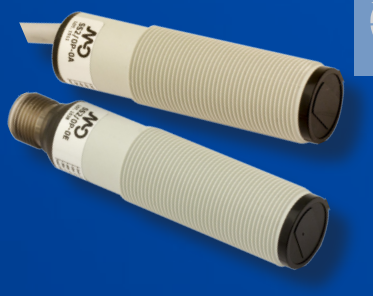
SS - SP series

M18 DC with lateral adjustment

features

- **Models with side sens. adjustment on axial and right angle optic**
- **LO/DO selectable output**
- **ATEX models, cat. 3, available on request**
- **LED status indicator for all versions**
- **Complete protection against electrical damages**
- **IP67 protection degree for all models**
- **Approvals: CE and cULus listed**



web contents

- **Application notes**
- **Photos**
- **Catalogue / Manuals**

code description (*)

background suppression

SS 0 / 0 N - 0 A

series	SS	M18 photoelectric sensors with axial optic
type	0	50 mm background suppr. without sens. adjust.
	1	100 mm background suppr. without sens. adjust.
	T	Focalizer background suppr. 12 mm (with focalizer STF-12) - 25 mm (with focalizer STF-25)
output	0	LO/DO selectable output
	L	3 wires – light on
	D	3 wires – dark on
NPN / PNP output	N	NPN output
	P	PNP output
housing material	0	Plastic housing
	1	Metallic housing
cable / plug exit	A	Axial cable exit 2 m
	E	M12 plug cable exit

(*) ATEX models available, contact our Sales Dept. for further information.

code description

diffuse reflection and retro-reflective

SS 2 / 0 N - 0 A

series	SS	M18 photoelectric sensors with axial optic
	SP	M18 photoelectric sensors with right angle optic
type	2	100 mm diffuse reflection without sens. adjust.
	3	100 mm diffuse reflection with sens. adjust.
	7	400 mm diffuse reflection with sens. adjust.
	8	800 mm diffuse reflection with sens. adjust.
	C	5 m retro-reflective without sens. adjust. (1)
	P	4 m polarized retro-reflective without sens. adjust. (1)
output	0	LO/DO selectable output
	L	3 wires - light on
	D	3 wires - dark on
NPN / PNP output	N	NPN output
	P	PNP output
housing material	0	Plastic housing
	1	Metallic housing
cable / plug oitput	A	Axial cable exit
	E	M12 plug cable exit
		Standard version
	3X	Retro-reflective and polarized with sens. adjust.

(1) Special version with sens. adjust, 3X variant

code description

through beam

SS H / 0 0 - 0 A

series	SS	M18 photoelectric sensors with axial optic
	SP	M18 photoelectric sensors with right angle optic
type	H	14 m emitter without sens. adjust.
	Z	14 m receiver without sens. adjust.
	D	14 m receiver with sens. sdjust.
	U	Emitter with reduced visible beam
	G	8 m receiver for small object
	V	3 m receiver for ultra small object
features	0	Emitter without check - LO/DO selectable
	X	Emitter with check
	L	3 wires – light on - S*D and S*Z only
	D	3 wires–dark on - S*D and S*Z only
	A	3 wires – light on - S*G and S*V only
	C	3 wires–dark on - S*G and S*V only
NPN / PNP output	0	Emitter
	N	NPN output
	P	PNP output
housing material	0	Plastic housing
	1	Metallic housing
cable / plug exit	A	Axial cable exit
	E	M12 plug cable exit - S*H, S*D and S*Z" versions only
	H	M12 plug cable exit - S*U, S*G and S*V versions only

available models

plug exit photoelectric sensors axial optic

function	distance	housing	adjustment	3 wires LO NPN	3 wires LO PNP	3 wires DO NPN	3 wires DO PNP	4 wires NPN LO / DO	4 wires PNP LO / DO
background suppression	50 mm	plastic	-	-	SS0/LP-0E	-	-	SS0/0N-0E	SS0/0P-0E
		metallic		-	SS0/LP-1E	-	-	SS0/0N-1E	SS0/0P-1E
	100 mm	plastic		-	SS1/LP-0E	-	-	SS1/0N-0E	SS1/0P-0E
		metallic		-	SS1/LP-1E	-	-	SS1/0N-1E	SS1/0P-1E
	focalized	plastic		-	-	-	-	SST/0N-0E	SST/0P-0E
		metallic		-	-	-	-	SST/0N-1E	SST/0P-1E
diffuse reflection	100 m	plastic		SS2/LN-0E	SS2/LP-0E	-	-	SS2/0N-0E	SS2/0P-0E
			●	-	-	-	-	-	-
		metallic	-	SS2/LN-1E	SS2/LP-1E	-	-	SS2/0N-1E	SS2/0P-1E
				-	-	-	-	-	SS3/0P-1E
	400 mm	plastic		-	SS7/LP-0E	-	-	SS7/0N-0E	SS7/0P-0E
		metallic	●	-	SS7/LP-1E	-	-	SS7/0N-1E	SS7/0P-1E
	800 mm	plastic		-	-	-	-	-	SS8/0P-0E
		metallic		-	-	-	-	-	SS8/0P-1E
retro-reflective	4 m	plastic	-	SSC/LN-0E	SSC/LP-0E	SSC/DN-0E	SSC/DP-0E	SSC/0N-0E	SSC/0P-0E
			●	-	-	-	-	SSC/0N-0E3X	SSC/0P-0E3X
		metallic	-	SSC/LN-1E	SSC/LP-1E	SSC/DN-1E	SSC/DP-1E	SSC/0N-1E	SSC/0P-1E
			●	-	-	-		SSC/0N-1E3X	SSC/0P-1E3X
polarized	3 m	plastic	-	SSP/LN-0E	SSP/LP-0E	SSP/DN-0E	SSP/DP-0E	SSP/0N-1E	SSP/0P-1E
			●	-	-	-	-	SSP/0N-1E3X	SSP/0P-1E3X
		metallic	-	SSP/LN-1E	SSP/LP-1E	SSP/DN-1E	SSP/DP-1E	SSP/0N-1E	SSP/0P-1E
			●	-	-	-	-	SSP/0N-1E3X	SSP/0P-1E3X
through-beam	14 m	plastic	emitter	SSH/00-0E					
			em. with check	SSH/X0-0E					
			receiver	SSZ/LN-0E	SSZ/LP-0E	SSZ/DN-0E	SSZ/DP-0E	SSZ/0N-0E	SSZ/0P-0E
			receiver adj.	SSD/LN-0E	SSD/LP-0E	SSD/DN-0E	SSD/DP-0E	SSD/0N-0E	SSD/0P-0E
		metallic	emitter	SSH/00-1E					
			em. with check	SSH/X0-1E					
			receiver	SSZ/LN-1E	SSZ/LP-1E	SSZ/DN-1E	SSZ/DP-1E	SSZ/0N-1E	SSZ/0P-1E
			receiver adj.	SSD/LN-1E	SSD/LP-1E	SSD/DN-1E	SSD/DP-1E	SSD/0N-1E	SSD/0P-1E
	8 m	plastic	emitter	SSU/00-0E					
			receiver	SSG/AN-0E	SSG/AP-0E	SSG/CN-0E	SSG/CP-0E	-	-
		metallic	emitter	SSU/00-1H					
			receiver	SSG/AN-1H	SSG/AP-1H	SSG/CN-1E	SSG/CP-1H	-	-
	3 m	plastic	emitter	SSU/00-0E					
			receiver	SSV/AN-0E	SSV/AP-0E	SSV/CN-0E	SSV/CP-0E	-	-
		metallic	emitter	SSU/00-1H					
			receiver	-					

