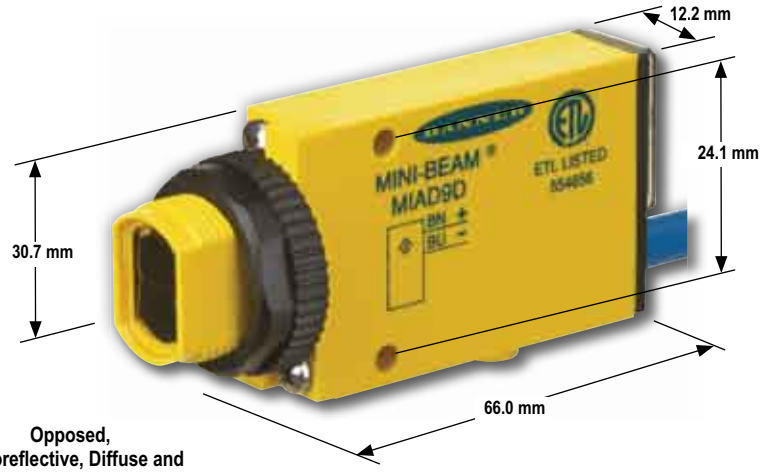
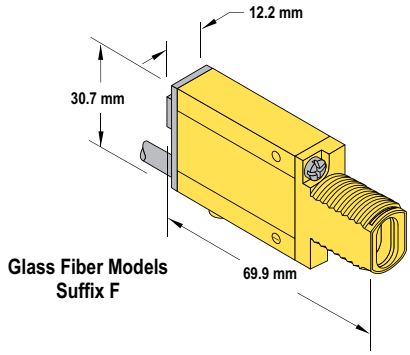
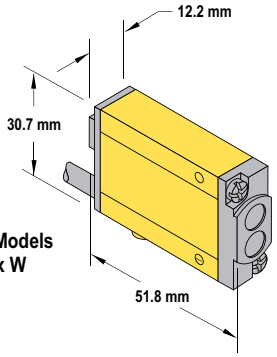
MINI-BEAM® NAMUR Sensors



Opposed, Retroreflective, Diffuse and Convergent Models
Suffix E, R, LV, D and CV



Glass Fiber Models
Suffix F



Diffuse Models
Suffix W

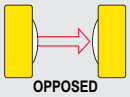
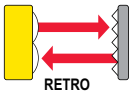
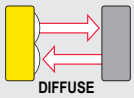
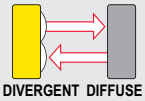
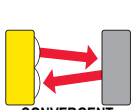
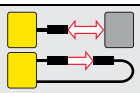
ONLINE
AUTOCAD, STEP, IGES & PDF

Photoelectrics Sensors
Fiber Optic Sensors
Special Purpose Sensors
Measurement & Inspection Sensors
Vision
Wireless
Lighting & Indicators
Safety Light Screens
Safety Laser Scanners
Fiber Optic Safety Systems
Safety Controllers & Modules
Safety Two-Hand Control Modules
Safety Interlock Switches
Emergency Stop & Stop Control

ACCESSORIES
page 118

MINI-BEAM® NAMUR Sensors, 5-15V dc

Infrared LED Visible Red LED

Sensing Mode/LED	Range	Connection	Output Type	Models	Excess Gain	Beam Pattern
 OPPOSED	6 m	2 m	—	MI9E Emitter	EGC-3 (p. 119)	BP-3 (p. 123)
		4-Pin Euro QD		MI9EQ Emitter		
		2 m	Constant Current: ≤1.2 mA dark ≥2.1 mA light	MIAD9R		
		4-Pin Euro QD		MIAD9RQ		
 RETRO	5 m†	2 m		MIAD9LV	EGC-10 (p. 119)	BP-10 (p. 123)
		4-Pin Euro QD		MIAD9LVQ		
 POLAR RETRO	50 mm - 2 m†	2 m		MIAD9LVAG	EGC-11 (p. 119)	BP-11 (p. 123)
		4-Pin Euro QD		MIAD9LVAGQ		
 DIFFUSE	380 mm	2 m		MIAD9D	EGC-18 (p. 120)	BP-18 (p. 124)
		4-Pin Euro QD		MIAD9DQ		
 DIVERGENT DIFFUSE	75 mm	2 m		MIAD9W	EGC-19 (p. 120)	BP-19 (p. 124)
		4-Pin Euro QD		MIAD9WQ		
 CONVERGENT	16 mm	2 m		MIAD9CV	EGC-33 (p. 121)	BP-33 (p. 125)
		4-Pin Euro QD		MIAD9CVQ		
	43 mm	2 m		MIAD9CV2	EGC-34 (p. 121)	BP-34 (p. 125)
		4-Pin Euro QD		MIAD9CV2Q		
 GLASS FIBER	Range varies by sensing mode and fiber optics used	2 m		MIAD9F	EGC-48 & EGC-49 (p. 121)	BP-48 & BP-49 (p. 125)
		4-Pin Euro QD		MIAD9FQ		

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, **MIAD9LV W/30**).

† 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 section for more information.

MINIATURE
COMPACT
WORLD-BEAM QS18
WORLD-BEAM Q20
MINI-BEAM
S18/M18
T18
TM18
Q25
MIDSIZE
FULLSIZE

MINI-BEAM® NAMUR Specifications

Supply Voltage	5 to 15V dc (provided by the amplifier to which the sensor is connected)
Output	**Constant current output:** ≤ 1.2 mA in the "dark" condition and ≥ 2.1 mA in the "light" condition
Output Response Time	**Opposed receiver:** 2 milliseconds ON/400 microseconds OFF **All others:** 5 milliseconds ON/OFF (does not include amplifier response)
Adjustments	GAIN (sensitivity) adjustment potentiometer
Indicators	Red LED Alignment Indicator Device (AID) located on rear panel lights when the sensor sees a "light" condition; pulse rate is proportional to 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 2-conductor 2 m or 9 m cables, or special 4-pin Euro-style quick-disconnect (QD) fitting are available; QD cordsets are ordered separately. See page 118.
Operating Conditions	**Temperature:** -40° to +70° C **Relative humidity:** 90% at 50° C (non-condensing)
Design Standards	**MIAD9 Series sensors comply with the following standards:** DIN 19 234, EN 50 014 Part 1. 1977, EN50 020 Part 7. 1977, Factory Mutual #3610 and 3611, CSA 22.2 #157-92 and 22.2 #213-M1987
Certifications	CE, KEMA, FM APPROVED, ETL LISTED, CSA
Hookup Diagrams	SP01 (p. 756)

APPROVALS

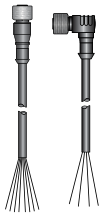
CSA:	#LR 41887	Instrinsically Safe, with Entity for Class I, Groups A-D Class I, Div. 2, Groups A-D	**FM:**	#J.I. 5Y3A4.AX	Intrinsically Safe, with Entity for Class I, II, III, Div. 1, Groups A-G Class I, II, III, Div. 2, Groups A-D and G
KEMA:	#03ATEX1441X	II IG EEx ia IIC T6	**ETL:**	#553868	

