SENSORS

MINI-BEAM®
Comprehensive Family of Photoelectric Sensors

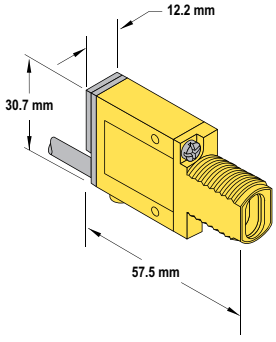
- Available models include opposed, opposed clear plastic detection, diffuse and divergent diffuse, polarized and non-polarized retroreflective, convergent, glass and plastic fiber optic.
- Compact, high-performance sensors feature 18 mm threaded lens or side mount.
- Models are available for ac or dc operation.
- Convergent and fiber optic models offer infrared or visible red, blue, white, or green LED light source; select a color based on the application.
- SME312 *Expert*™ models offer easy, push-button TEACH-mode setup.
- MIAD9 series NAMUR models are for hazardous environments with approved switching amplifiers having intrinsically safe input circuits.
- MINI-BEAM models detect clear plastic; MINI-BEAM *Expert*™ models detect clear objects.

ACCESSORIES page 118
OPPOSED
CLEAR PLASTIC OPPOSED
RETRO
POLAR RETRO
CLEAR PLASTIC POLAR RETRO
DIFFUSE
DIVERGENT DIFFUSE
CONVERGENT
GLASS FIBER
PLASTIC FIBER

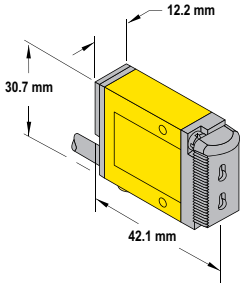
MINI-BEAM® DC Sensors

Opposed, Retroreflective, Diffuse and Convergent Models
Suffix E, R, EPD, RPD, D, LV, LP, C, C2, CV, CV2, CVB, CV2B, CVG and CV2G

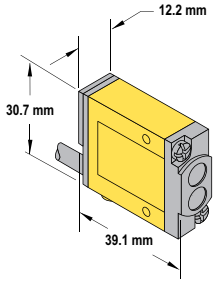
ONLINE
AUTOCAD, STEP, IGES & PDF



Glass Fiber Models
Suffix F, FV, FVG and FVB



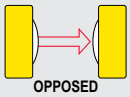
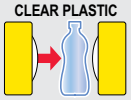
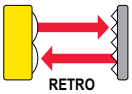
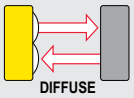
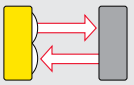
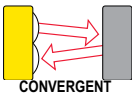
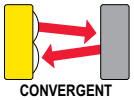
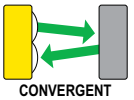
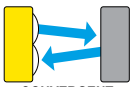
Plastic Fiber Models
Suffix FP, FPG and FPB



Diffuse Models
Suffix DBZ and W

MINI-BEAM®, 10-30V dc

Infrared LED · Visible Red LED · Visible Green LED · Visible Blue LED

Sensing Mode/LED	Range	Connection	Output	Models	Excess Gain	Beam Pattern
 OPPOSED	3 m	2 m	Bipolar NPN/PNP	**SM31E Emitter**	EGC-1 (p. 119)	BP-1 (p. 123)
		4-Pin Euro QD		**SM31EQD Emitter**		
		2 m		**SM31R**		
		4-Pin Euro QD		**SM31RQD**		
	30 m	2 m		**SM31EL Emitter**	EGC-2 (p. 119)	BP-2 (p. 123)
		4-Pin Euro QD		**SM31ELQD Emitter**		
		2 m		**SM31RL**		
		4-Pin Euro QD		**SM31RLQD**		
CLEAR PLASTIC  OPPOSED	0.3 m	2 m		**SM31EPD Emitter**	See Note Below***	See Note Below***
		4-Pin Euro QD		**SM31EPDQD Emitter**		
		2 m		**SM31RPD**		
		4-Pin Euro QD		**SM31RPDQD**		
 RETRO	5 m†	2 m	Bipolar NPN/PNP	**SM312LV**	EGC-4 (p. 119)	BP-4 (p. 123)
		4-Pin Euro QD		**SM312LVQD**		
 POLAR RETRO	50 mm - 2 m†	2 m		**SM312LVAG**	EGC-5 (p. 119)	BP-5 (p. 123)
		4-Pin Euro QD		**SM312LVAGQD**		
EXTENDED RANGE  POLAR RETRO	10 mm - 3 m†	2 m		**SM312LP**	EGC-6 (p. 119)	BP-6 (p. 123)
		4-Pin Euro QD		**SM312LPQD**		
 DIFFUSE	380 mm	2 m	Bipolar NPN/PNP	**SM312D**	EGC-12 (p. 119)	BP-12 (p. 123)
		4-Pin Euro QD		**SM312DQD**		
	300 mm	2 m		**SM312DBZ**	EGC-13 (p. 119)	BP-13 (p. 123)
		4-Pin Euro QD		**SM312DBZQD**		
 DIVERGENT DIFFUSE	130 mm	2 m		**SM312W**	EGC-14 (p. 119)	BP-14 (p. 123)
		4-Pin Euro QD		**SM312WQD**		
 CONVERGENT	16 mm	2 m	Bipolar NPN/PNP	**SM312C**	EGC-20 (p. 120)	BP-20 (p. 124)
		4-Pin Euro QD		**SM312CQD**		
	43 mm	2 m		**SM312C2**	EGC-21 (p. 120)	BP-21 (p. 124)
		4-Pin Euro QD		**SM312C2QD**		
 CONVERGENT	16 mm	2 m		**SM312CV**	EGC-22 (p. 120)	BP-22 (p. 124)
		4-Pin Euro QD		**SM312CVQD**		
	43 mm	2 m		**SM312CV2**	EGC-23 (p. 120)	BP-23 (p. 124)
		4-Pin Euro QD		**SM312CV2QD**		
 CONVERGENT	16 mm	2 m		**SM312CVG**	EGC-24 (p. 120)	BP-24 (p. 124)
		4-Pin Euro QD		**SM312CVGQD**		
	49 mm	2 m		**SM312CV2G**	EGC-25 (p. 120)	BP-25 (p. 124)
		4-Pin Euro QD		**SM312CV2GQD**		
 CONVERGENT	16 mm	2 m		**SM312CVB**	EGC-26 (p. 120)	BP-26 (p. 124)
		4-Pin Euro QD		**SM312CVBQD**		
	49 mm	2 m		**SM312CV2B**	EGC-27 (p. 120)	BP-27 (p. 124)
		4-Pin Euro QD		**SM312CV2BQD**		

More on next page

Connection options: A model with a QD requires a mating cordset (see page 118).

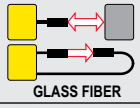
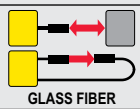
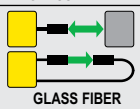
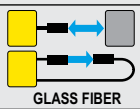
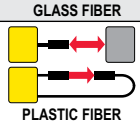
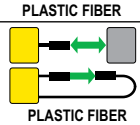
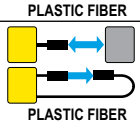
For 9 m cable, add suffix **W/30** to the 2 m model number (example, **SM312D W/30**).

*** Actual range depends on light transmission through the plastic being sensed. Some clear plastic materials may not be detected. When in doubt, ask your Banner representative to evaluate material samples.