available models

cable exit photoelectric sensors axial optic

function	distance	housing	adjustment	3 wires LO NPN	3 wires LO PNP	3 wires DO NPN	3 wires DO PNP	4 wires NPN LO / DO	4 wires PNP LO / DO
background suppression	50 mm	plastic	-	-	-	-	-	SS0/0N-0A	SS0/0P-0A
		metallic		-	-	-	-	SS0/0N-1A	SS0/0P-1A
	100 mm	plastic		-	-	-	-	SS1/0N-0A	SS1/0P-0A
		metallic		-	-	-	-	SS1/0N-1A	SS1/0P-1A
	focalizzata	plastic		-	-	-	-	SST/0N-0A	SST/0P-0A
		metallic		-	-	-	-	SST/0N-1A	SST/0P-1A
diffuse reflection	100 m	plastic		SS2/LN-0A	SS2/LP-0A	-	SS2/DP-0A	SS2/0N-0A	SS2/0P-0A
			●	-	-	-	-	SS3/0N-0A	SS3/0P-0A
		metallic	-	SS2/LN-1A	SS2/LP-1A	SS2/DN-1A	SS2/DP-1A	SS2/0N-1A	SS2/0P-1A
				-	-	-	-	SS3/0N-1A	SS3/0P-1A
	400 mm	plastic		-	-	-	-	SS7/0N-0A	SS7/0P-0A
		metallic	●	-	-	-	-	SS7/0N-1A	SS7/0P-1A
	800 mm	plastic		-	-	-	-	SS8/0N-0A	SS8/0P-0A
		metallic		-	-	-	-	SS8/0N-1A	SS8/0P-1A
retro-reflective	5 m	plastic	-	-	-	-	-	SSC/0N-0A	SSC/0P-0A
			●	-	-	-	-	SSC/0N-0A3X	SSC/0P-0A3X
		metallic	-	-	-	-	-	SSC/0N-1A	SSC/0P-1A
			●	-	-	-	-	SSC/0N-1A3X	SSC/0P-1A3X
polarized	4 m	plastic	-	-	-	-	SSP/DP-0A	SSP/0N-1A	SSP/0P-1A
			●	-	-	-	-	SSP/0N-1A3X	SSP/0P-1A3X
		metallic	-	-	-	-	SSP/DP-1A	SSP/0N-1A	SSP/0P-1A
			●	-	-	-	-	SSP/0N-1A3X	SSP/0P-1A3X
through-beam	14 m	plastic	emitter	SSH/00-0A					
			em. with check	SSH/X0-0A					
			receiver	SSZ/LN-0A	SSZ/LP-0A	SSZ/DN-0A	SSZ/DP-0A	SSZ/0N-0A	SSZ/0P-0A
			receiver adj.	-	-	-	-	SSD/0N-0A	SSD/0P-0A
		metallic	emitter	SSH/00-1A					
			em. with check	SSH/X0-1A					
			receiver	-	-	-	-	SSZ/0N-1E	SSZ/0P-1E
			receiver adj.	-	-	-	-	SSD/0N-1E	SSD/0P-1E
	8 m	plastic	emitter	SSU/00-0A					
			receiver	SSG/AN-0A	SSG/AP-0A	SSG/CN-0A	SSG/CP-0A	-	-
		metallic	emitter	SSU/00-1A					
			em. with check	SSU/X0-1A					
			receiver	SSG/AN-1A	SSG/AP-1A	SSG/CN-1A	SSG/CP-1A	-	-
	3 m	plastic	emitter	SSU/00-0A					
			em. with check	SSU/X0-0A					
			receiver	-	SSV/AP-0A	-	-	-	-
		metallic	emitter	SSU/00-1A					
			receiver	-	SSV/AP-1A	-	-	-	-

available models

plug exit photoelectric sensors radial optic

function	distance	housing	adjustment	3 wires LO NPN	3 wires LO PNP	3 wires DO NPN	3 wires DO PNP	4 wires NPN LO/DO	4 wires PNP LO/DO
diffuse reflection	100 mm	plasticc	-	SP2/LN-0E	SP2/LP-0E	-	-	SP2/0N-0E	SP2/0P-0E
			●	-	-	-	-	-	SP3/0P-0E
		metallic	-	SP2/LN-1E	SP2/LP-1E	-	-	SP2/0N-1E	SP2/0P-1E
			●	-	-	-	-	-	SP3/0P-1E
	400 mm	plastic		-	-	-	-	SP7/0N-0E	SP7/0P-0E
	800 mm			-	-	-	-	-	SP8/0P-0E
		metallic		-	-	-	-	-	SP8/0P-1E
through-beam	14 m	plastic	emitter	SPH/00-0E					
			receiver with check	-	-	-	-	SPZ/0N-0E	SPZ/0P-0E
		metallic	emitter	SPH/00-1E					
	8 m	plastic		SPU/00-0E					
	3 m	metallic		SPU/00-1E					

available models

cable exit photoelectric sensors radial optic

function	distance	housing	adjustment	3 wires LO NPN	3 wires LO PNP	3 wires DO NPN	3 wires DO PNP	4 wires NPN LO/DO	4 wires PNP LO/DO
diffuse reflection	100 mm	metallic	●	-	-	SP3/DN-1A	-	-	-
	400 mm	plastic		-	-	-	-	SP7/0N-0A	SP7/0P-0A
		metallic		-	-	-	-	SP7/0N-1A	SP7/0P-1A
through-beam	14 m	plastic	emitter	SPH/00-0A					
			em. with check	SPH/X0-0A					
			receiver	-	-	-	-	SPZ/0N-0A	SPZ/0P-0A
		metallic	emitter	SPH/00-1A					
			em. with check	SPH/X0-1A					
			receiver	-	-	-	-	SPZ/0N-1A	SPZ/0P-1A
	3 m		emitter	SPU/00-1A					

technical specification

background suppression models

	SS0/**-**	SS1/**-**	SST/**-**
			
nominal sensing distance	50 mm	100 mm	12/25 mm
emission	red (660 nm)		
spot diameter	see diagram		
minimum detectable object	1 mm	3.5 mm	0.1 mm with STF-12 0.25 mm with STF-25
dfferential travel	≤ 10 %		
repeatability	5 %		
operating voltage	10...30 Vdc		
ripple	≤ 10 %		
supply current	≤ 30 mA		
load current	100 mA		
leakage current	10 µA		
output voltage drop	1.2 V max. IL = 100 mA		
output type	NPN or PNP - LO/DO selectable		
switching frequency	1 kHz		
power on delay	200 ms		
power supply protections	polarity reversal, transient		
output protection	short circuit (autoreset)		
operating temperature range	- 25°C...+ 70°C (without freeze)		
temperature drift	10 % Sr		
protection degree	IP67 (EN60529) [1]		
EMC	in conformity with the EMC Directive according to EN 60947-5-2		
external light interference	3,000 lux (incandescence lamp) 10,000 lux (sunlight)		
LEDs	yellow		
housing material	PBT (plastic) / nicked plated brass (metallic) / PC (cable exit))		
optic material	plastic		
tightening torque	25 Nm (metallic housing), 1 Nm (plastic housing)		
weight (approx)	plastic version: 30 g connector / 70 g cable metallic version: 100 g connector / 130 g cable		