Cordsets

Euro QD

See page 682

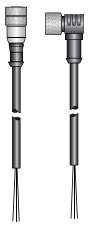
Length	Threaded 4-Pin		Threaded 5-Pin	
	Straight	Right-Angle	Straight	Right-Angle
1.83 m	MQDC-406	MQDC-406RA	MQDC1-506	MQDC1-506RA
4.57 m	MQDC-415	MQDC-415RA	MQDC1-515	MQDC1-515RA
9.14 m	MQDC-430	MQDC-430RA	MQDC1-530	MQDC1-530RA



Micro

See page 698

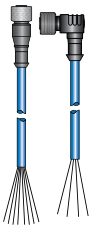
Length	Threaded 3-Pin	
	Straight	Right-Angle
1.83 m	MQDC-306	MQDC-306RA
4.57 m	MQDC-315	MQDC-315RA
9.14 m	MQDC-330	MQDC-330RA



NAMUR Euro QD

See page 683

Length	Threaded 4-Pin	
	Straight	Right-Angle
1.83 m	MQD9-406	MQD9-406RA
4.57 m	MQD9-415	MQD9-415RA



Additional cordset information available. See page 679.

Brackets

MINI-BEAM

 pg. 637	 pg. 638	 pg. 638	 pg. 642	 pg. 639
SMB18A	SMB18FA..	SMB18SF	SMB312B	SMB3018SC

Additional brackets and information available. See page 620.

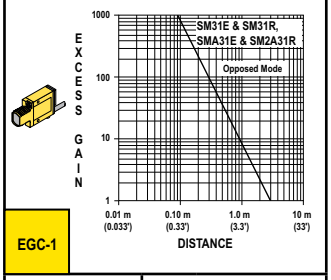
REFLECTORS PAGE 710

APERTURES PAGE 736

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

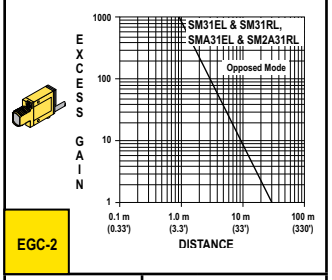
Opposed Mode MINI-BEAM®



EGC-1

Range: 3 m **LED:** ○

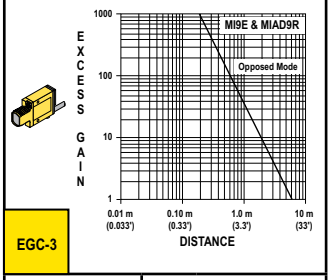
Opposed Mode MINI-BEAM®



EGC-2

Range: 30 m **LED:** ○

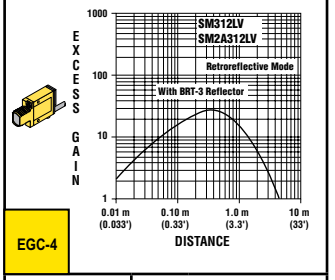
Opposed Mode MINI-BEAM® NAMUR



EGC-3

Range: 6 m **LED:** ○

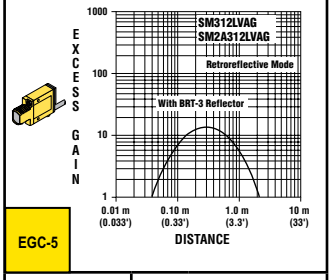
Retroreflective Mode MINI-BEAM®



EGC-4

Range: 5 m **LED:** ●

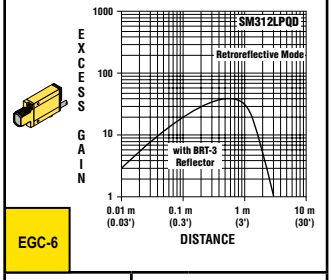
Polarized Retroreflective Mode MINI-BEAM®



EGC-5

Range: 2 m **LED:** P

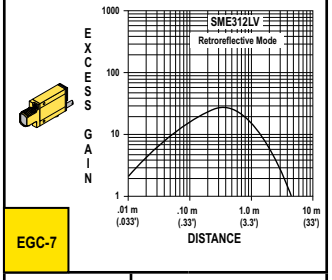
Retroreflective Mode MINI-BEAM®



EGC-6

Range: 3 m **LED:** P

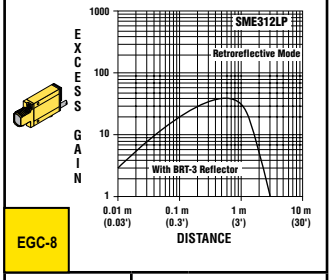
Retroreflective Mode MINI-BEAM® *Expert*™



EGC-7

Range: 5 m **LED:** ●

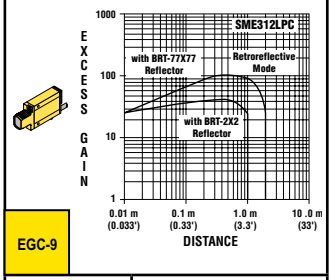
Polarized Retroreflective Mode MINI-BEAM® *Expert*™



EGC-8

Range: 3 m **LED:** P

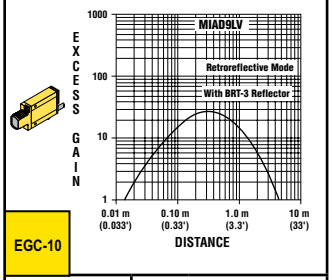
Retroreflective Mode MINI-BEAM® *Expert*™



EGC-9

Range: 1 m **LED:** ■

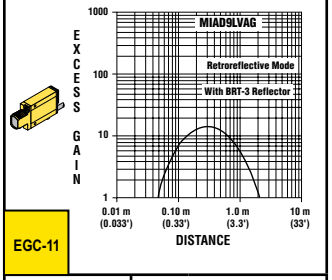
Retroreflective Mode MINI-BEAM® NAMUR



EGC-10

Range: 5 m **LED:** ●

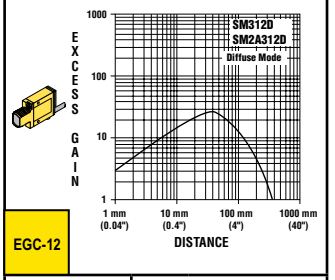
Polarized Retroreflective Mode MINI-BEAM® NAMUR