† Retroreflective range is specified using one model BRT-3 retroreflector. Actual sensing range may differ, depending on the efficiency and reflective area of the retroreflector used. See Accessories for more information.

MINI-BEAM®, 10-30V dc (cont'd)

Infrared LED | Visible Red LED | Visible Green LED | Visible Blue LED

Sensing Mode/LED	Range	Connection	Output	Models	Excess Gain	Beam Pattern
 GLASS FIBER	Range varies by sensing mode and fiber optics used	2 m	Bipolar NPN/PNP	**SM312F**	EGC-35 & EGC-36 (p. 121)	BP-35 & BP-36 (p. 125)
		4-Pin Euro QD		**SM312FQD**		
 GLASS FIBER		2 m		**SM312FV**	EGC-37 & EGC-38 (p. 121)	BP-37 & BP-38 (p. 125)
		4-Pin Euro QD		**SM312FVQD**		
 GLASS FIBER		2 m		**SM312FVG**	EGC-39 (p. 121)	BP-39 (p. 125)
		4-Pin Euro QD		**SM312FVGQD**		
 GLASS FIBER		2 m		**SM312FVB**	EGC-40 (p. 121)	BP-40 (p. 125)
		4-Pin Euro QD		**SM312FVBQD**		
 PLASTIC FIBER		2 m	Bipolar NPN/PNP	**SM312FP**	EGC-50 & EGC-51 (p. 122)	BP-50 & BP-51 (p. 126)
		4-Pin Euro QD		**SM312FPQD**		
 PLASTIC FIBER		2 m		**SM312FPG**	EGC-52 (p. 122)	BP-52 (p. 126)
		4-Pin Euro QD		**SM312FPGQD**		
 PLASTIC FIBER		2 m		**SM312FPB**	EGC-53 (p. 122)	BP-53 (p. 126)
		4-Pin Euro QD		**SM312FPBQD**		

Connection options: A model with a QD requires a mating cordset (see page 118).

For 9 m cable, add suffix **W/30** to the 2 m model number (example, **SM312F W/30**).

MINI-BEAM® DC Specifications

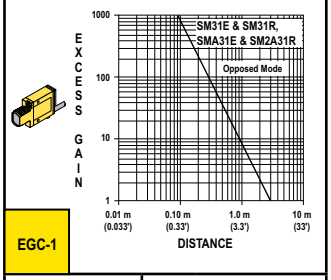
Supply Voltage and Current	10 to 30V dc (10% max. ripple) at less than 25 mA (exclusive of load)
Supply Protection Circuitry	Protected against reverse polarity and transient voltages
Output Configuration	**Bipolar:** One current sourcing (PNP) and one current sinking (NPN) open-collector transistor; light operate (LO) or dark operate (DO) selectable.
Output Rating	150 mA max. each output at 25° C, derated to 100 mA at 70° C (derate ≈ 1 mA per ° C) **OFF-state leakage current:** less than 1 µA **Output saturation voltage (PNP output):** less than 1 V @ 10 mA; less than 2 V @ 150 mA **Output saturation voltage (NPN output):** less than 200 mV @ 10mA; less than 1 V @ 150 mA
Output Protection Circuitry	Protected against false pulse on power-up and continuous overload or short-circuit of outputs
Output Response Time	Sensors will respond to either a "light" or a "dark" signal of 1 millisecond or longer duration, 500 Hz max. 0.3 millisecond response modification is available. See note below†.
Delay at Power-up	100 millisecond; outputs do not conduct during this time.
Repeatability	**Opposed:** 0.14 milliseconds **Non-Polarized and Polarized Retroreflective, Diffuse, Convergent, and Glass and Plastic Fiber Optic:** 0.3 milliseconds. Response time and repeatability specifications are independent of signal strength.
Adjustments	LIGHT/DARK OPERATE select switch and 15-turn GAIN (sensitivity) adjustment potentiometer
Indicators	Alignment Indicating Device system (AID) lights a rear-panel mounted red LED indicator whenever the sensor sees a "light" condition, with a superimposed pulse rate proportional to the light signal strength (the stronger the signal, the faster the pulse rate).
Construction	Reinforced thermoplastic polyester housing, totally encapsulated, o-ring sealing, acrylic lenses, and stainless steel screws.
Environmental Rating	Meets NEMA standards 1, 2, 3, 3S, 4, 4X, 6, 12, and 13; IEC IP67
Connections	PVC-jacketed 4-conductor 2 m or 9 m cables, or 4-pin Euro-style quick-disconnect (**QD**) fitting are available. QD cordsets are ordered separately. See page 118.
Operating Conditions	**Temperature:** -20° to +70° C **Relative humidity:** 90% at 50° C (non-condensing)
Certifications	
Hookup Diagrams	**Emitters:** DC02 (p. 744) **Other Models:** DC04 (p. 744)

† NOTE: DC MINI-BEAMs may be ordered with 0.3 millisecond ON/OFF response by adding suffix **MHS** to the model number (example, **SM312LVMHS**). This modification reduces sensing range (and excess gain).

Excess Gain Curves (Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED P = Visible Red LED Polarized ■ = Visible Red Clear Object Detection Polarized

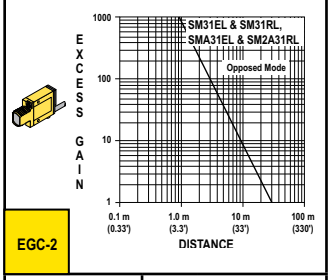
Opposed Mode MINI-BEAM®



EGC-1

Range: 3 m **LED:** ○

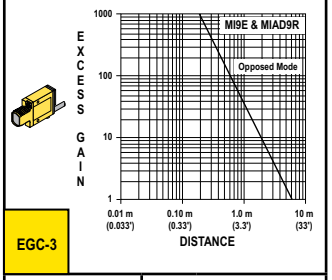
Opposed Mode MINI-BEAM®



EGC-2

Range: 30 m **LED:** ○

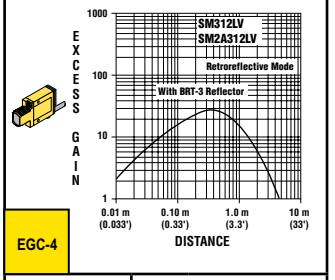
Opposed Mode MINI-BEAM® NAMUR



EGC-3

Range: 6 m **LED:** ○

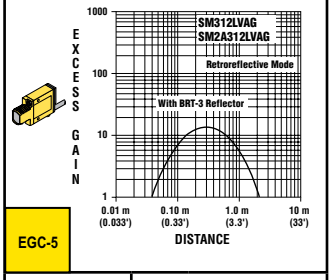
Retroreflective Mode MINI-BEAM®



EGC-4

Range: 5 m **LED:** ●

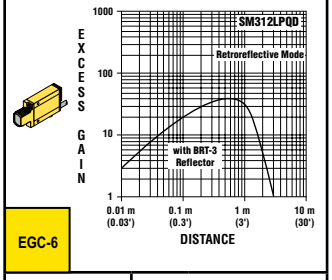
Polarized Retroreflective Mode MINI-BEAM®



