

# S3N

## MINIATURE PHOTOELECTRIC SENSOR



- All models with visible and bright red emission
  - LED and Laser emission models
  - Multiple Background suppression functions
  - Shiny and clear object detection
  - Single, Double trimmer & Push Button models
  - Diffuse proximity up to 100 cm
  - Background suppression up to 800 mm (LED trimmer version)
  - Polarized RRX 7 m (Red LED emission)
- Polarized RRX 12 m (Red Laser emission)
  - Through-beam 20 m and Laser 30 m
  - Connection with 2 m Cable or M8 connector
  - Rugged IP67 Plastic miniature case
  - M3 threaded holes on the front side with metal inserts
  - State of the art IO-Link connectivity with extended Smart Tasks

CE

UKCA

 US



 IO-Link





### CODE DESCRIPTION

	S3N	-	P	R	-	5	-	B	0	1	-	P	L
series	S3N	Miniature photoelectric sensor											
housing	P	standard housing											
emission	R	Radial LED emission											
	H	Radial LASER emission											
connection	5	M8 connector											
	2	2 m cable											
function	B	Retro Reflex Polarized											
	C	Diffused											
	FG	Through Beam											
	M	Background suppression											
	T	Transparent (not available yet)											
	W	Mark reader (not available yet)											
distance	0	Standard distance											
	1	Long distance											
adjustment	1	Trimmer adjustment											
	3	Teach-In push button											
output	P	PNP output											
	N	NPN output											
	0	IO-Link configurable static output											
output configuration		L/D configurable by trimmer											
	L	Normally Open output Light mode											
	D	Normally Open output Dark mode											
	Z	IO-Link + configurable static output											


## TECHNICAL FEATURES

	S3N-PR-*-B01-**-*	S3N-PR-*-C01-**-*	S3N-PR-*-C11-**-*
			
Optical Function	Polarized retroreflective	Diffuse narrow beam	Diffuse beam Long Range
Operating Distance	0.05...7 m on R5	2...250 mm (White 90%)	0...1000 mm (White 90%)
Emission	red LED (635 nm) EC62471 EXEMPT RISK GROUP (RG0)		
Switching Frequency	1 kHz		
Response Time	500 µs		
Supply Voltage	10-30 VDC		
Ripple	≤ 10% peak to peak max.		
No load Current	35 mA max.		
Voltage Leakage	≤ 2 V		
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled		
Load Current	100 mA Max, short circuit protected		
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)		
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models)		
Short Circuit Protection	●		
Reverse Polarity Protection	●		
Overvoltage Protection	●		
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing		
Ground resistivity	500 Vac 1 min., between electronics and housing		
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)		
Dimensions	11 x 32 x 20 mm		
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE		
Actuatuators Material	POM, PMMA		
Plug Material	Nickel plated brass		
Optical Window Material	PMMA		
Mechanical Protection	IP67		
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements		
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)		
Ambient Light Immunity	according to EN 60947-5-2 : 2020		
Operating Temperature	-25 ... +55 °C		
Storage Temperature	-40°C...+70°C		



## TECHNICAL FEATURES

	S3N-PR-*-FG01-**-	S3N-PR-5-FG03-OZ	S3N-PR-*-M01-**-	S3N-PR-*-M03-OZ
				
Optical Function	Through beam emitter and receiver		Background suppression	
Operating Distance	0...20 m		0...300 mm 0...800 mm (White 90%)	0...180 mm (Black 6%)
Emission	red LED (635 nm)			
Switching Frequency	500 Hz			
Response Time	1 ms			
Supply Voltage	10-30 VDC			
Ripple	≤ 10% peak to peak max.			
No load Current	35 mA max.			
Voltage Leakage	≤ 2 V			
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled			
Load Current	100 mA Max, short circuit protected			
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)			
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models)			
Short Circuit Protection	•			
Reverse Polarity Protection	•			
Overvoltage Protection	•			
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing			
Ground resistivity	500 Vac 1 min., between electronics and housing			
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)			
Dimensions	11 x 32 x 20 mm			
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE			
Actuatuators Material	POM, PMMA			
Plug Material	Nickel plated brass			
Optical Window Material	PMMA			
Mechanical Protection	IP67			
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements			
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)			
Ambient Light Immunity	according to EN 60947-5-2 : 2020			
Operating Temperature	-25 ... +55 °C			
Storage Temperature	-40°C...+70°C			