EGC-11

Range: 2 m **LED:** P

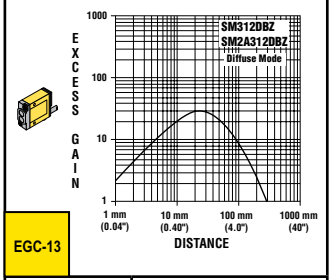
Diffuse Mode MINI-BEAM®



EGC-12

Range: 380 mm **LED:** ○

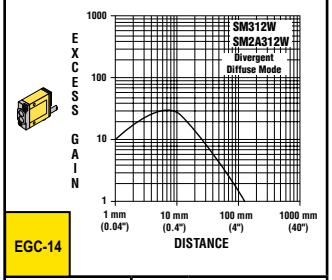
Diffuse Mode MINI-BEAM®



EGC-13

Range: 300 mm **LED:** ○

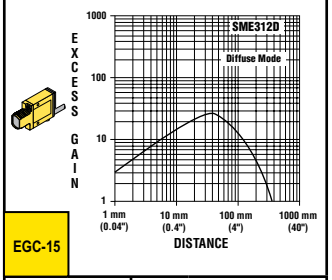
Divergent Diffuse Mode MINI-BEAM®



EGC-14

Range: 130 mm **LED:** ○

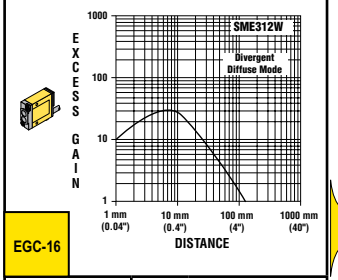
Diffuse Mode MINI-BEAM® *Expert*™



EGC-15

Range: 380 mm **LED:** ○

Divergent Diffuse Mode MINI-BEAM® *Expert*™



EGC-16

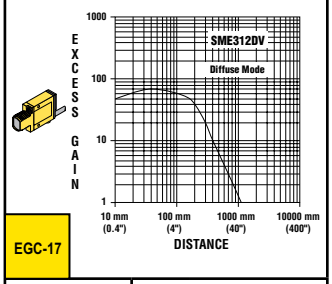
Range: 130 mm **LED:** ○

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

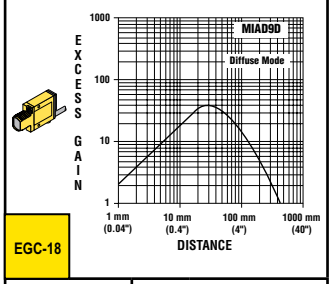
Diffuse Mode MINI-BEAM® *Expert*™



EGC-17

Range: 1100 mm **LED:** ●

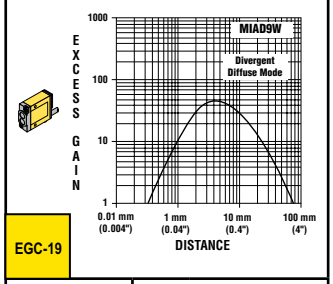
Diffuse Mode MINI-BEAM® NAMUR



EGC-18

Range: 380 mm **LED:** ○

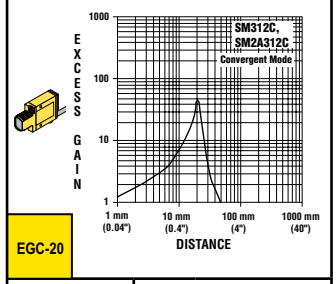
Divergent Diffuse Mode MINI-BEAM® NAMUR



EGC-19

Range: 75 mm **LED:** ○

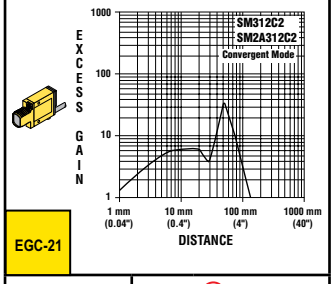
Convergent Mode MINI-BEAM®



EGC-20

Range: 16 mm **LED:** ○

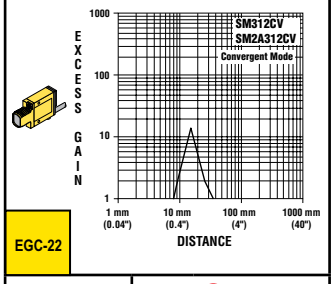
Convergent Mode MINI-BEAM®



EGC-21

Range: 43 mm **LED:** ○

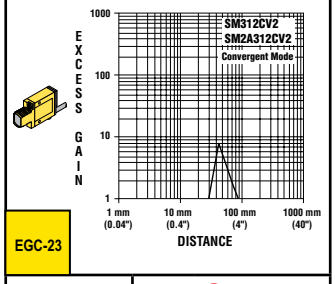
Convergent Mode MINI-BEAM®



EGC-22

Range: 16 mm **LED:** ●

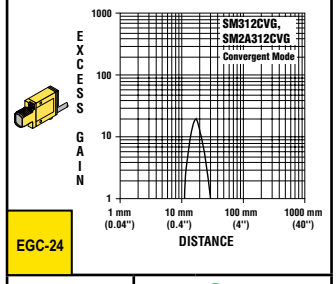
Convergent Mode MINI-BEAM®



EGC-23

Range: 43 mm **LED:** ●

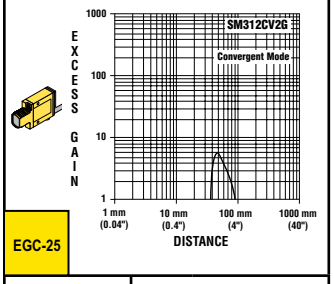
Convergent Mode MINI-BEAM®



EGC-24

Range: 16 mm **LED:** ●

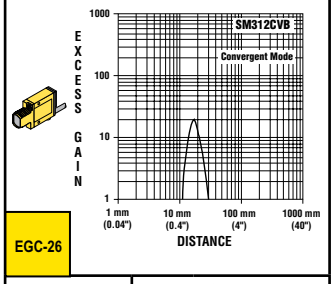
Convergent Mode MINI-BEAM®



EGC-25

Range: 49 mm **LED:** ●

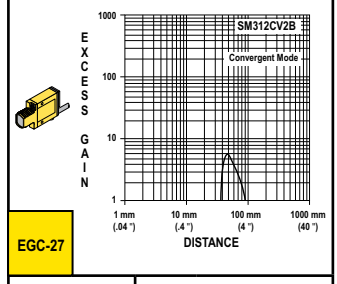
Convergent Mode MINI-BEAM®



EGC-26

Range: 16 mm **LED:** ●

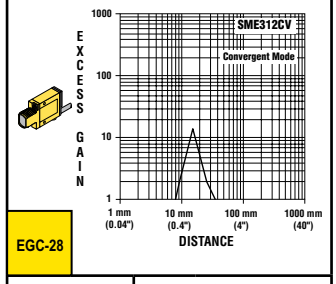
Convergent Mode MINI-BEAM®



EGC-27

Range: 49 mm **LED:** ●

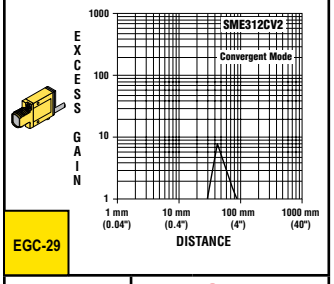
Convergent Mode MINI-BEAM® *Expert*™



EGC-28

Range: 16 mm **LED:** ●

