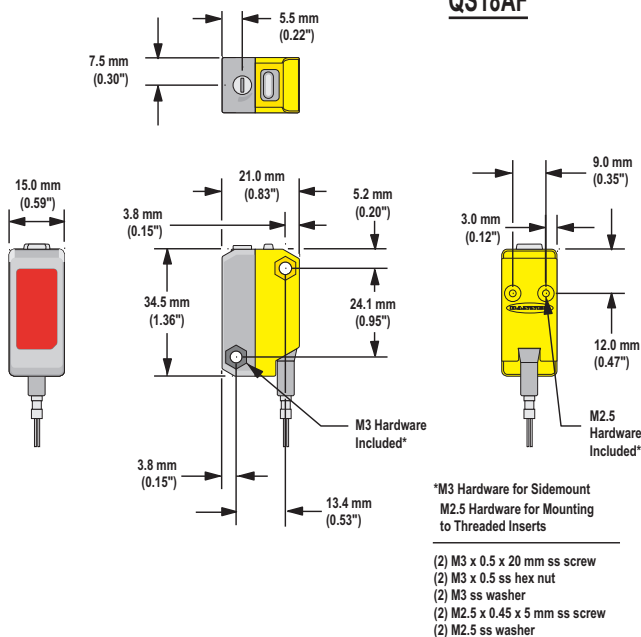


CAUTION . . . Do Not Disassemble for Repair

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. **Do NOT attempt to disassemble this sensor for repair.** A defective unit must be returned to the manufacturer.

Dimensions

QS18AF



QS18LAF and QS18LAF250

