BANNER®
the photoelectric specialist

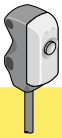
VS3 Series Retroreflective Mode Sensors

Miniature self-contained sensors

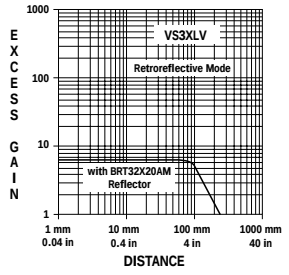
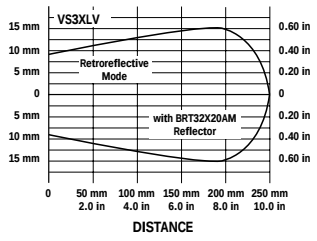
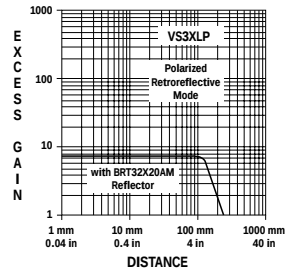
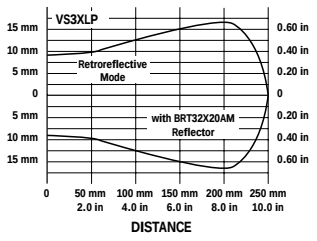
VS3 Series Retroreflective Mode Sensor Features

- Extremely compact self-contained miniature sensor
- 10 to 30V dc operation
- Visible red sensing beam
- Range to supplied retroreflector is 0 to 250 mm (up to 10")
- Coaxial optics eliminate “blind” area at close range
- Choose dark- or light-operate models
- Choose models with NPN (sinking) or PNP (sourcing) output
- 3-wire hookup; output load capacity to 50 mA
- Choice of integral cable or quick-disconnect connector

Visible red, 680 nm



VS3 Series Retroreflective-Mode Sensors

Models		Cable	Supply Voltage	Output Type	Excess Gain	Beam Pattern
Non-Polarized Models						
VS3AN5XLV **VS3AN5XLVQ**	250 mm (10") using BRT32X20AM retro target (supplied)	2 m (6.5') 3-Pin Pico QD	10 to 30V dc	NPN Light Operate		
VS3RN5XLV **VS3RN5XLVQ**		2 m (6.5') 3-Pin Pico QD		NPN Dark Operate		
VS3AP5XLV **VS3AP5XLVQ**		2 m (6.5') 3-Pin Pico QD		PNP Light Operate		
VS3RP5XLV **VS3RP5XLVQ**		2 m (6.5') 3-Pin Pico QD		PNP Dark Operate		
Polarized Models						
VS3AN5XLP **VS3AN5XLPQ**	250 mm (10") using BRT32X20AM retro target (supplied)	2 m (6.5') 3-Pin Pico QD	10 to 30V dc	NPN Light Operate		
VS3RN5XLP **VS3RN5XLPQ**		2 m (6.5') 3-Pin Pico QD		NPN Dark Operate		
VS3AP5XLP **VS3AP5XLPQ**		2 m (6.5') 3-Pin Pico QD		PNP Light Operate		
VS3RP5XLP **VS3RP5XLPQ**		2 m (6.5') 3-Pin Pico QD		PNP Dark Operate		

See Safety Use Warning on Back Page.

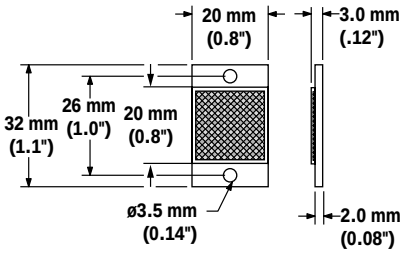
VS3 Series Retroreflective Mode

VS3 Series Overview

VS3 Series miniature self-contained sensors are designed for retroreflective sensing in small areas previously accessible only to remote or fiber optic models. Typical applications include mounting on small feeder tracks, packaging machines, and conveyors, where larger sensors will not fit.

The coaxial optics of the VS3 allow the retroreflective target to be placed as close to the sensor lens as needed – there is no "blind" response area, as is typical of most retroreflective sensors. The VS3 is supplied with a Banner model BRT32X20AM retroreflective target (see right). The specifications shown on page 1 assume use of this target.

Other retroreflective materials may be substituted. For example, using the standard BRT-3 target, the range becomes 400 mm (16"); standard BRT-THG retroreflective tape yields a 150 mm (6") range. Contact Banner Engineering for sensing performance when using other retroreflective targets.