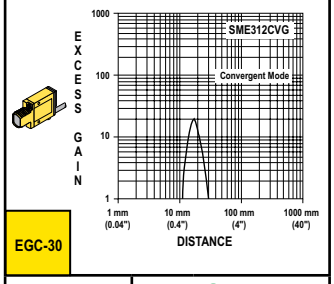
Convergent Mode MINI-BEAM® *Expert*™



EGC-29

Range: 43 mm **LED:** ●

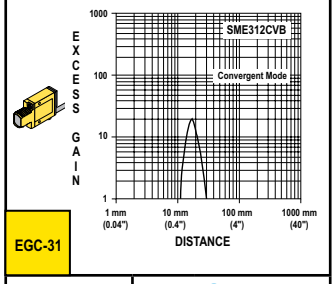
Convergent Mode MINI-BEAM® *Expert*™



EGC-30

Range: 16 mm **LED:** ●

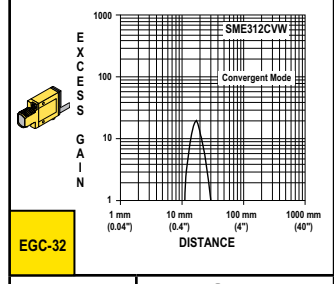
Convergent Mode MINI-BEAM® *Expert*™



EGC-31

Range: 16 mm **LED:** ●

Convergent Mode MINI-BEAM® *Expert*™



EGC-32

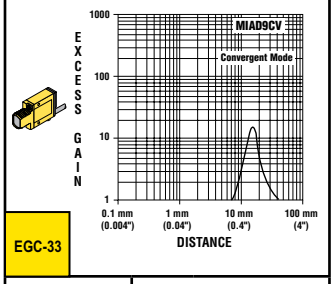
Range: 16 mm **LED:** ○

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

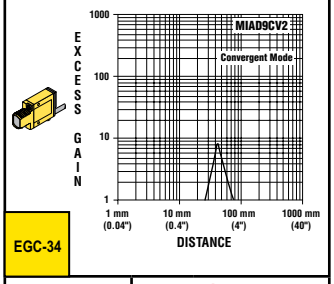
Convergent Mode MINI-BEAM® NAMUR



EGC-33

Range: 16 mm **LED:** ●

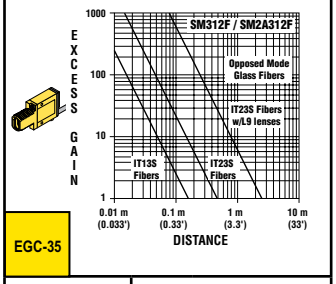
Convergent Mode MINI-BEAM® NAMUR



EGC-34

Range: 43 mm **LED:** ●

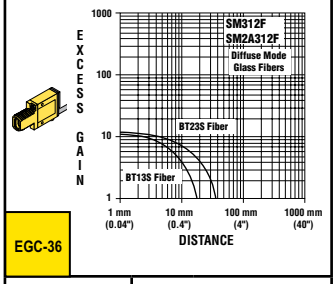
Opposed Mode—Glass Fiber MINI-BEAM®



EGC-35

Range: Varies **LED:** ○

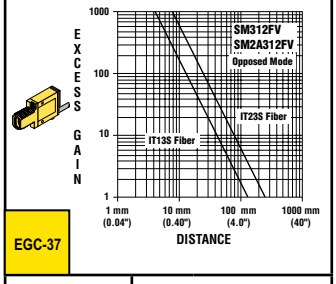
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-36

Range: Varies **LED:** ○

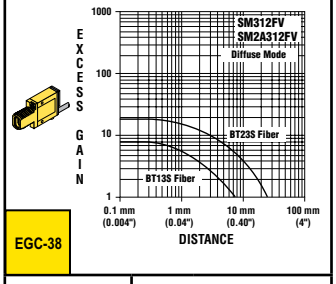
Opposed Mode—Glass Fiber MINI-BEAM®



EGC-37

Range: Varies **LED:** ●

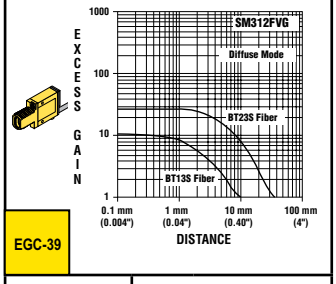
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-38

Range: Varies **LED:** ●

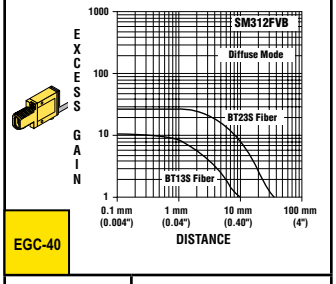
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-39

Range: Varies **LED:** ●

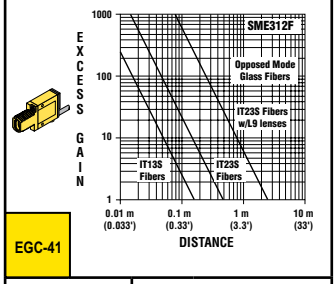
Diffuse Mode—Glass Fiber MINI-BEAM®



EGC-40

Range: Varies **LED:** ●

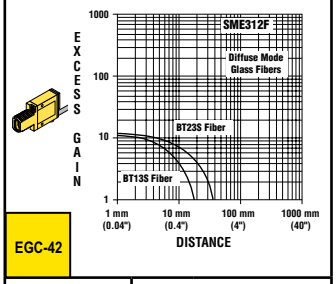
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-41

Range: Varies **LED:** ○

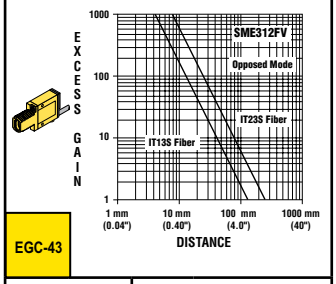
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-42

Range: Varies **LED:** ○

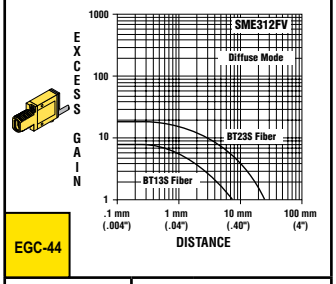
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-43

Range: Varies **LED:** ●

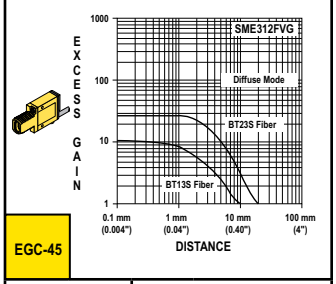
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-44