## TECHNICAL FEATURES

	S3N-PH-*-B01-**-**	S3N-PH-5-B03-OZ
		
Optical Function	Polarized retroreflective	
Operating Distance	0.1...12 m on R7	
Emission	Laser light 650 nm (red), Class 1 IEC60825-1 Ed. 3 2014	
Switching Frequency	2 kHz	
Response Time	250 µs	
Supply Voltage	10-30 VDC	
Ripple	≤ 10% peak to peak max.	
No load Current	35 mA max.	
Voltage Leakage	≤ 2 V	
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled	
Load Current	100 mA Max, short circuit protected	
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)	
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models)	
Short Circuit Protection	●	
Reverse Polarity Protection	●	
Overvoltage Protection	●	
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing	
Ground resistivity	500 Vac 1 min., between electronics and housing	
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)	
Dimensions	11 x 32 x 20 mm	
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE	
Actuators Material	Trimmers POM	Push button POM
Plug Material	Nickel plated brass	
Optical Window Material	PMMA	
Mechanical Protection	IP67	
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements	
Certifications	CE, UKCA, cULus, CDRH 1 (IO-Link: S3N...OZ models)	
Ambient Light Immunity	according to EN 60947-5-2 : 2020	
Operating Temperature	-25 ... +55 °C	
Storage Temperature	-40°C...+70°C	

## TECHNICAL FEATURES

	S3N-PH-*-M01-**	S3N-PH-5-M03-OZ	S3N-PH-*-FG01-**	S3N-PH-5-FG03-OZ
				
Optical Function	Background suppression		Through beam emitter and receiver	
Operating Distance	0...130mm 0...600 mm (White 90%)	0...130 mm (Black 6%)	0...30 m	
Emission	Laser light 650 nm (red), Class 1 IEC60825-1 Ed. 3 2014			
Switching Frequency	2 kHz	1.5 kHz	2 kHz	
Reponse Time	250 µs	333 µs	250 µs	
Supply Voltage	10-30 VDC			
Ripple	≤ 10% peak to peak max.			
No load Current	35 mA max.			
Voltage Leakage	≤ 2 V			
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled			
Load Current	100 mA Max, short circuit protected			
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)			
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models)			
Short Circuit Protection	●			
Reverse Polarity Protection	●			
Overvoltage Protection	●			
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing			
Ground resistivity	500 Vac 1 min., between electronics and housing			
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)			
Dimensions	11 x 32 x 20 mm			
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE			
Actuatuators Material	POM, PMMA			
Plug Material	Nickel plated brass			
Optical Window Material	PMMA			
Mechanical Protection	IP67			
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements			
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)			
Ambient Light Immunity	according to EN 60947-5-2 : 2020			
Operating Temperature	-25 ... +55 °C			
Storage Temperature	-40°C...+70°C			