[1] Protection guaranteed only with plug cable well mounted

technical specification

diffuse reflection and retro-reflective models

	diffuse reflection				retro-reflective	polarized
	S*2/**-**	S*3/**-**	S*7/**-**	S*8/**-**	S*C/**-****	S*P/**-****
						
nominal sensing distance	with white target 100 x 100 mm		400 mm with white target 200 x 200 mm	800 mm with white target 400 x 400 mm	5 m with reflector RL 110	4 m with reflector RL 110
emission	infrared (880 nm)					red (660 nm)
dfferential travel	≤ 10 %					
repeatability	5 %					
operating voltage	10...30 Vdc					
ripple	≤ 10 %					
supply current	30 mA					
load current	100 mA					
leakage current	10 µA					
output voltage drop	1.2 V max. IL = 100 mA					
output type	NPN or PNP - LO/DO selectable					
switching frequency	250 Hz					
power on delay	200 ms					
power supply protections	polarity reversal, transient					
output protection	short circuit (autoreset)					
sensibility adjustment	-	●			-	●
operating temperature range	- 25°C...+ 70°C (without freeze)					
temperature drift	10 % Sr					
protection degree	IP67 (EN60529) [1]					
EMC	in conformity with the EMC Directive according to EN 60947-5-2					
external light interference	3,000 lux (incandescence lamp), 10.000 lux (sunlight)					
LEDs	yellow					
housing material	PBT (plastic) / nicked plated brass / PC (cable exit)					
optic material	plastic					
tightening torque	1 Nm (plastic housing), 25 Nm (metal housing)					
weight (approx)	plastic version: 30 g connector / 70 g cable metallic version: 100 g connector / 130 g cable					

[1] Protection guaranteed only with plug cable well mounted

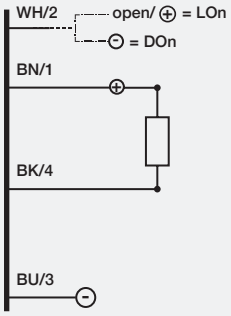
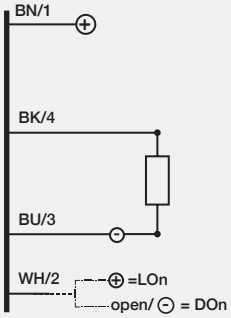
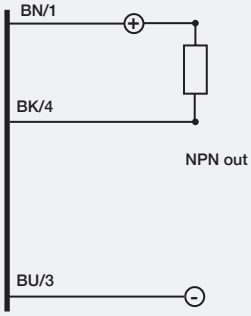
technical specification

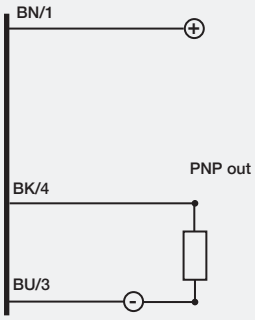
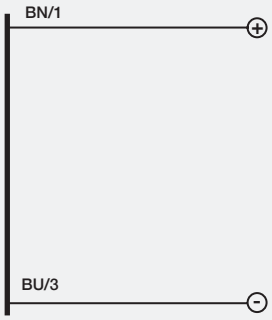
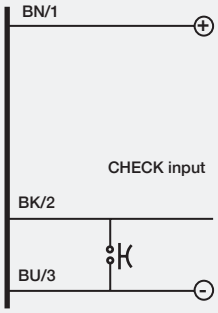
through beam models

	standard beam			barrier for small and ulta-small objects		
	emitter S*H/*0-**	receiver S*Z/**-**	receiver S*D/**-**	emitter S*U/*0-**	receiver S*G/**-**	receiver S*V/**-**
nominal sensing distance	14 m			-	8 m	3 m
minimum detectable object	-				Ø 4 mm	Ø 1 mm
emission	infrared (880 nm)			red (660 nm)		
tolerance	-			90% - 200% @ Eg = 1,5		
dfferential travel	≤ 10 %					
repeatability	5 %					
operating voltage	10...30 Vdc					
ripple	≤ 10 %					
supply current	40 mA	30 mA		25 mA	20 mA	
load current	100 mA					
leakage current	10 µA					
output voltage drop	2.5 V max. IL = 100 mA					
output type	NPN or PNP - LO/DO selectable			NPN or PNP - NO or NC		
switching frequency	250 Hz					
power on delay	200 ms					
power supply protections	polarity reversal, transient					
output protection	short circuit (autoreset)					
sensibility adjustment	-	●		-		
operating temperature range	- 25°C...+ 75°C (without freeze)					
temperature drift	10 % Sr			≤ 10 % Sr		
protection degree	IP67 (EN60529) [1]					
EMC	in conformity with the EMC Directive according to EN 60947-5-2					
external light interference	3,000 lux (incandescent lamp), 10,000 lux (sunlight)					
LEDs	yellow			red (activated output)		
housing material	PBT (plastic) / nicked plated brass / PC (cable exit)					
optic material	plastic					
tightening torque	1 Nm (plastic housing), 25 Nm (metallic housing)					
weight (approx)	plastic version: 30 g connector / 70 g cable metallic version: 100 g connector / 130 g cable					

[1] Protection guaranteed only with plug cable well mounted

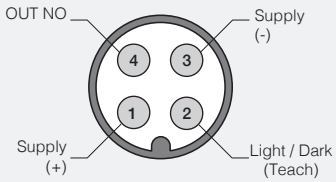
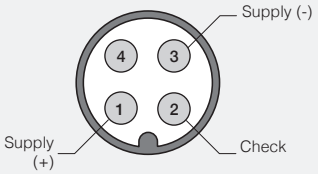
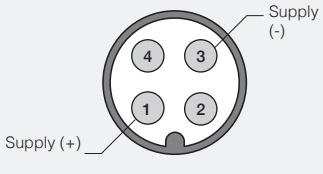
electrical diagrams of the connections

S**/0N-**	S**/0P-**	S**/*N-** (3 wires NPN)
		

S**/*P-** (3 wires PNP)	S**/00-**	S*H/X0-**
		

BN	brown
BU	blue
BK	black
WH	white
PK	pink
GY	grey

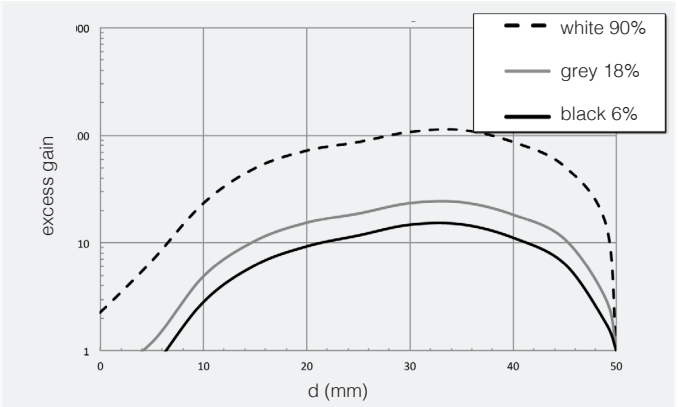
plug

M12 diffuse reflection polarized receiver	M12 emitter with check	M12 emitter without check
		