Range: Varies **LED:** ●

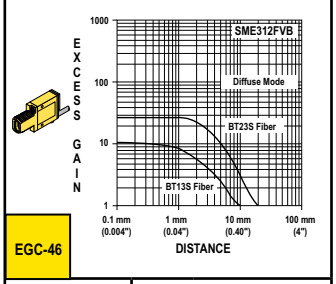
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-45

Range: Varies **LED:** ●

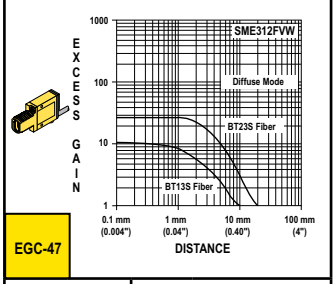
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-46

Range: Varies **LED:** ●

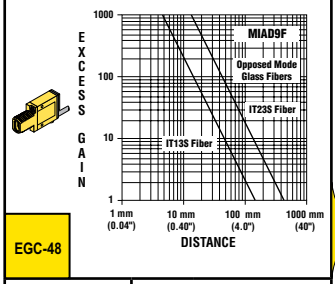
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



EGC-47

Range: Varies **LED:** ○

Opposed Mode—Glass Fiber MINI-BEAM® NAMUR



EGC-48

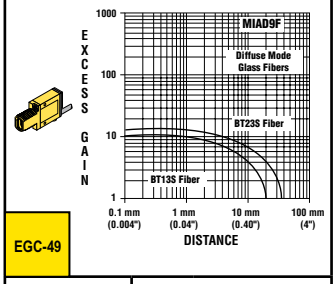
Range: Varies **LED:** ○

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

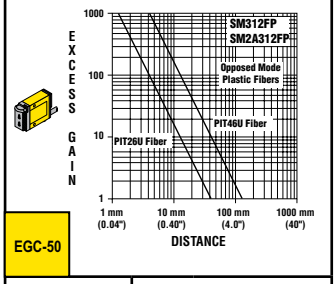
Diffuse Mode—Glass Fiber MINI-BEAM® NAMUR



EGC-49

Range: Varies **LED:** ○

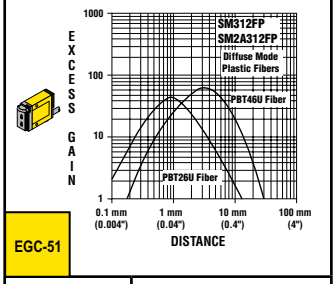
Opposed Mode—Plastic Fiber MINI-BEAM®



EGC-50

Range: Varies **LED:** ●

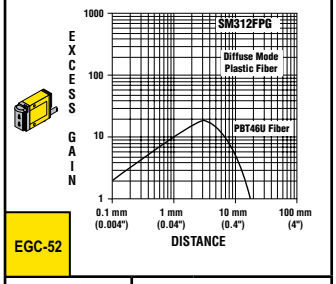
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-51

Range: Varies **LED:** ●

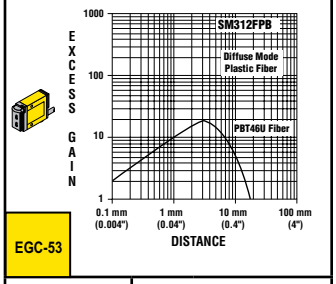
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-52

Range: Varies **LED:** ●

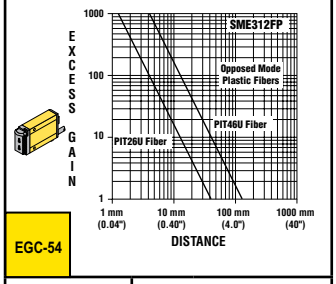
Diffuse Mode—Plastic Fiber MINI-BEAM®



EGC-53

Range: Varies **LED:** ●

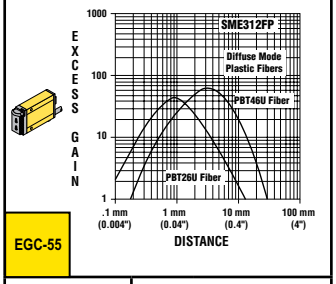
Opposed Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-54

Range: Varies **LED:** ●

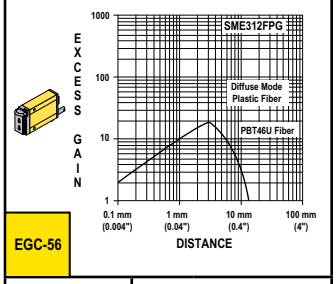
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-55

Range: Varies **LED:** ●

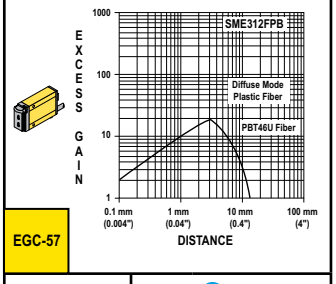
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-56

Range: Varies **LED:** ●

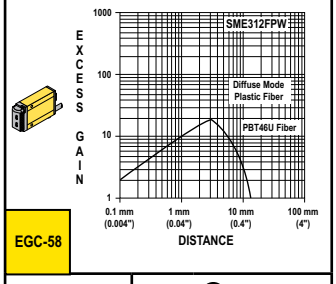
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



EGC-57

Range: Varies **LED:** ●

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



EGC-58

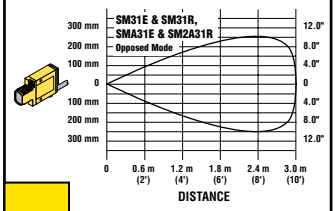
Range: Varies **LED:** ○

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

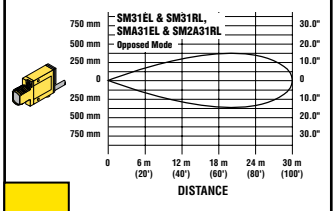


BP-1

Range: 3 m **LED:** ○

Opposed Mode MINI-BEAM®

Effective Beam: 13 mm

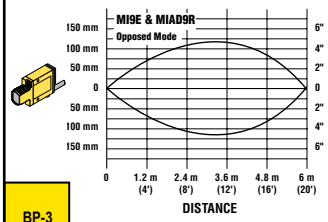


BP-2

Range: 30 m **LED:** ○

Opposed Mode MINI-BEAM® NAMUR

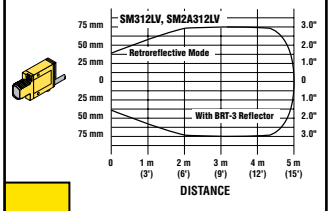
Effective Beam: 13 mm



BP-3

Range: 6 m **LED:** ○

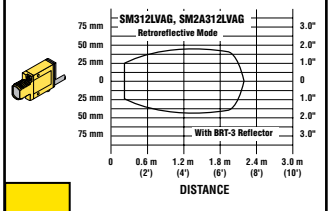
Retroreflective Mode MINI-BEAM®



BP-4

Range: 5 m **LED:** ●

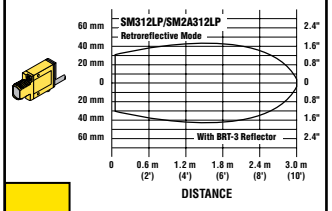
Polarized Retroreflective Mode MINI-BEAM®