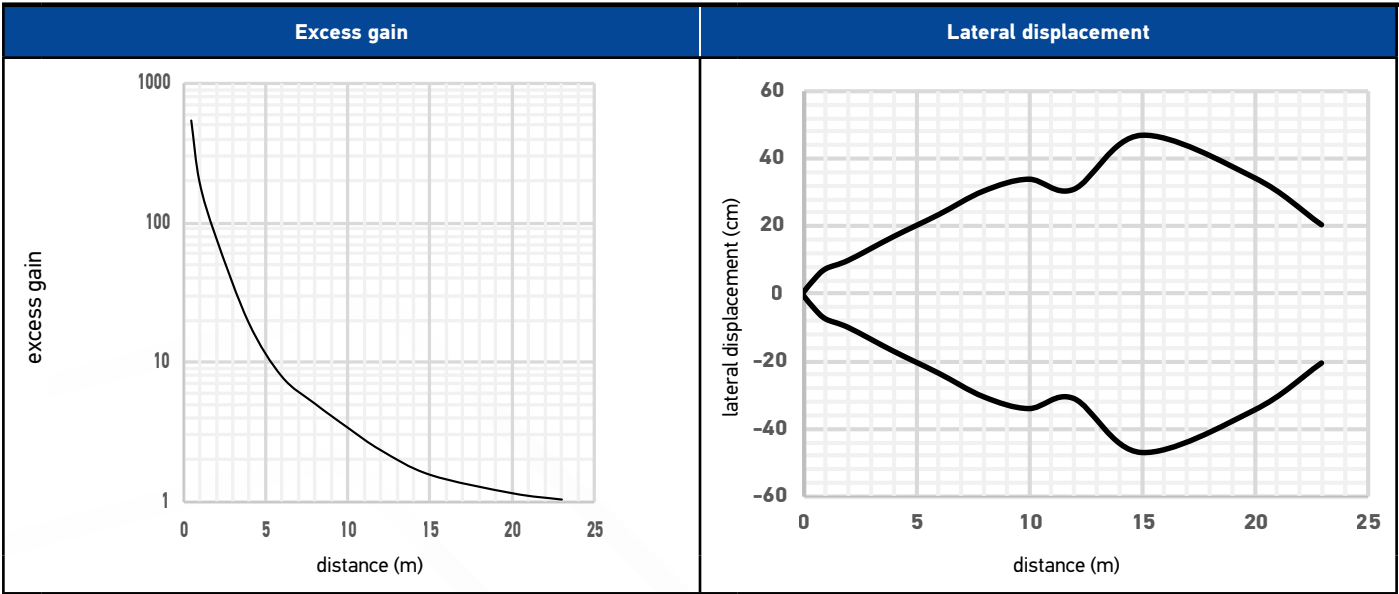
## AVAILABLE MODELS

Distance	Adjustment	2 m 3 wires cable Ø 3.5 mm		M8 4pin		
		PNP	NPN	PNP	NPN	IO-Link + Conf. out
Red LED retro reflective polarized 0.05...7 m on R5	1 Trimmer (Adj.) LIGHT	<b>S3N-PR-2-B01-PL</b> (95B010082)	<b>S3N-PR-2-B01-NL</b> (95B010242)	<b>S3N-PR-5-B01-PL</b> (95B010092)	<b>S3N-PR-5-B01-NL</b> (95B010252)	-
	1 Trimmer (Adj.) DARK	<b>S3N-PR-2-B01-PD</b> (95B010102)	<b>S3N-PR-2-B01-ND</b> (95B010262)	<b>S3N-PR-5-B01-PD</b> (95B010112)	<b>S3N-PR-5-B01-ND</b> (95B010272)	-
	2 Trimmers (Adj.+ L/D)	<b>S3N-PR-2-B01-P</b> (95B010592)	<b>S3N-PR-2-B01-N</b> (95B010582)	<b>S3N-PR-5-B01-P</b> (95B010612)	<b>S3N-PR-5-B01-N</b> (95B010602)	-
	Push button	-	-	-	-	<b>S3N-PR-5-B03-OZ</b> (95B010780)
Red LED diffused Narrow Beam 2...250 mm	1 Trimmer (Adj.) LIGHT	<b>S3N-PR-2-C01-PL</b> (95B010042)	<b>S3N-PR-2-C01-NL</b> (95B010202)	<b>S3N-PR-5-C01-PL</b> (95B010052)	<b>S3N-PR-5-C01-NL</b> (95B010212)	-
	1 Trimmer (Adj.) DARK	<b>S3N-PR-2-C01-PD</b> (95B010062)	<b>S3N-PR-2-C01-ND</b> (95B010222)	<b>S3N-PR-5-C01-PD</b> (95B010072)	<b>S3N-PR-5-C01-ND</b> (95B010232)	-
	2 Trimmers (Adj.+ L/D)	<b>S3N-PR-2-C01-P</b> (95B010672)	<b>S3N-PR-2-C01-N</b> (95B010662)	<b>S3N-PR-5-C01-P</b> (95B010692)	<b>S3N-PR-5-C01-N</b> (95B010682)	-
	Push Button	-	-	-	-	<b>S3N-PR-5-C03-OZ</b> (95B010790)
Red LED diffused Long Distance 0...1000 mm	1 Trimmer (Adj.) LIGHT	<b>S3N-PR-2-C11-PL</b> (95B010002)	<b>S3N-PR-2-C11-NL</b> (95B010162)	<b>S3N-PR-5-C11-PL</b> (95B010132)	<b>S3N-PR-5-C11-NL</b> (95B010172)	-