EGC-5

Range: 2 m **LED:** P

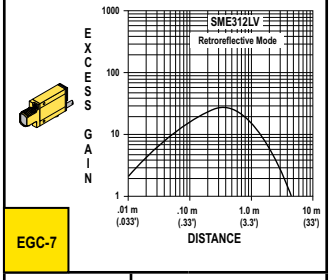
Retroreflective Mode MINI-BEAM®



EGC-6

Range: 3 m **LED:** P

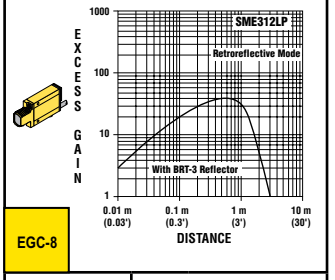
Retroreflective Mode MINI-BEAM® *Expert*™



EGC-7

Range: 5 m **LED:** ●

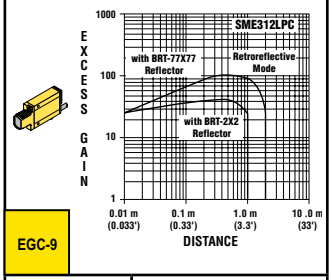
Polarized Retroreflective Mode MINI-BEAM® *Expert*™



EGC-8

Range: 3 m **LED:** P

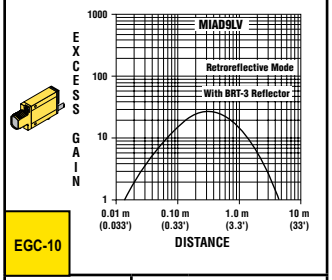
Retroreflective Mode MINI-BEAM® *Expert*™



EGC-9

Range: 1 m **LED:** ■

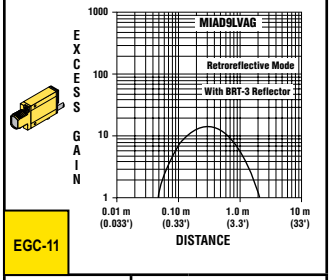
Retroreflective Mode MINI-BEAM® NAMUR



EGC-10

Range: 5 m **LED:** ●

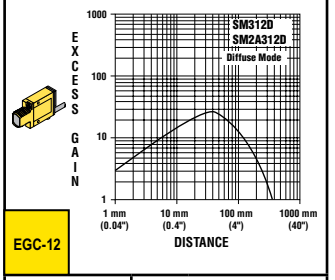
Polarized Retroreflective Mode MINI-BEAM® NAMUR



EGC-11

Range: 2 m **LED:** P

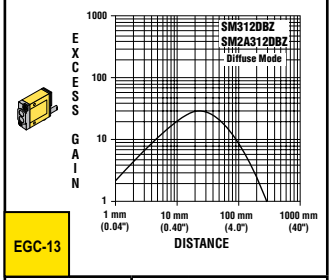
Diffuse Mode MINI-BEAM®



EGC-12

Range: 380 mm **LED:** ○

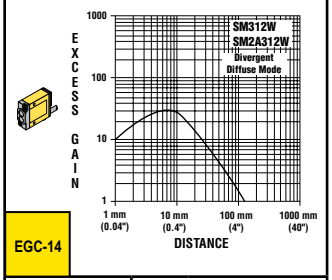
Diffuse Mode MINI-BEAM®



EGC-13

Range: 300 mm **LED:** ○

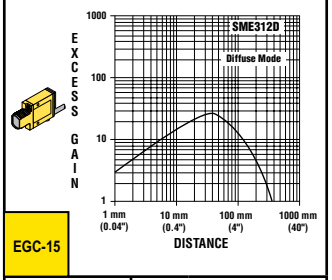
Divergent Diffuse Mode MINI-BEAM®



EGC-14

Range: 130 mm **LED:** ○

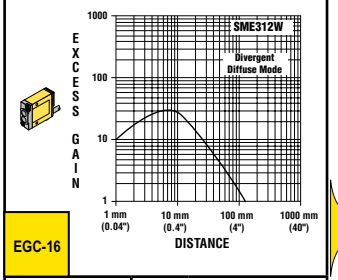
Diffuse Mode MINI-BEAM® *Expert*™



EGC-15

Range: 380 mm **LED:** ○

Divergent Diffuse Mode MINI-BEAM® *Expert*™



EGC-16

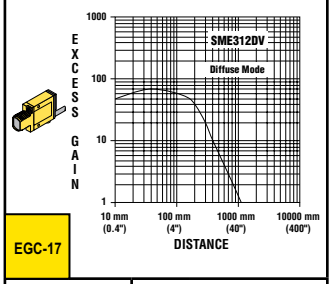
Range: 130 mm **LED:** ○

More on next page

Excess Gain Curves (Diffuse and Convergent mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