BP-5

Range: 2 m **LED:** P

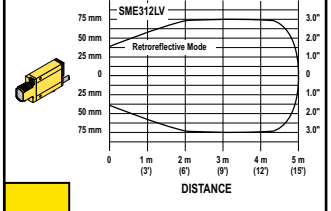
Polarized Retroreflective Mode MINI-BEAM®



BP-6

Range: 3 m **LED:** P

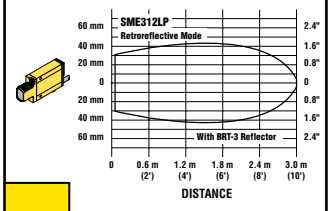
Retroreflective Mode MINI-BEAM® *Expert*™



BP-7

Range: 5 m **LED:** ●

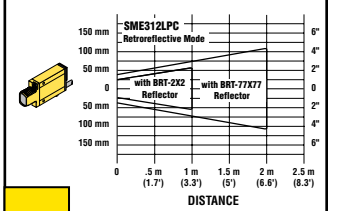
Polarized Retroreflective Mode MINI-BEAM® *Expert*™



BP-8

Range: 3 m **LED:** P

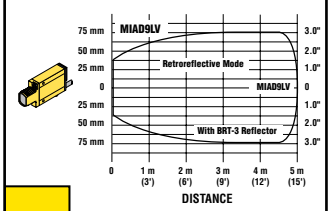
Retroreflective Mode MINI-BEAM® *Expert*™



BP-9

Range: 1 m **LED:** ■

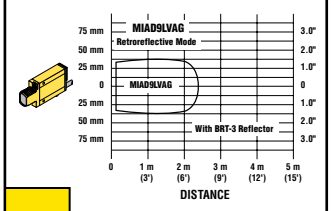
Retroreflective Mode MINI-BEAM® NAMUR



BP-10

Range: 5 m **LED:** ●

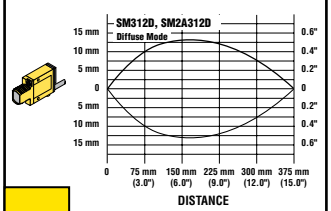
Polarized Retroreflective Mode MINI-BEAM® NAMUR