Maximum Temperature: 65°C (150°F)

Figure 1. Retroreflective target, model BRT-32X20AM (supplied with each sensor)

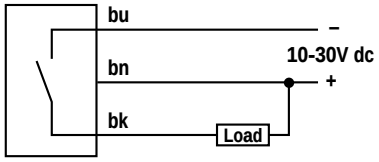
VS3 Series Specifications

Supply Voltage and Current	10 to 30V dc (10% maximum ripple) at less than 25 mA (exclusive of load)
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Configuration	SPST solid-state switch Choose NPN (current sinking) or PNP (current sourcing) models Choose light operate (N.O.) or dark operate (N.C.) models
Output Rating	50 mA maximum **Off-state leakage current:** < 1 microamp at 24V dc **On-state saturation voltage:** < 0.25V at 10 mA dc; < 0.5V at 50 mA dc
Output Protection Circuitry	Protected against false pulse on power-up and continuous overload or short circuit of outputs Overload trip point ≥ 100 mA
Output Response Time	1 millisecond ON and OFF (NOTE: 150 millisecond delay maximum on power-up: output does not conduct during this time)
Repeatability	160 microseconds
Indicators	Two LEDs: Green and Yellow GREEN **ON steady** = power to sensor is ON GREEN **flashing** = output overload YELLOW **ON steady** = light is sensed
Construction	**XLV Models:** Black ABS housing with acrylic lens **XLP Models:** Black ABS housing with glass lens and acrylic cover
Environmental Rating	IEC IP67; NEMA 6
Connections	2 m (6.5') attached cable: three #28 ga stranded conductors with PE insulation; PVC outer cable jacket; or 3-pin Pico-style threaded quick-disconnect fitting. QD cables are ordered separately.
Operating Conditions	**Temperature:** -20° to +55°C (-4° to +131°F) **Maximum Relative Humidity:** 80% at 50°C (non-condensing)
Vibration and Mechanical Shock	**Vibration:** All models meet IEC 60068-2-6, IEC 60947-5-2, UL491 Section 40, MIL-STD-202F Method 201A; 10 to 60 Hz, 0.5 mm peak to peak **Shock:** All models meet IEC 60068-2-27, IEC 60947-5-2; 30g peak acceleration, 11 millisecond pulse duration, half-sine wave pulse shape
Application Notes	M3 stainless steel mounting hardware included. Optional mounting brackets are available (page 4).
Certifications	CE

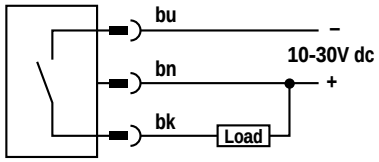
Banner Engineering Corp. • Minneapolis, U.S.A.
www.bannerengineering.com • Tel: 763.544.3164