	1 Trimmer (Adj.) DARK	<b>S3N-PR-2-C11-PD</b> (95B010022)	<b>S3N-PR-2-C11-ND</b> (95B010182)	<b>S3N-PR-5-C11-PD</b> (95B010032)	<b>S3N-PR-5-C11-ND</b> (95B010192)	-
	2 Trimmers (Adj.+ L/D)	<b>S3N-PR-2-C11-P</b> (95B010632)	<b>S3N-PR-2-C11-N</b> (95B010622)	<b>S3N-PR-5-C11-P</b> (95B010652)	<b>S3N-PR-5-C11-N</b> (95B010642)	-
	Push Button	-	-	-	-	<b>S3N-PR-5-C13-OZ</b> (95B010800)
Red LED through beam emitter and receiver 0...20 m	1 Trimmer (Adj.) LIGHT	<b>S3N-PR-2-FG01-PL</b> (95B010122)	<b>S3N-PR-2-FG01-NL</b> (95B010282)	<b>S3N-PR-5-FG01-PL</b> (95B010352)	<b>S3N-PR-5-FG01-NL</b> (95B010292)	-
	1 Trimmer (Adj.) DARK	<b>S3N-PR-2-FG01-PD</b> (95B010142)	<b>S3N-PR-2-FG01-ND</b> (95B010302)	<b>S3N-PR-5-FG01-PD</b> (95B010152)	<b>S3N-PR-5-FG01-ND</b> (95B010312)	-
	2 Trimmers (Adj.+ L/D)	<b>S3N-PR-2-FG01-P</b> (95B010712)	<b>S3N-PR-2-FG01-N</b> (95B010702)	<b>S3N-PR-5-FG01-P</b> (95B010132)	<b>S3N-PR-5-FG01-N</b> (95B010722)	-
	Push Button	-	-	-	-	<b>S3N-PR-5-FG03-OZ</b> (95B010810)
Red LED Mechanic BGS 0...300 mm 0...800 mm (White 90%)	1 Trimmer (Adj.) LIGHT	<b>S3N-PR-2-M01-PL</b> (95B010332)	<b>S3N-PR-2-M01-NL</b> (95B010322)	<b>S3N-PR-5-M01-PL</b> (95B010352)	<b>S3N-PR-5-M01-NL</b> (95B010342)	-
	1 Trimmer (Adj.) DARK	-	-	<b>S3N-PR-5-M01-PD</b> (95B010562)	-	-
	2 Trimmers (Adj.+ L/D)	<b>S3N-PR-2-M01-P</b> (95B010752)	<b>S3N-PR-2-M01-N</b> (95B010742)	<b>S3N-PR-5-M01-P</b> (95B010772)	<b>S3N-PR-5-M01-N</b> (95B010762)	-
Red LED bkgd.suppression electronic 0...180 mm on black 6%	Push Button	-	-	-	-	<b>S3N-PR-5-M03-OZ</b> (95B010820)