BP-11

Range: 2 m **LED:** P

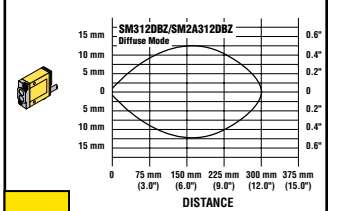
Diffuse Mode MINI-BEAM®



BP-12

Range: 380 mm **LED:** ○

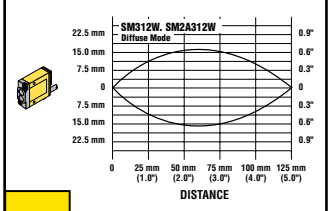
Diffuse Mode MINI-BEAM®



BP-13

Range: 300 mm **LED:** ○

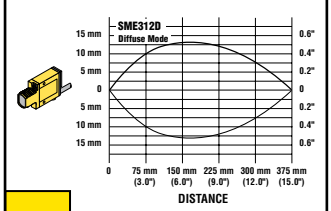
Divergent Diffuse Mode MINI-BEAM®



BP-14

Range: 130 mm **LED:** ○

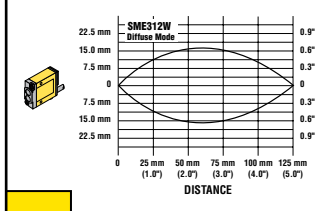
Diffuse Mode MINI-BEAM® *Expert*™



BP-15

Range: 380 mm **LED:** ○

Diffuse Mode MINI-BEAM® *Expert*™



BP-16

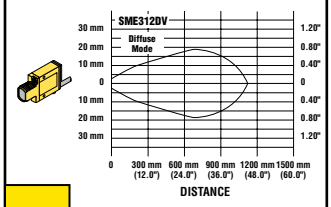
Range: 130 mm **LED:** ○

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

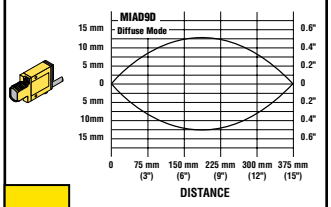
Diffuse Mode MINI-BEAM® *Expert*™



BP-17

Range: 1100 mm **LED:** ●

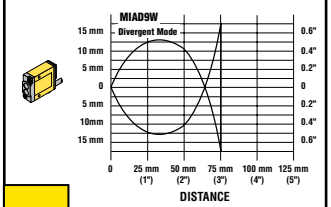
Diffuse Mode MINI-BEAM® NAMUR



BP-18

Range: 380 mm **LED:** ○

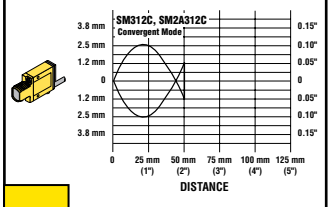
Divergent Diffuse Mode MINI-BEAM® NAMUR



BP-19

Range: 75 mm **LED:** ○

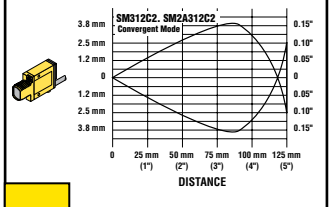
Convergent Mode MINI-BEAM®



BP-20

Range: 16 mm **LED:** ○

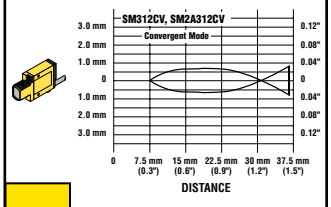
Convergent Mode MINI-BEAM®



BP-21

Range: 43 mm **LED:** ○

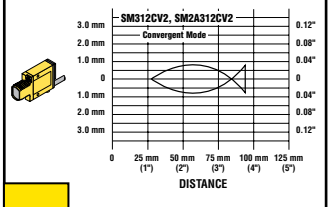
Convergent Mode MINI-BEAM®



BP-22

Range: 16 mm **LED:** ●

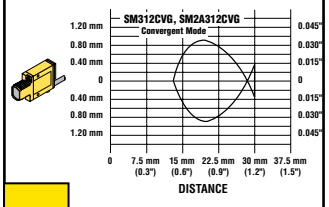
Convergent Mode MINI-BEAM®



BP-23

Range: 43 mm **LED:** ●

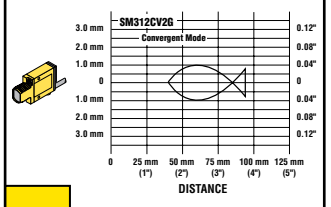
Convergent Mode MINI-BEAM®



BP-24

Range: 16 mm **LED:** ●

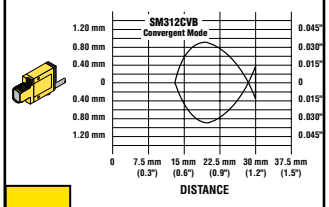
Convergent Mode MINI-BEAM®



BP-25

Range: 49 mm **LED:** ●

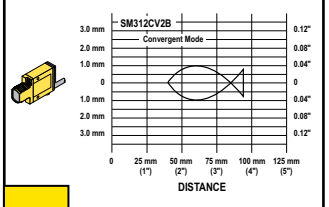
Convergent Mode MINI-BEAM®



BP-26

Range: 16 mm **LED:** ●

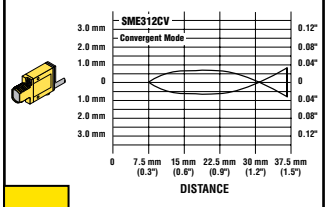
Convergent Mode MINI-BEAM®



BP-27

Range: 49 mm **LED:** ●

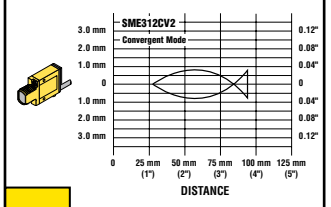
Convergent Mode MINI-BEAM® *Expert*™



BP-28

Range: 16 mm **LED:** ●

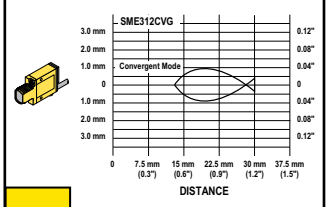
Convergent Mode MINI-BEAM® *Expert*™



BP-29

Range: 43 mm **LED:** ●

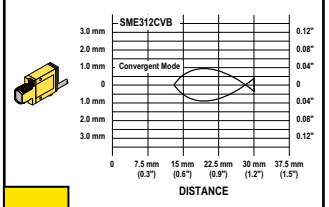
Convergent Mode MINI-BEAM® *Expert*™



BP-30

Range: 16 mm **LED:** ●

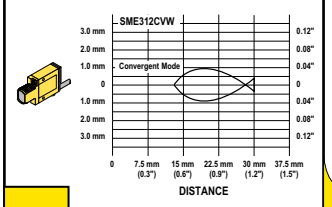
Convergent Mode MINI-BEAM® *Expert*™



BP-31

Range: 16 mm **LED:** ●

Convergent Mode MINI-BEAM® *Expert*™



BP-32

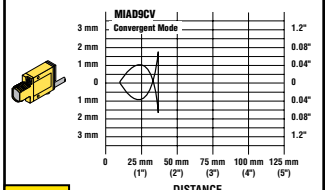
Range: 16 mm **LED:** ○

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

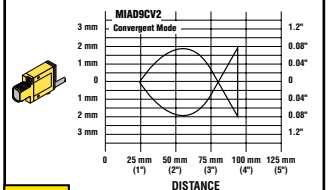
Convergent Mode MINI-BEAM® NAMUR



BP-33

Range: 16 mm **LED:** ●

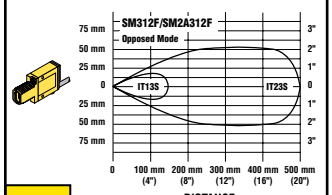
Convergent Mode MINI-BEAM® NAMUR



BP-34

Range: 43 mm **LED:** ●

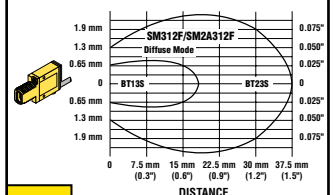
Opposed Mode—Glass Fiber MINI-BEAM®



BP-35

Fiber: Individual **LED:** ○

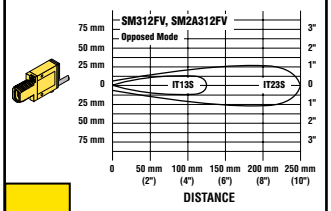
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-36

Range: Varies **LED:** ○

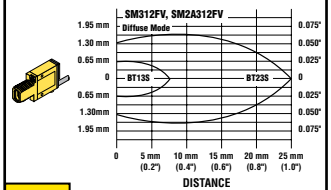
Opposed Mode—Glass Fiber MINI-BEAM®



BP-37

Range: Varies **LED:** ●

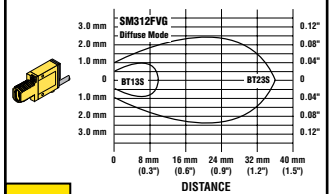
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-38

Range: Varies **LED:** ●

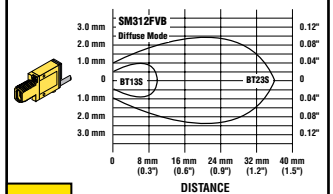
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-39

Range: Varies **LED:** ●

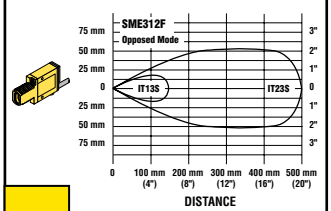
Diffuse Mode—Glass Fiber MINI-BEAM®



BP-40

Range: Varies **LED:** ●

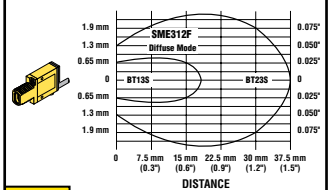
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-41

Range: Varies **LED:** ○

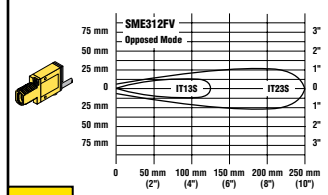
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-42

Range: Varies **LED:** ○

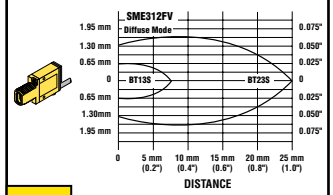
Opposed Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-43

Range: Varies **LED:** ●

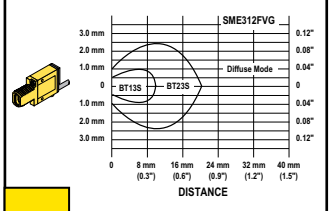
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-44

Range: Varies **LED:** ●

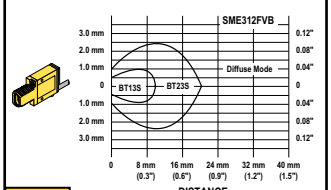
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-45

Range: Varies **LED:** ●

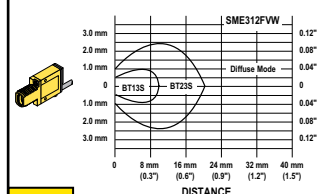
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-46