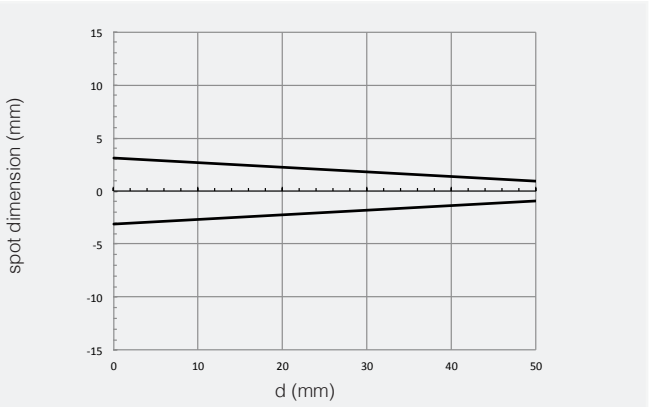
response diagrams

background suppression models

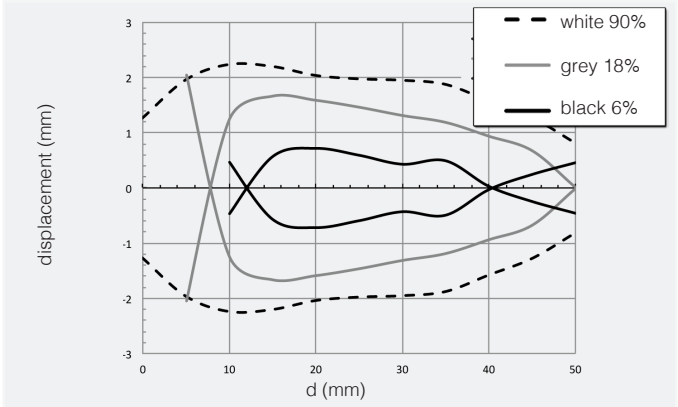
SS0/**-** excess gain



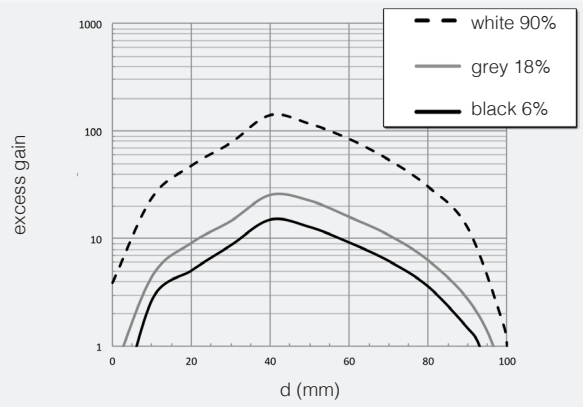
SS0/**-** spot dimension



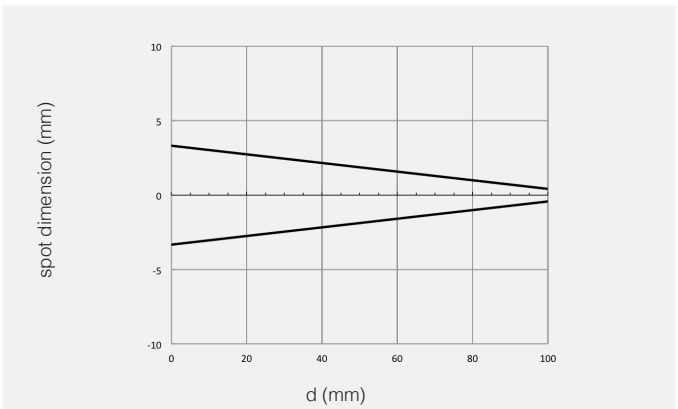
SS0/**-** parallel displacement



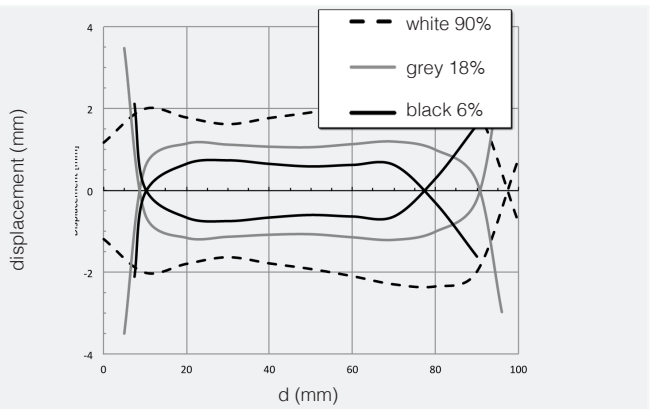
SS1/**-** excess gain



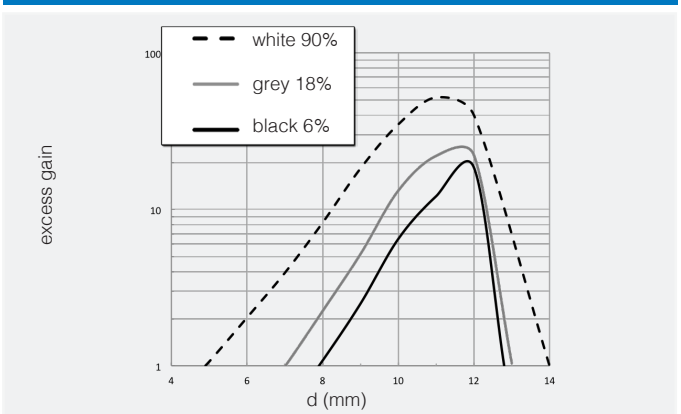
SS1/**-** spot dimension



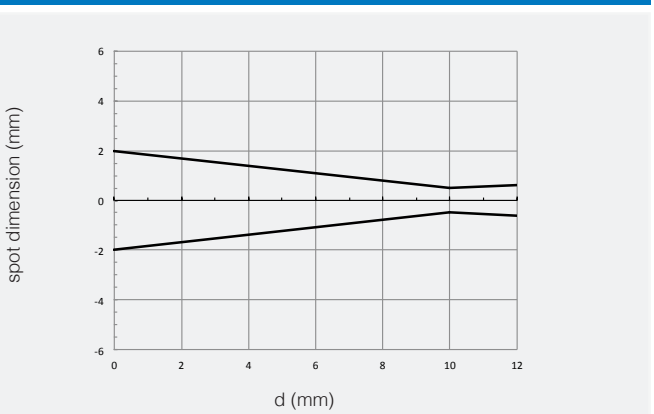
SS1/**-** parallel displacement



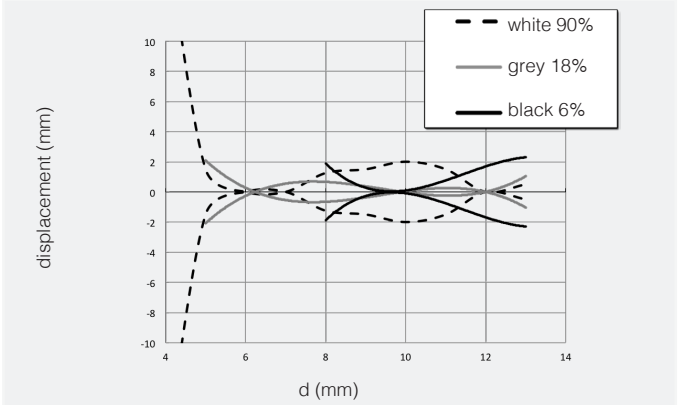
S*T/**-** + STF-12 excess gain



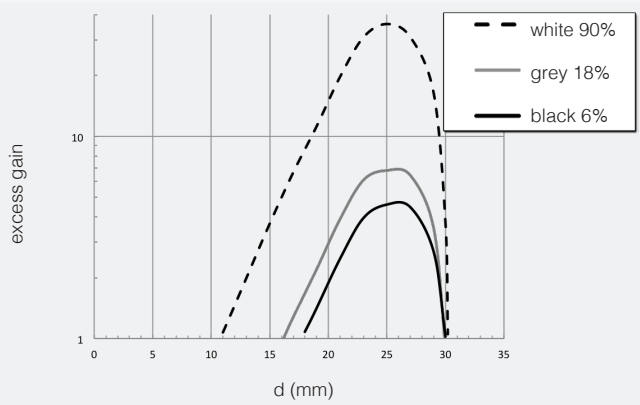
S*T/**-** + STF-12 spot dimension



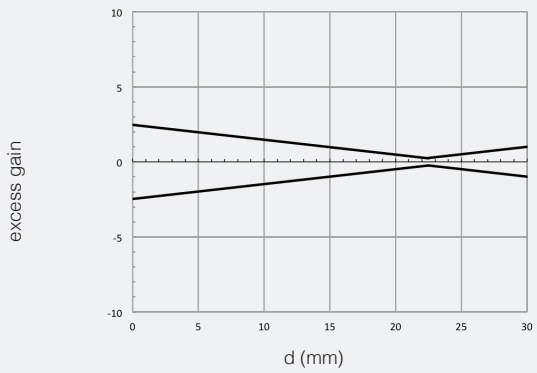
S*T/**-** + STF-12 parallel displacement



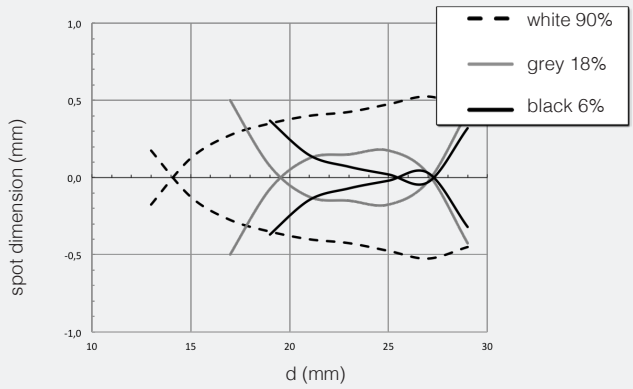
S*T/**-** + STF-25 excess gain



S*T/**-** + STF-25 spot dimension



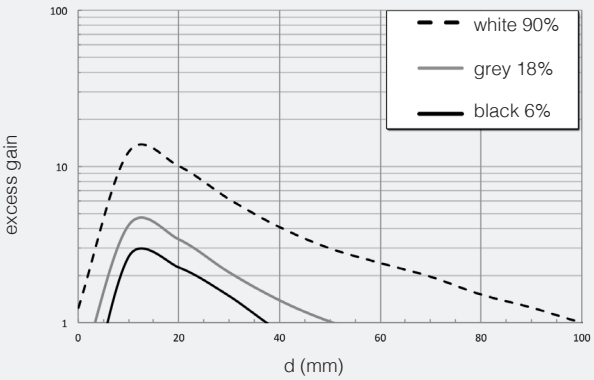
S*T/**-** + STF-25parallel displacementnt