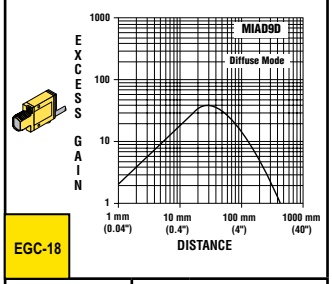
Diffuse Mode MINI-BEAM® *Expert*™



EGC-17

Range: 1100 mm **LED:** ●

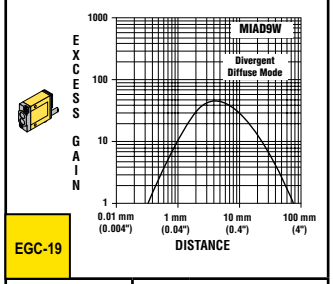
Diffuse Mode MINI-BEAM® NAMUR



EGC-18

Range: 380 mm **LED:** ○

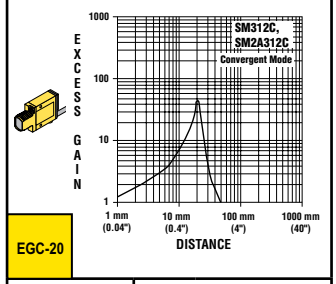
Divergent Diffuse Mode MINI-BEAM® NAMUR



EGC-19

Range: 75 mm **LED:** ○

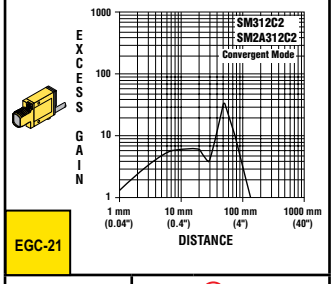
Convergent Mode MINI-BEAM®



EGC-20

Range: 16 mm **LED:** ○

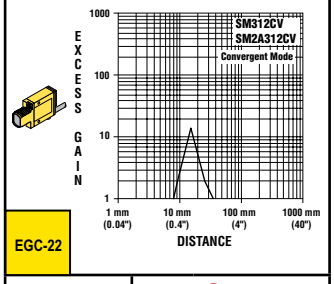
Convergent Mode MINI-BEAM®



EGC-21

Range: 43 mm **LED:** ○

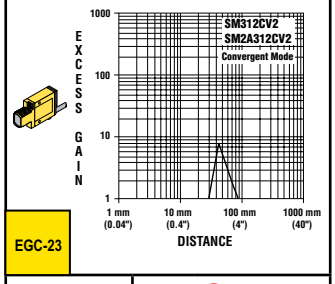
Convergent Mode MINI-BEAM®



EGC-22

Range: 16 mm **LED:** ●

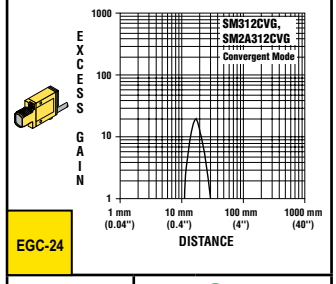
Convergent Mode MINI-BEAM®



EGC-23

Range: 43 mm **LED:** ●

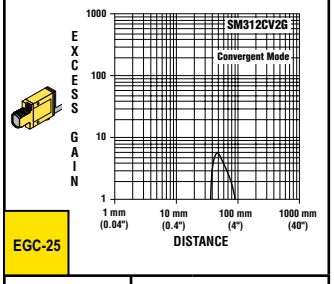
Convergent Mode MINI-BEAM®



EGC-24

Range: 16 mm **LED:** ●

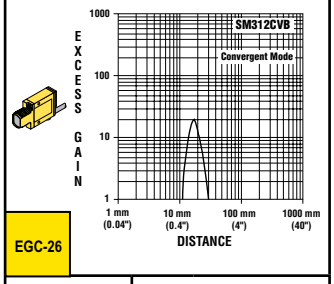
Convergent Mode MINI-BEAM®



EGC-25

Range: 49 mm **LED:** ●

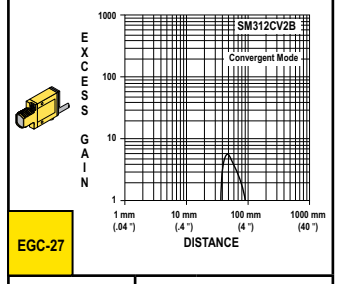
Convergent Mode MINI-BEAM®



EGC-26

Range: 16 mm **LED:** ●

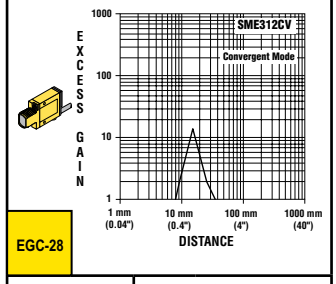
Convergent Mode MINI-BEAM®



EGC-27

Range: 49 mm **LED:** ●

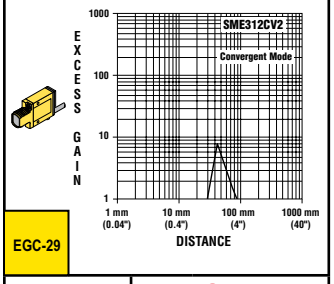
Convergent Mode MINI-BEAM® *Expert*™



EGC-28

Range: 16 mm **LED:** ●

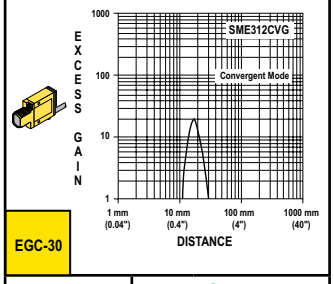
Convergent Mode MINI-BEAM® *Expert*™



EGC-29

Range: 43 mm **LED:** ●

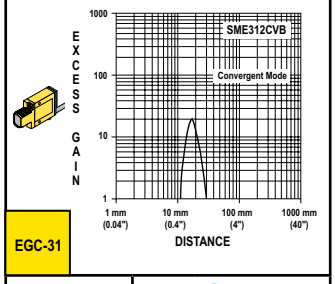
Convergent Mode MINI-BEAM® *Expert*™



EGC-30

Range: 16 mm **LED:** ●

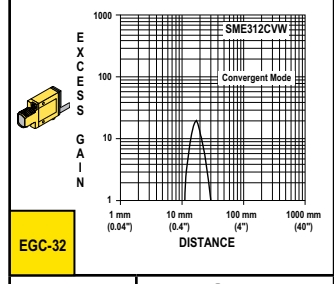
Convergent Mode MINI-BEAM® *Expert*™



EGC-31

Range: 16 mm **LED:** ●

Convergent Mode MINI-BEAM® *Expert*™



EGC-32

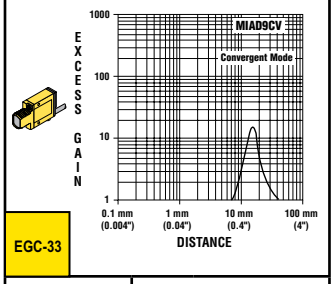
Range: 16 mm **LED:** ○

More on next page

Excess Gain Curves (Convergent and Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

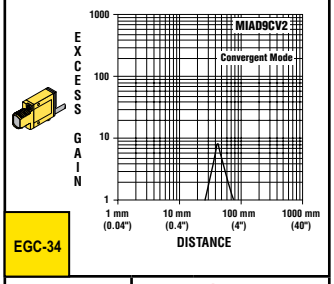
Convergent Mode MINI-BEAM® NAMUR



EGC-33

Range: 16 mm **LED:** ●

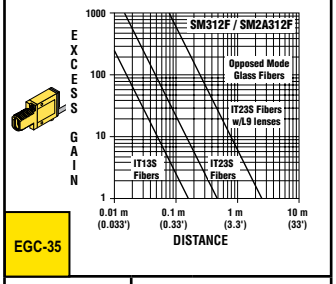
Convergent Mode MINI-BEAM® NAMUR



EGC-34

Range: 43 mm **LED:** ●

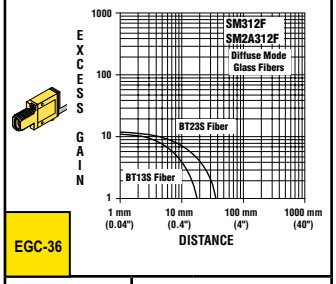
Opposed Mode—Glass Fiber MINI-BEAM®



EGC-35

Range: Varies **LED:** ○

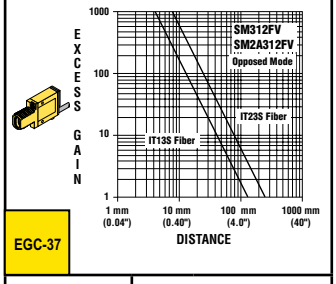
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-36

Range: Varies **LED:** ○

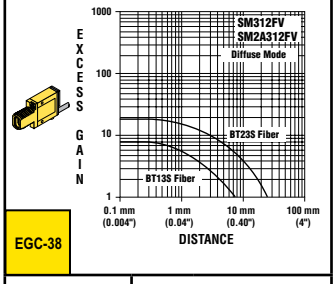
Opposed Mode—Glass Fiber MINI-BEAM®



EGC-37

Range: Varies **LED:** ●

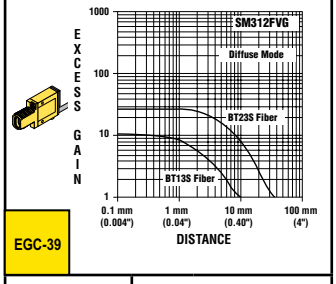
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-38

Range: Varies **LED:** ●

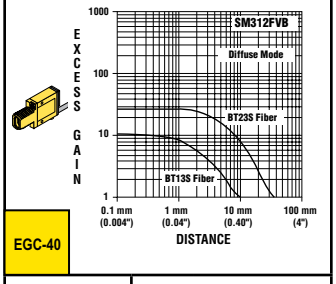
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-39

Range: Varies **LED:** ●

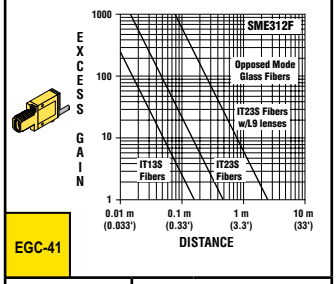
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-40