Range: Varies **LED:** ●

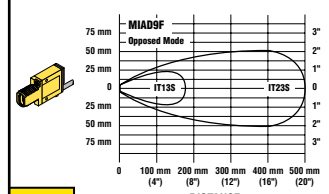
Diffuse Mode—Glass Fiber MINI-BEAM® *Expert*™



BP-47

Range: Varies **LED:** ○

Opposed Mode—Glass Fiber MINI-BEAM® NAMUR



BP-48

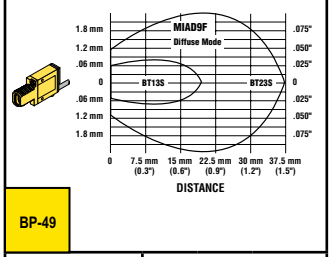
Range: Varies **LED:** ○

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

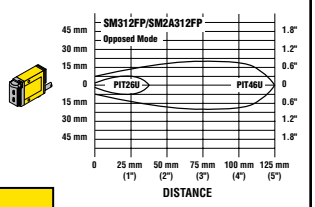
Diffuse Mode—Glass Fiber MINI-BEAM® NAMUR



BP-49

Range: Varies **LED:** ○

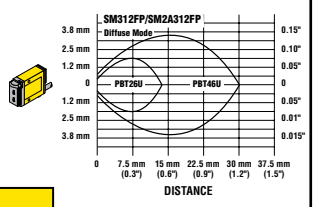
Opposed Mode—Plastic Fiber MINI-BEAM®



BP-50

Range: Varies **LED:** ●

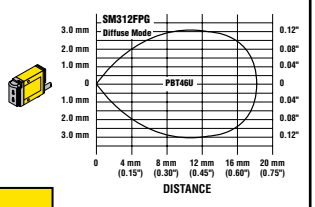
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-51

Range: Varies **LED:** ●

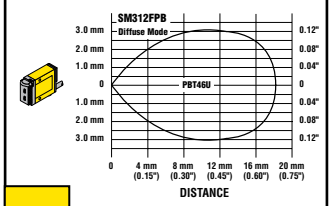
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-52

Range: Varies **LED:** ●

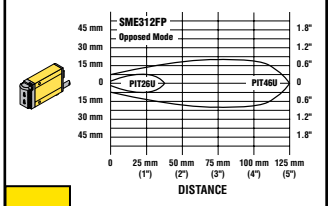
Diffuse Mode—Plastic Fiber MINI-BEAM®



BP-53

Range: Varies **LED:** ●

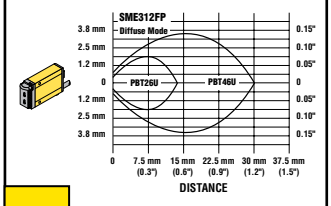
Opposed Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-54

Range: Varies **LED:** ●

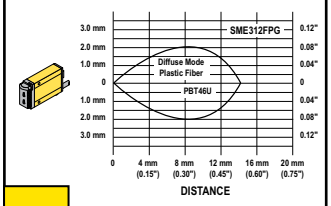
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-55

Range: Varies **LED:** ●

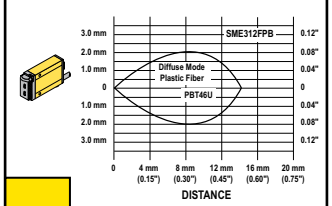
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-56

Range: Varies **LED:** ●

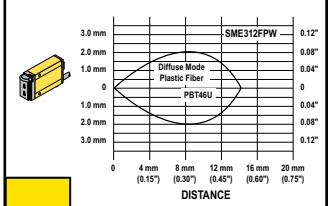
Diffuse Mode—Plastic Fiber MINI-BEAM® *Expert*™



BP-57

Range: Varies **LED:** ●

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

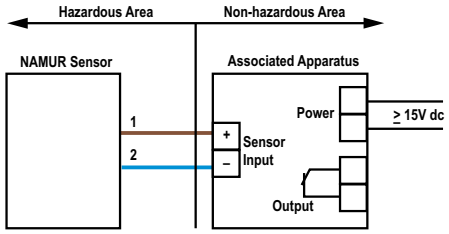


BP-58

Range: Varies **LED:** ○

Special Hookups

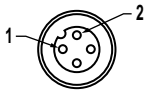
SP01 NAMUR Hookup



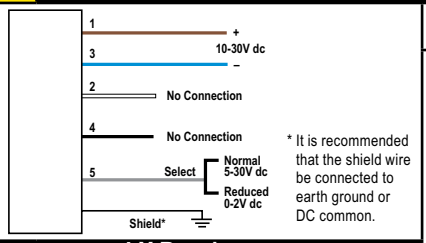
Key

1 = Brown
2 = Blue

4-Pin Euro NAMUR

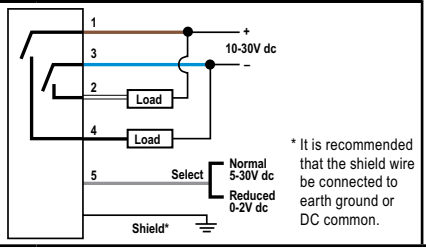


SP02 LX Emitter



* It is recommended that the shield wire be connected to earth ground or DC common.

LX Receiver

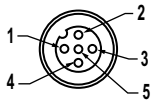


* It is recommended that the shield wire be connected to earth ground or DC common.

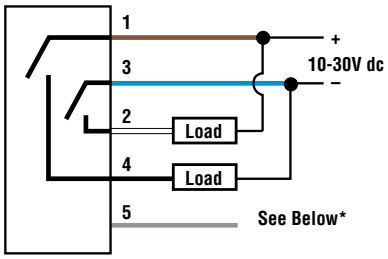
Key

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

5-Pin Euro



SP03 SL10, SL30 and SLO30

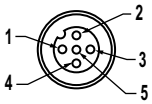


* For Dark Operate, connect gray wire to + (brown).
For Light Operate, connect gray wire to – (blue) or leave circuit open.

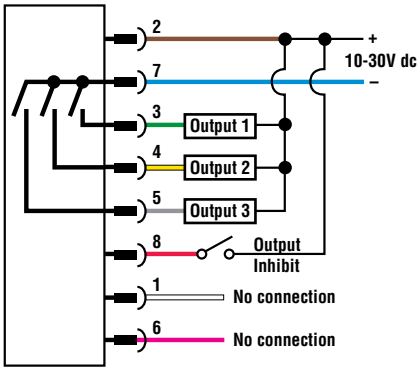
Key

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

5-Pin Euro



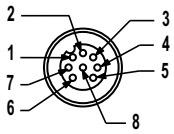
SP04 QC50/QCX50 Current Sinking (NPN)



Key

1 = White
2 = Brown
3 = Green
4 = Yellow
5 = Gray
6 = Pink
7 = Blue
8 = Red

8-Pin Euro



More on next page