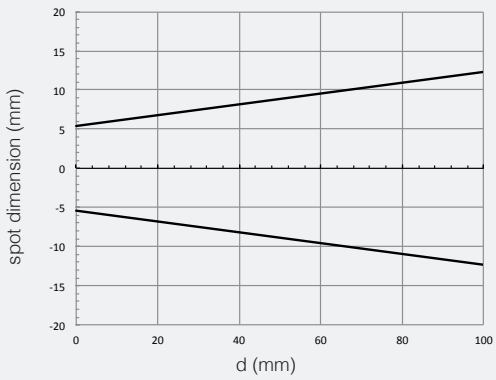
response diagrams

retro-reflective models

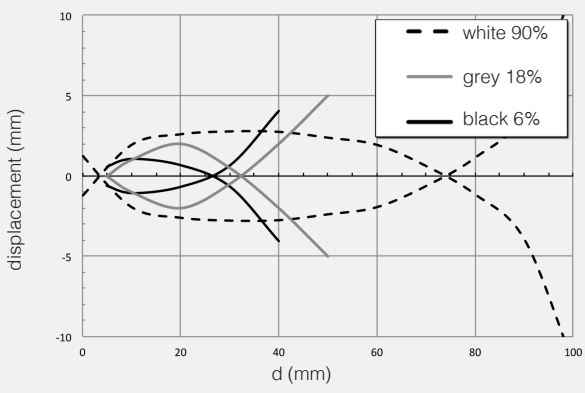
S*2,S*3/**-** excess gain



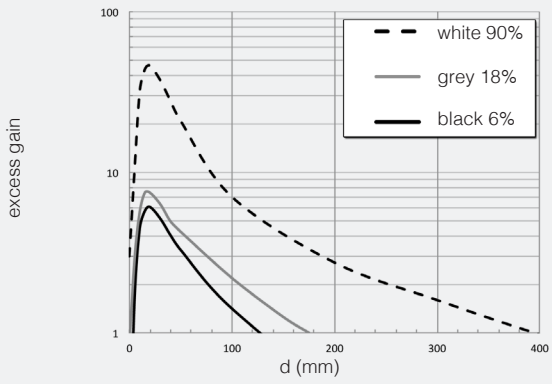
S*2,S*3//**-** spot dimension



S*2,S*3//**-** parallel displacement



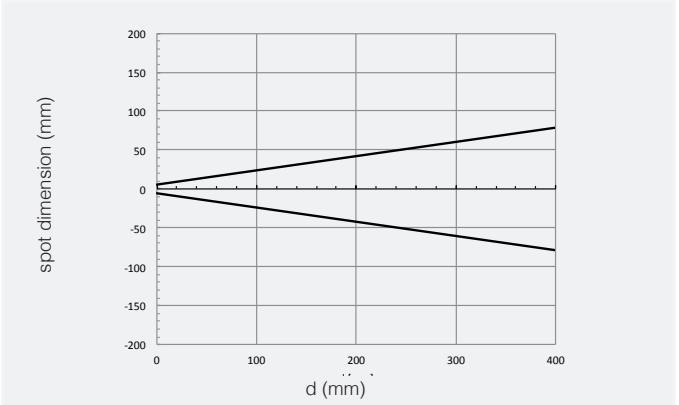
S*6,S*7/**-** excess gain



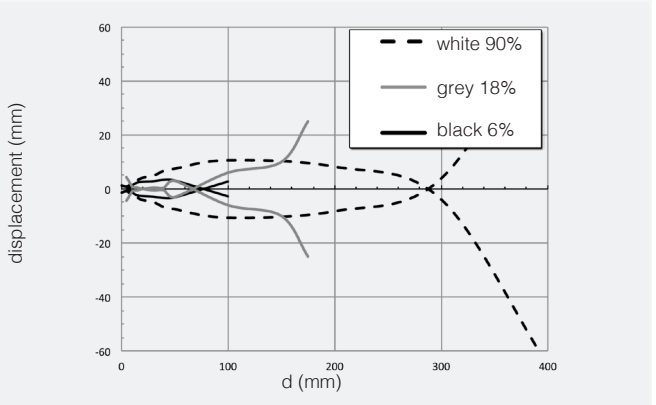
response diagrams

retro-reflective models

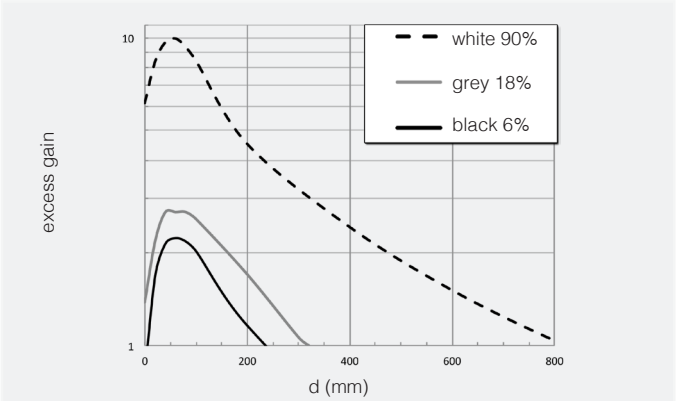
S*6/**-**,S*7/**-** spot dimension



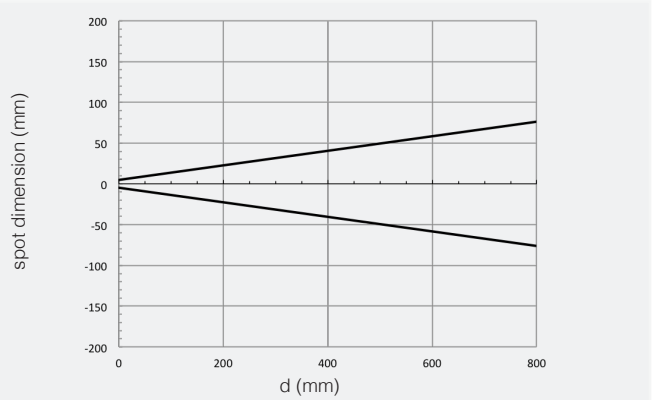
S*6/**-**,S*7/**-** parallel displacement