VS3 Series Sensor Hookups

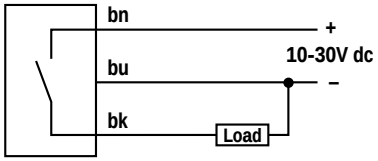
Sensors with NPN Outputs
Cabled hookup



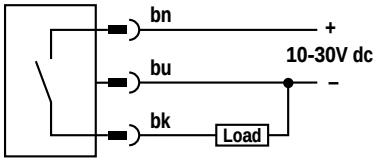
Quick-Disconnect hookup



Sensors with PNP Outputs
Cabled hookup

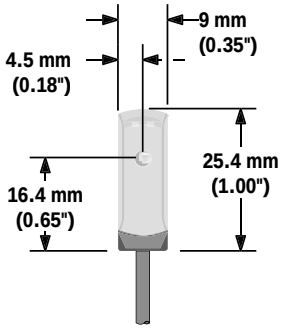


Quick-Disconnect hookup

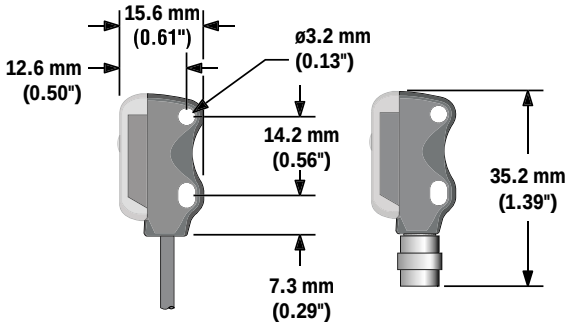


VS3 Series Retroreflective Mode Sensor Dimensions

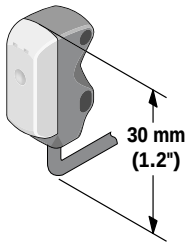
VS3…5XLV



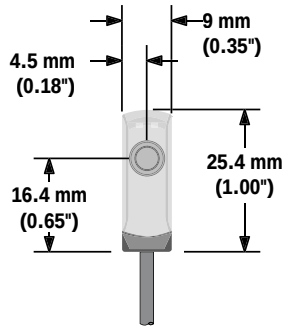
VS3…5XLVQ



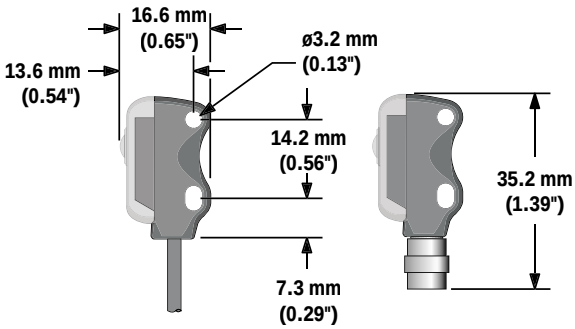
With Integral Cable



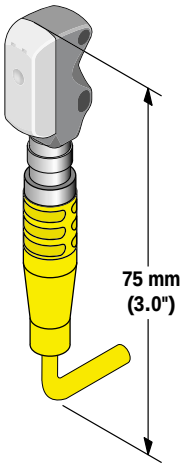
VS3…5XLP



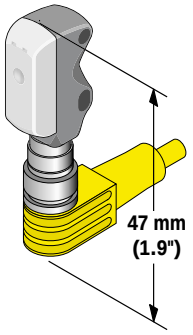
VS3…5XLPQ



With Straight QD Cable



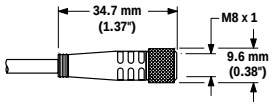
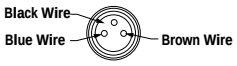
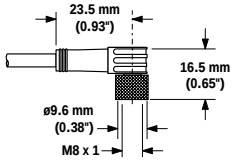
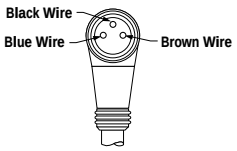
With Right-angle QD Cable



VS3 Series Retroreflective Mode

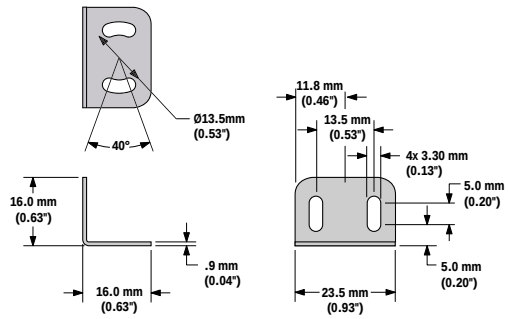
Accessories

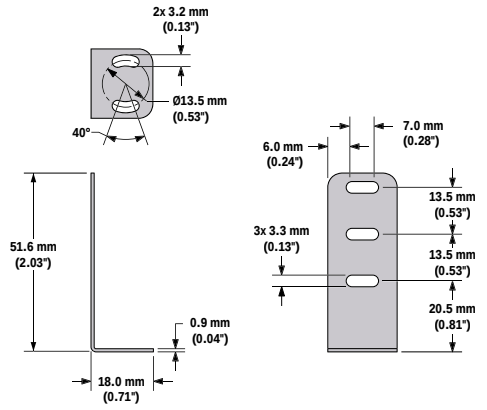
Quick-Disconnect (QD) Cables

Style	Models	Length	For Use With	Dimensions	Pinout
3-pin Pico Style Straight	**PKG3M-2** **PKG3M-9**	2 m (6.5') 9 m (30')	All VS3 Series sensors with model suffix "Q".		
3-pin Pico Style Right-angle	**PKW3M-2** **PKW3M-9**	2 m (6.5') 9 m (30')			

VS3 Series Mounting Brackets

SMBVS3S	• Right-angle bracket • 300 series stainless steel	**SMBVS3T**	• Right-angle tall bracket • 300 series stainless steel





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WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.