Range: Varies **LED:** ●

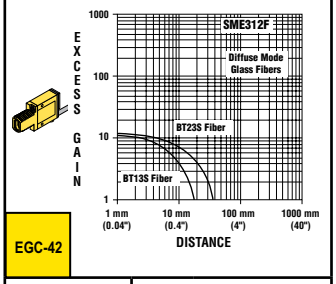
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-41

Range: Varies **LED:** ○

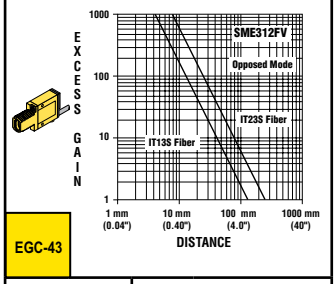
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-42

Range: Varies **LED:** ○

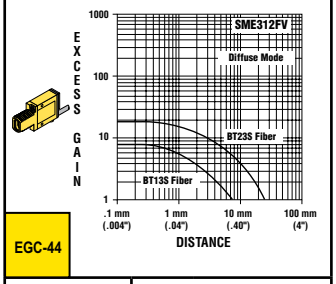
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-43

Range: Varies **LED:** ●

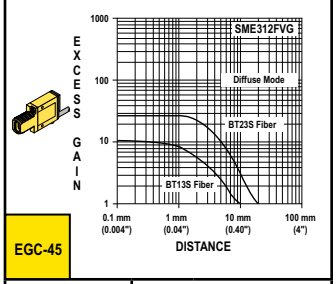
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-44

Range: Varies **LED:** ●

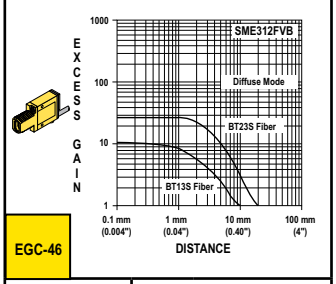
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-45

Range: Varies **LED:** ●

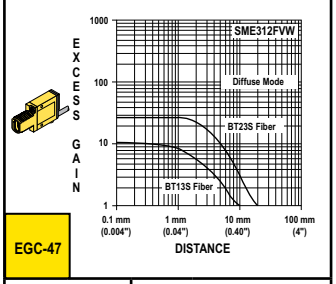
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-46

Range: Varies **LED:** ●

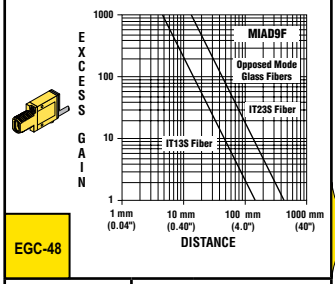
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-47

Range: Varies **LED:** ○

Opposed Mode—Glass Fiber MINI-BEAM® NAMUR



EGC-48

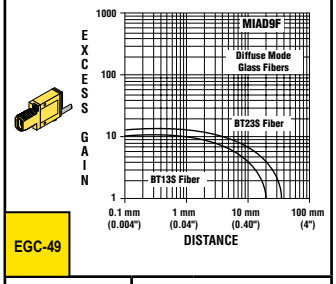
Range: Varies **LED:** ○

More on next page

Excess Gain Curves (Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

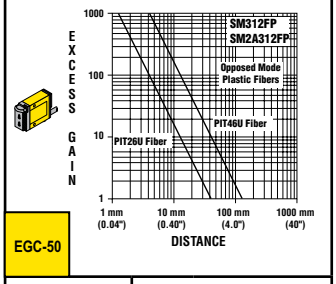
Diffuse Mode—Glass Fiber MINI-BEAM® NAMUR



EGC-49

Range: Varies **LED:** ○

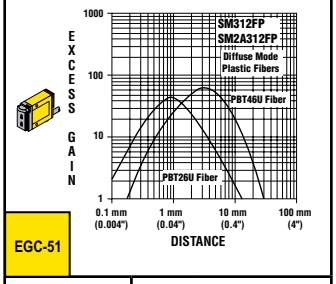
Opposed Mode—Plastic Fiber MINI-BEAM®



EGC-50

Range: Varies **LED:** ●

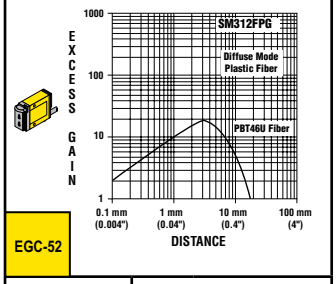
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-51

Range: Varies **LED:** ●

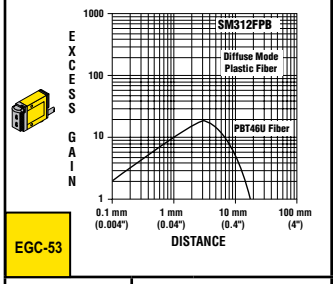
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-52

Range: Varies **LED:** ●

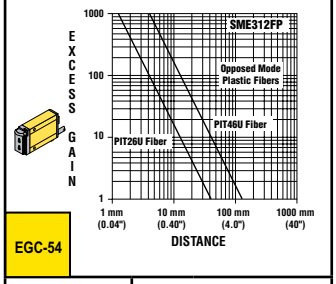
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-53

Range: Varies **LED:** ●

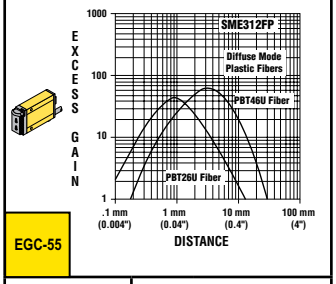
Opposed Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-54

Range: Varies **LED:** ●

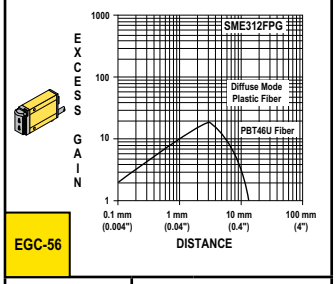
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-55

Range: Varies **LED:** ●

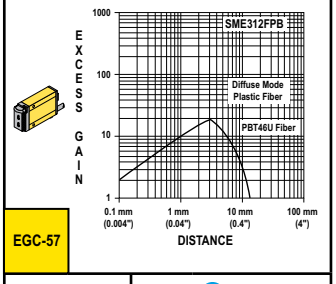
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-56

Range: Varies **LED:** ●

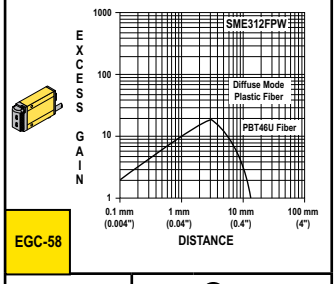
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-57

Range: Varies **LED:** ●

Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-58

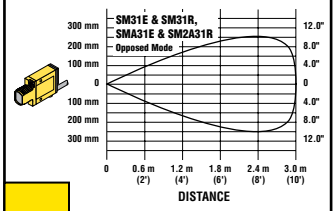
Range: Varies **LED:** ○

Beam Patterns (Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED P = Visible Red LED Polarized ■ = Visible Red Clear Object Detection Polarized