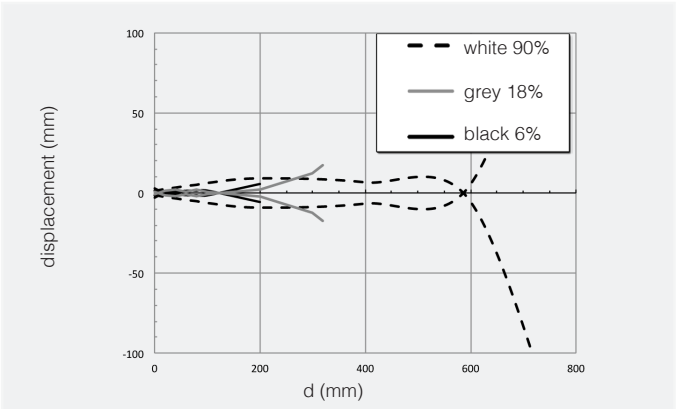
S*8/**-** excess gain



S*8/**-** spot dimension



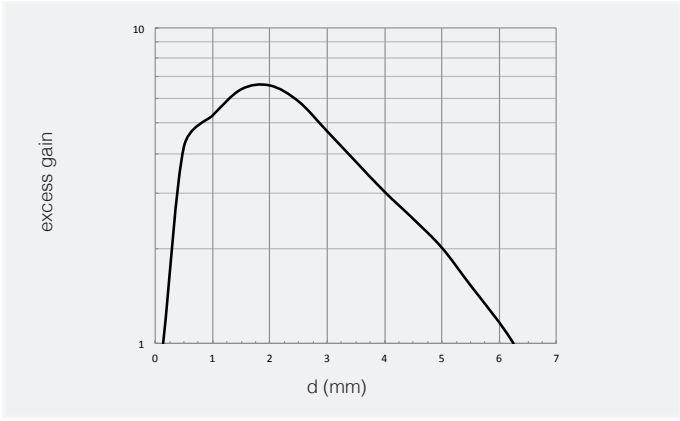
S*8/**-** parallel displacement



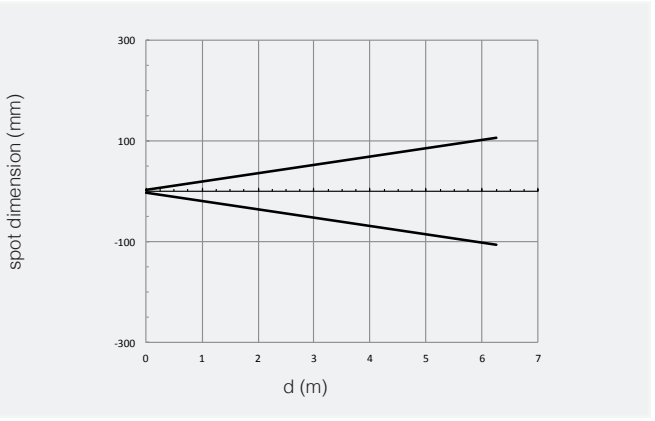
response diagrams

retro-reflective models (diagrams measured using RL100)

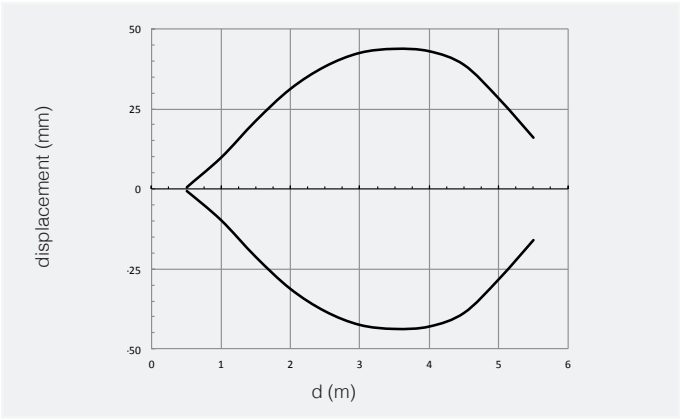
S*C/**-** excess gain



S*C/**-** spot dimension



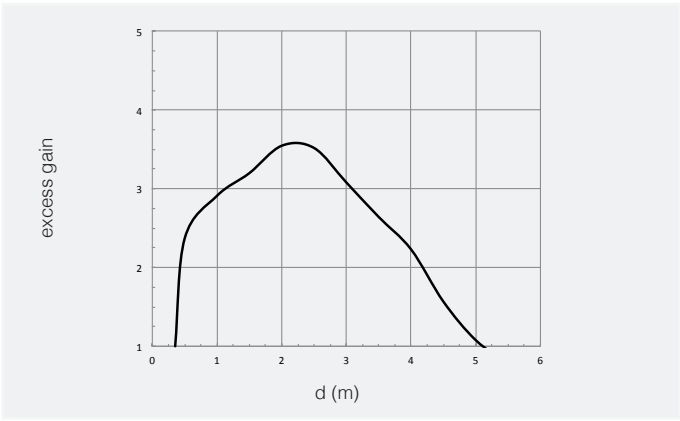
S*C/**-** parallel displacement



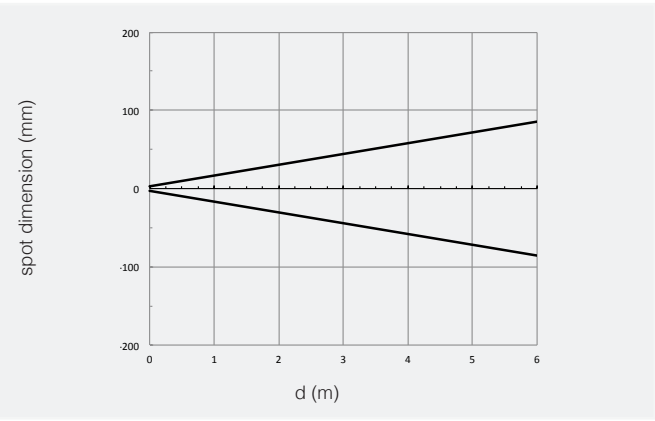
response diagrams

polarized models (diagrams measured using RL100)

S*P/**-** excess gain



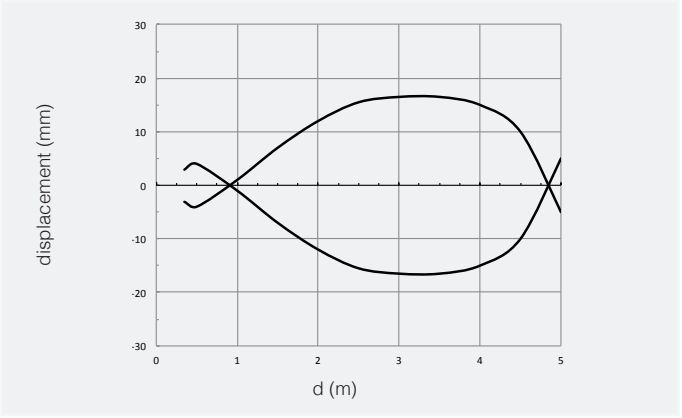
S*P/**-** spot dimension



response diagrams

polarized models (diagrams measured using RL100)

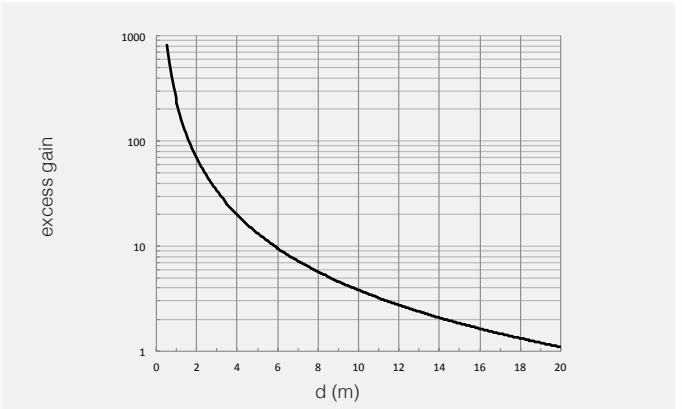
S*P/**-** parallel displacement



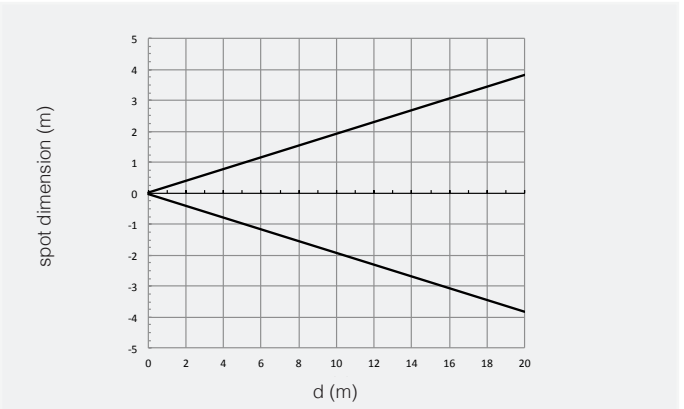
response diagrams

through beam models

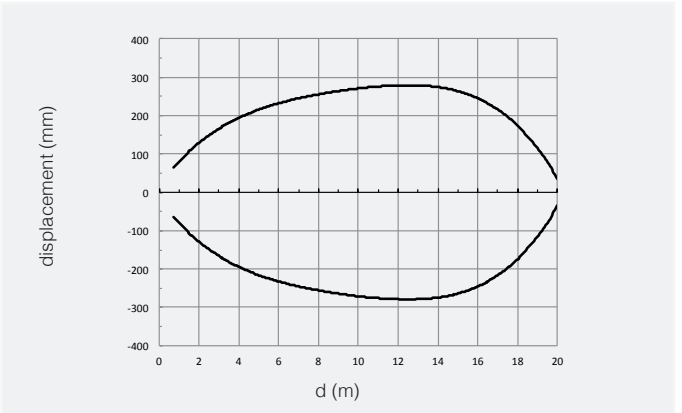
S*H/**-(0,1)*, S*D/**-(0,1)* excess gain



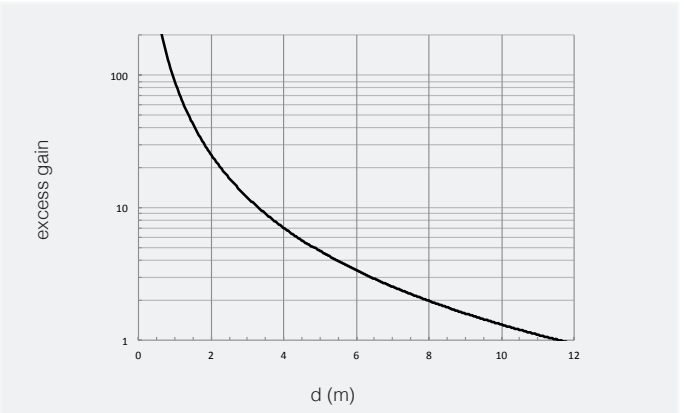
S*H/**-(0,1)*, S*D/**-(0,1)* spot dimension



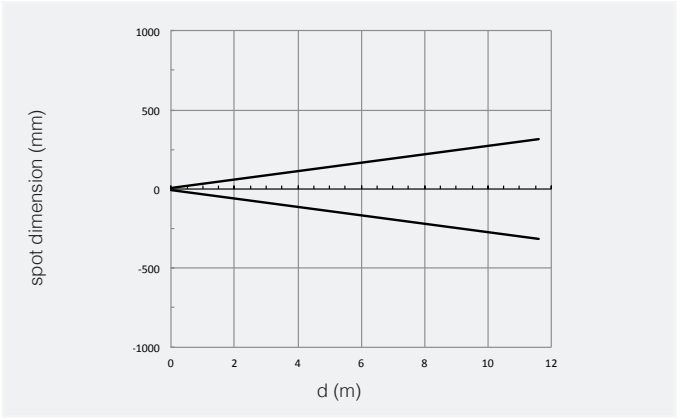
S*H/**-(0,1)*, S*D/**-(0,1)* parallel displacement