Opposed Mode MINI-BEAM®

Effective Beam: 3.5 mm

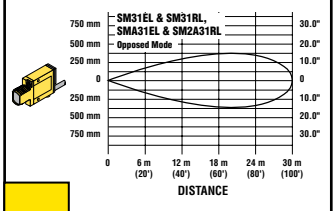


BP-1

Range: 3 m **LED:** ○

Opposed Mode MINI-BEAM®

Effective Beam: 13 mm

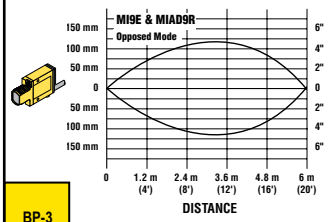


BP-2

Range: 30 m **LED:** ○

Opposed Mode MINI-BEAM® NAMUR

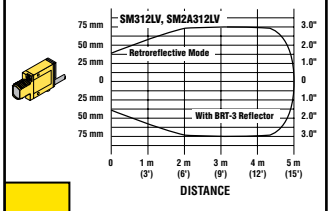
Effective Beam: 13 mm



BP-3

Range: 6 m **LED:** ○

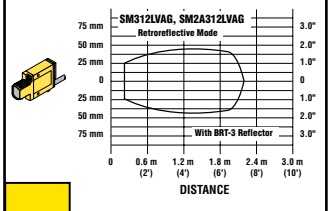
Retroreflective Mode MINI-BEAM®



BP-4

Range: 5 m **LED:** ●

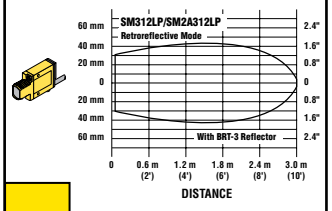
Polarized Retroreflective Mode MINI-BEAM®



BP-5

Range: 2 m **LED:** P

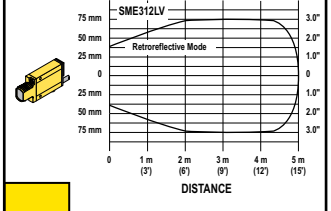
Polarized Retroreflective Mode MINI-BEAM®



BP-6

Range: 3 m **LED:** P

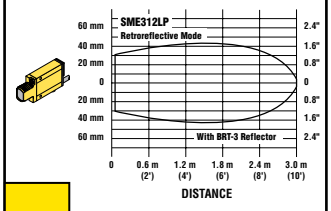
Retroreflective Mode MINI-BEAM® *Expert*™



BP-7

Range: 5 m **LED:** ●

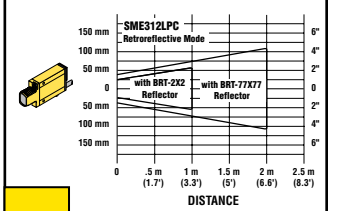
Polarized Retroreflective Mode MINI-BEAM® *Expert*™



BP-8

Range: 3 m **LED:** P

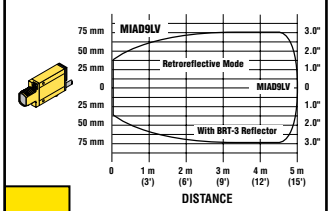
Retroreflective Mode MINI-BEAM® *Expert*™



BP-9

Range: 1 m **LED:** ■

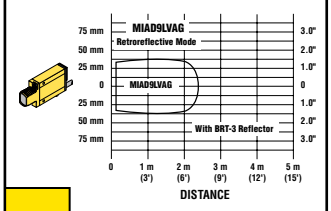
Retroreflective Mode MINI-BEAM® NAMUR



BP-10

Range: 5 m **LED:** ●

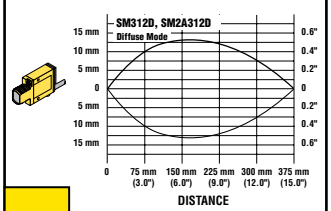
Polarized Retroreflective Mode MINI-BEAM® NAMUR



BP-11

Range: 2 m **LED:** P

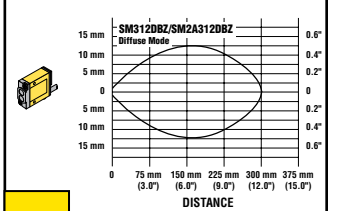
Diffuse Mode MINI-BEAM®



BP-12

Range: 380 mm **LED:** ○

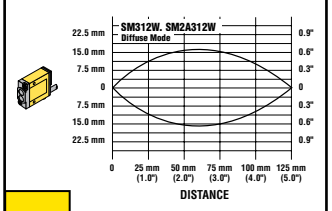
Diffuse Mode MINI-BEAM®



BP-13

Range: 300 mm **LED:** ○

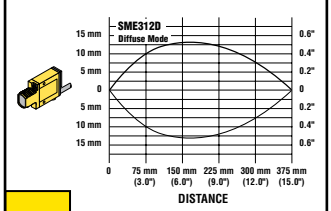
Divergent Diffuse Mode MINI-BEAM®



BP-14

Range: 130 mm **LED:** ○

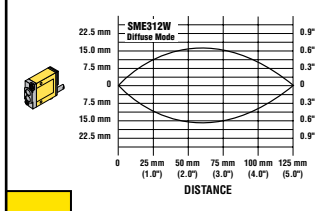
Diffuse Mode MINI-BEAM® *Expert*™



BP-15

Range: 380 mm **LED:** ○

Diffuse Mode MINI-BEAM® *Expert*™



BP-16

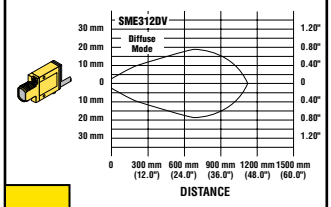
Range: 130 mm **LED:** ○

More on next page

Beam Patterns (Convergent and Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

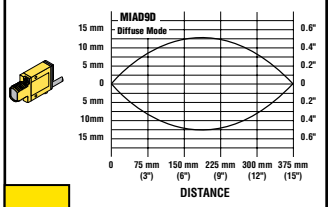
Diffuse Mode MINI-BEAM® *Expert*™



BP-17

Range: 1100 mm **LED:** ●

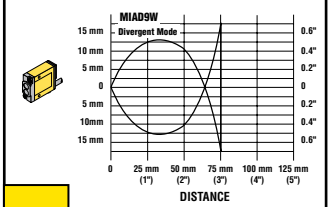
Diffuse Mode MINI-BEAM® NAMUR



BP-18

Range: 380 mm **LED:** ○

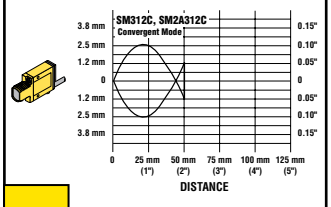
Divergent Diffuse Mode MINI-BEAM® NAMUR



BP-19

Range: 75 mm **LED:** ○

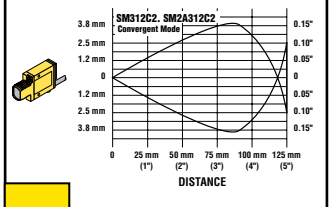
Convergent Mode MINI-BEAM®



BP-20

Range: 16 mm **LED:** ○

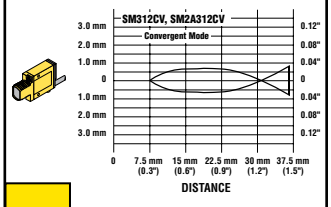
Convergent Mode MINI-BEAM®



BP-21

Range: 43 mm **LED:** ○

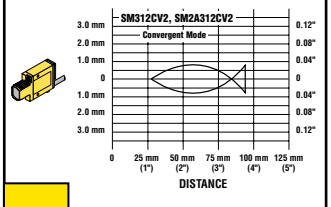
Convergent Mode MINI-BEAM®



BP-22

Range: 16 mm **LED:** ●

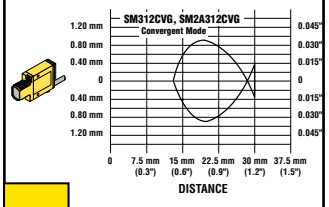
Convergent Mode MINI-BEAM®



BP-23

Range: 43 mm **LED:** ●

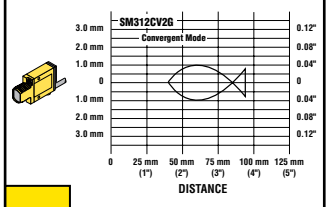
Convergent Mode MINI-BEAM®



BP-24

Range: 16 mm **LED:** ●

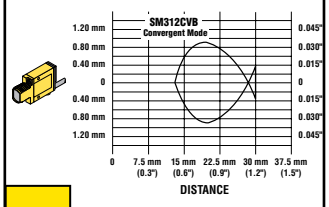
Convergent Mode MINI-BEAM®



BP-25

Range: 49 mm **LED:** ●

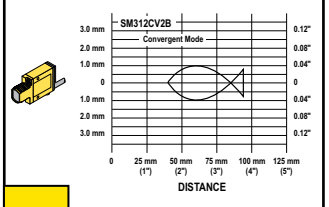
Convergent Mode MINI-BEAM®



BP-26

Range: 16 mm **LED:** ●

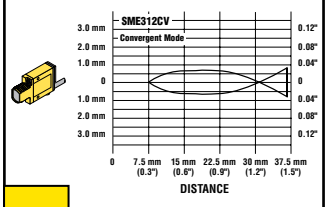
Convergent Mode MINI-BEAM®



BP-27

Range: 49 mm **LED:** ●

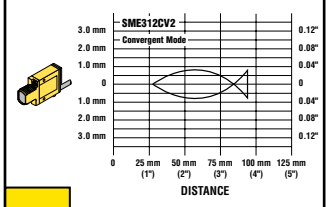
Convergent Mode MINI-BEAM® *Expert*™



BP-28

Range: 16 mm **LED:** ●

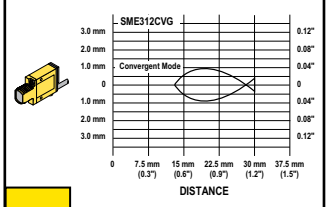
Convergent Mode MINI-BEAM® *Expert*™



BP-29

Range: 43 mm **LED:** ●

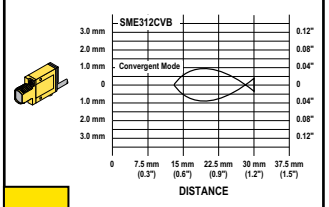
Convergent Mode MINI-BEAM® *Expert*™



BP-30

Range: 16 mm **LED:** ●

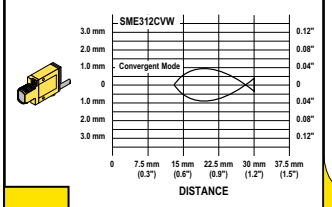
Convergent Mode MINI-BEAM® *Expert*™



BP-31

Range: 16 mm **LED:** ●

Convergent Mode MINI-BEAM® *Expert*™



BP-32

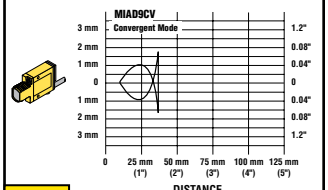
Range: 16 mm **LED:** ○

More on next page

Beam Patterns (Convergent and Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

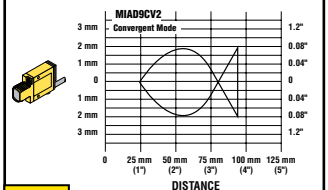
Convergent Mode MINI-BEAM® NAMUR



BP-33

Range: 16 mm **LED:** ●

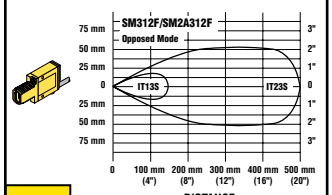
Convergent Mode MINI-BEAM® NAMUR



BP-34

Range: 43 mm **LED:** ●

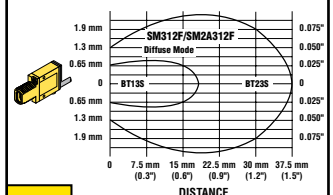
Opposed Mode—Glass Fiber MINI-BEAM®



BP-35

Fiber: Individual **LED:** ○

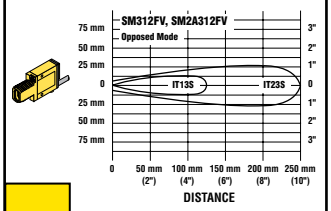
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-36

Range: Varies **LED:** ○

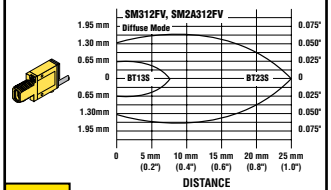
Opposed Mode—Glass Fiber MINI-BEAM®



BP-37

Range: Varies **LED:** ●

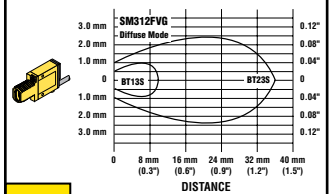
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-38

Range: Varies **LED:** ●

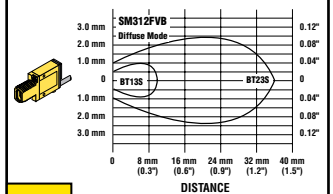
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-39

Range: Varies **LED:** ●

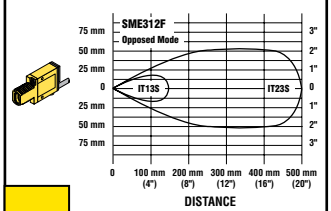
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-40

Range: Varies **LED:** ●

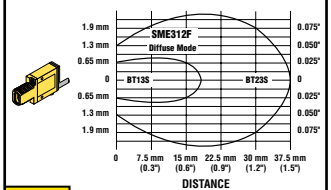
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-41

Range: Varies **LED:** ○

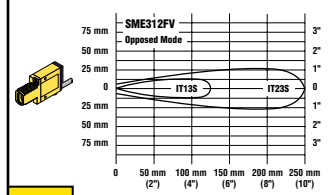
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-42

Range: Varies **LED:** ○

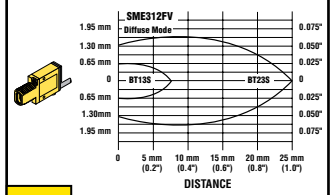
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-43

Range: Varies **LED:** ●

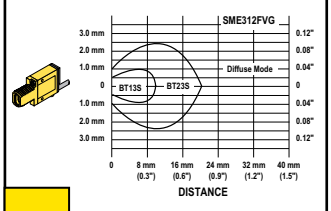
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-44