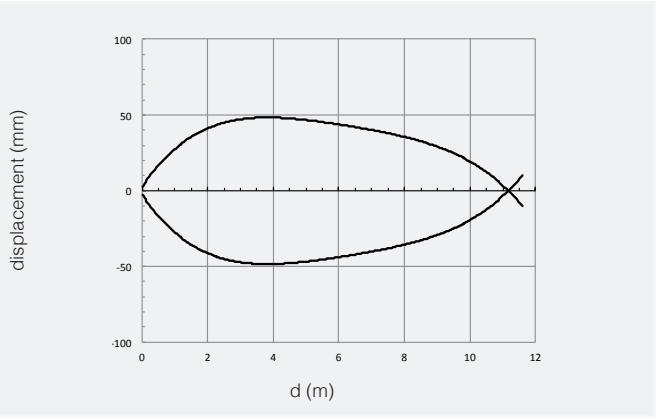
S*U/**-**, S*G/**-** excess gain



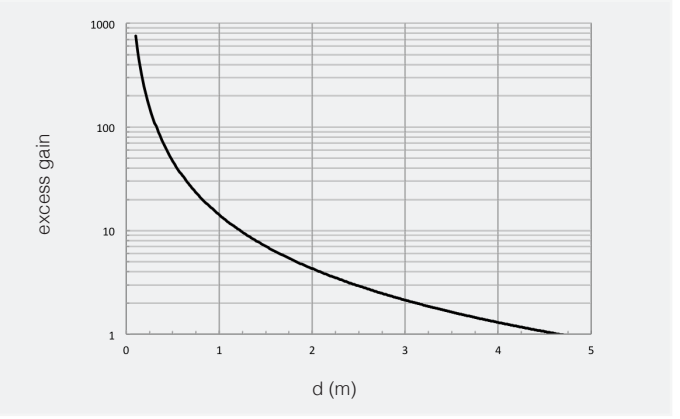
S*U/**-**, S*G/**-** spot dimension



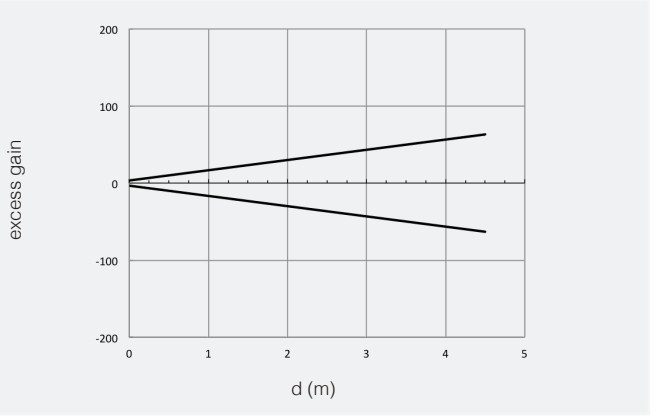
S*U/**-**, S*G/**-** parallel displacement



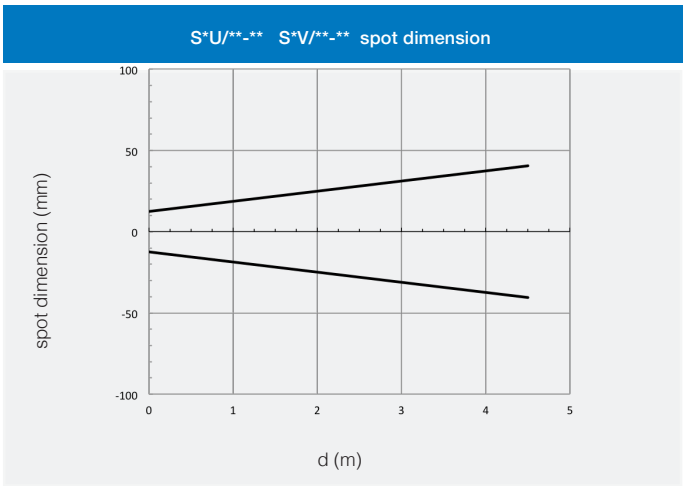
S*U/**-** S*V/**-** excess gain



S*U/**-** S*V/**-** excess gain

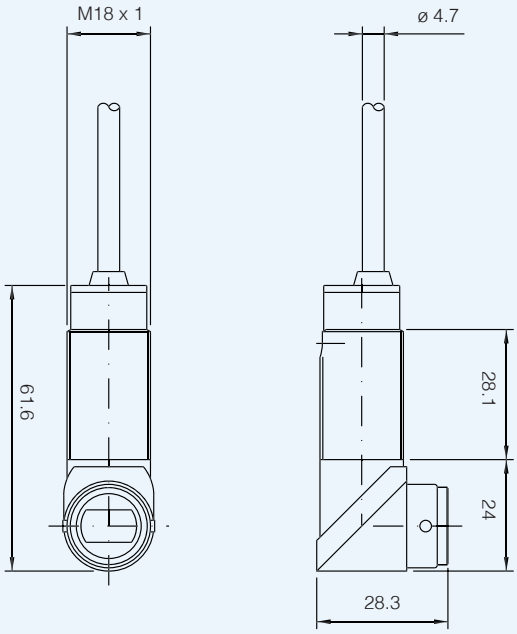


S*U/**-** S*V/**-** spot dimension

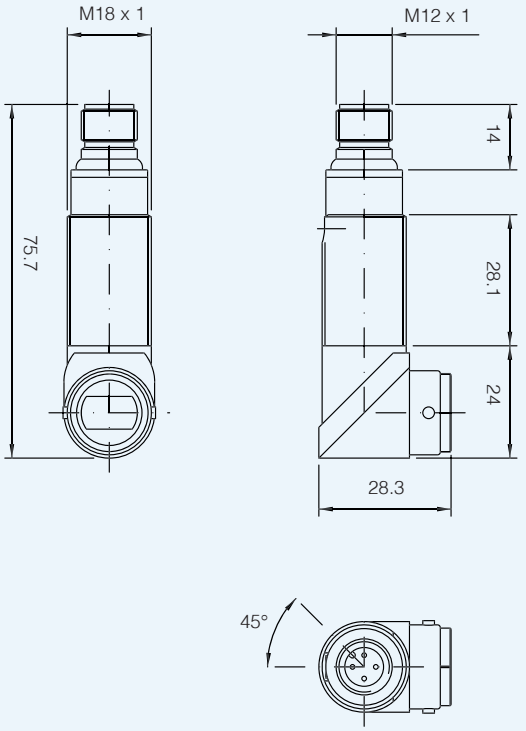


dimensions (mm)

SP*/**-*A

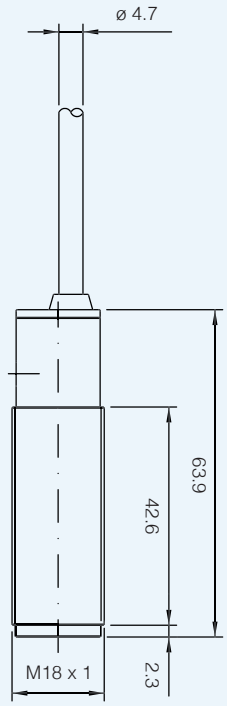


SP*/**-*E

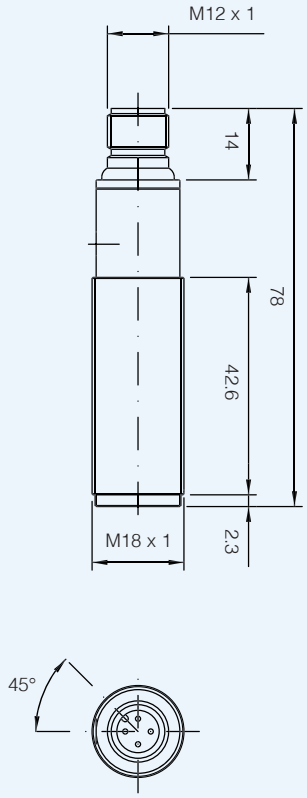


dimensions (mm)

SS*/-*A**

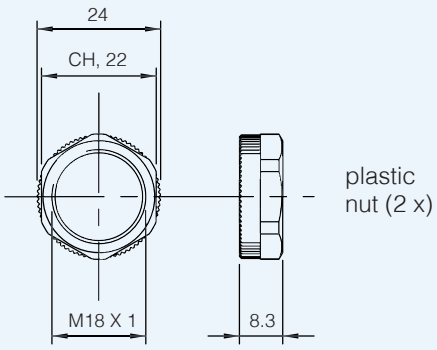


SS*/-*E**



dimensions (mm)

accessories included in all plastic models



dimensions (mm)

accessories included in all metallic models