Range: Varies **LED:** ●

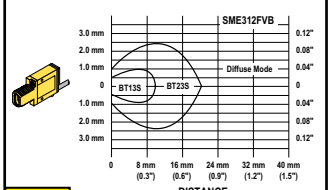
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-45

Range: Varies **LED:** ●

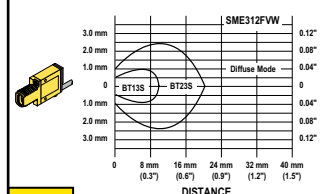
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-46

Range: Varies **LED:** ●

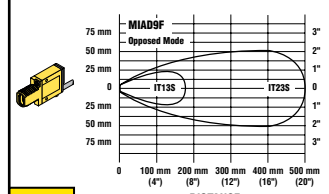
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-47

Range: Varies **LED:** ○

Opposed Mode—Glass Fiber MINI-BEAM® NAMUR



BP-48

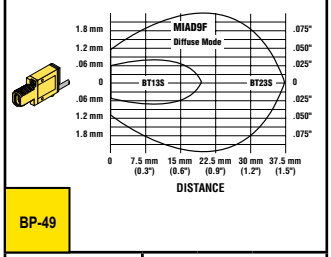
Range: Varies **LED:** ○

More on next page

Beam Patterns (Diffuse mode performance based on 90% reflectance white test card)

○ = Infrared LED ● = Visible Red LED ● = Visible Green LED ● = Visible Blue LED ○ = Visible White LED

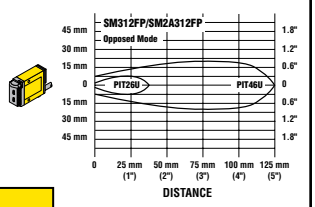
Diffuse Mode—Glass Fiber MINI-BEAM® NAMUR



BP-49

Range: Varies **LED:** ○

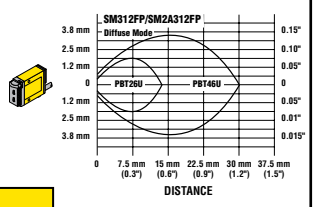
Opposed Mode—Plastic Fiber MINI-BEAM®



BP-50

Range: Varies **LED:** ●

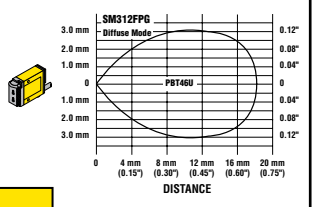
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-51

Range: Varies **LED:** ●

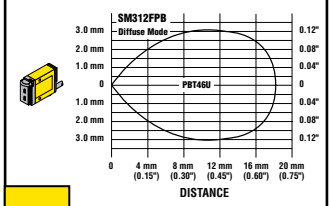
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-52

Range: Varies **LED:** ●

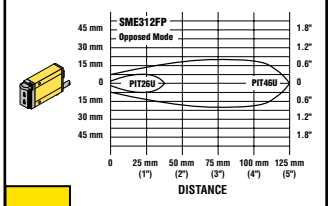
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-53

Range: Varies **LED:** ●

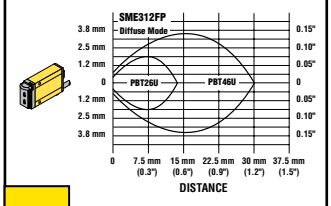
Opposed Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-54

Range: Varies **LED:** ●

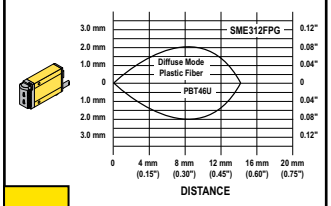
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-55

Range: Varies **LED:** ●

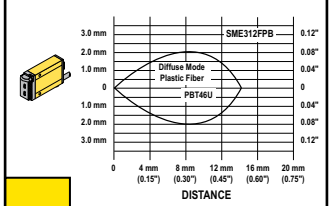
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-56

Range: Varies **LED:** ●

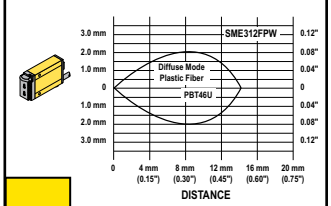
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-57

Range: Varies **LED:** ●

Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™

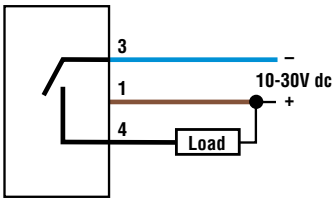


BP-58

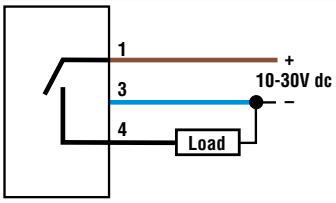
Range: Varies **LED:** ○

DC Hookups

DC01 Current Sinking (NPN)



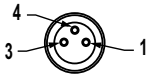
Current Sourcing (PNP)



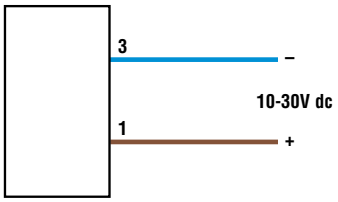
Key

1 = Brown
3 = Blue
4 = Black

3-Pin Pico



DC02 Emitter

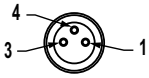


Key

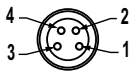
1 = Brown
2 = White†
3 = Blue
4 = Black†

† Not Used

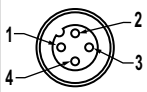
3-Pin Pico



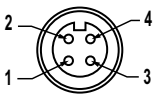
4-Pin Pico



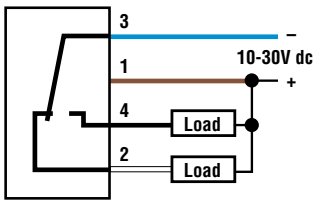
4-Pin Euro



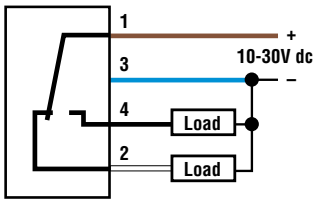
4-Pin Mini



DC03 Complementary Current Sinking (NPN)



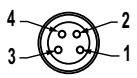
Complementary Current Sourcing (PNP)



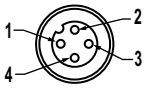
Key

1 = Brown
2 = White
3 = Blue
4 = Black

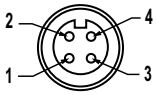
4-Pin Pico



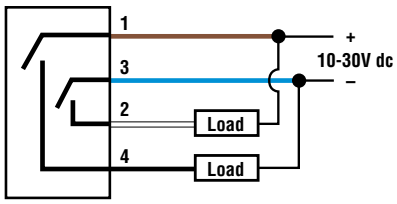
4-Pin Euro



4-Pin Mini



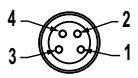
DC04 Bipolar (NPN + PNP)



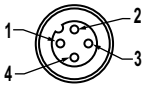
Key

1 = Brown
2 = White
3 = Blue
4 = Black

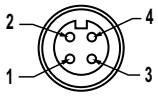
4-Pin Pico



4-Pin Euro



4-Pin Mini



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