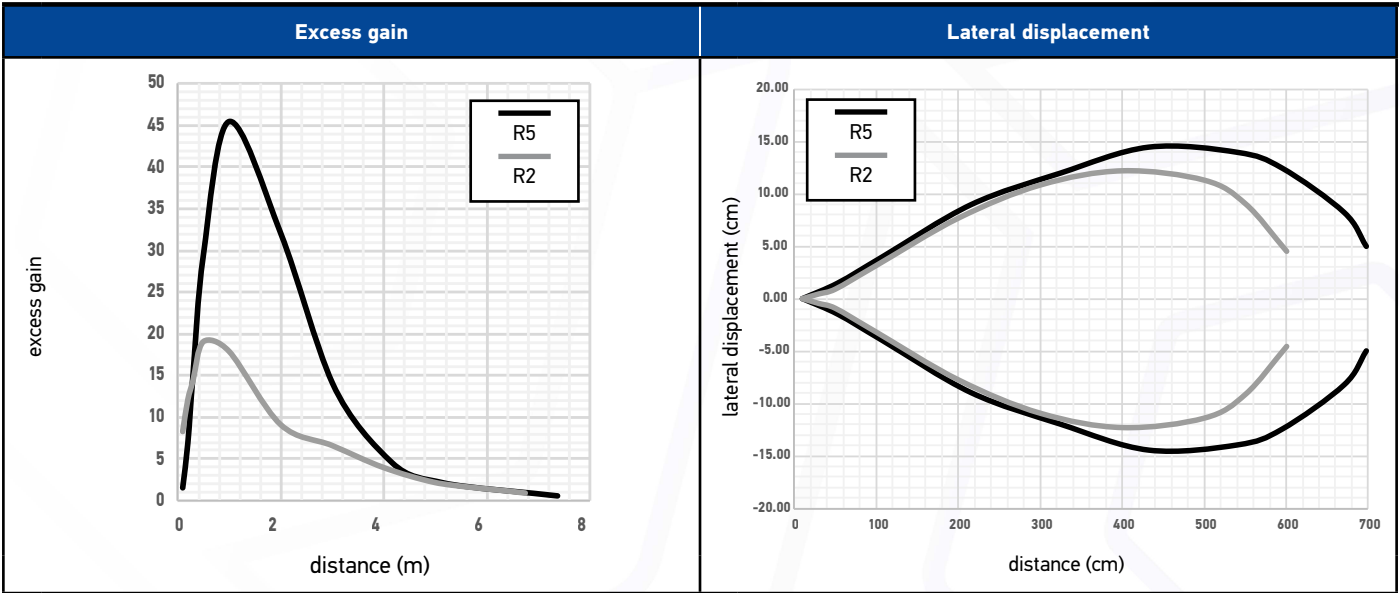
Distance	Adjustment	2 m 3 wires cable Ø 3.5 mm		M8 4pin		
		PNP	NPN	PNP	NPN	IO-Link + Conf. out
Red Laser Retro Reflex Polarized 0.05...12 m on R7	2 Trimmers (Adj.+ L/D)	<b>S3N-PH-2-B01-P</b> (95B010442)	<b>S3N-PH-2-B01-N</b> (95B010452)	<b>S3N-PH-5-B01-P</b> (95B010462)	<b>S3N-PH-5-B01-N</b> (95B010472)	-
	Push Button	-	-	-	-	<b>S3N-PH-5-B03-OZ</b> (95B010880)
Red Laser Mechanic BGS 0...130 mm 0...600 mm (White 90%) Red Laser bkgd. suppression electronic 0...130 mm on black 6%	2 Trimmers (Adj.+ L/D)	<b>S3N-PH-2-M01-P</b> (95B010482)	<b>S3N-PH-2-M01-N</b> (95B010492)	<b>S3N-PH-5-M01-P</b> (95B010502)	<b>S3N-PH-5-M01-N</b> (95B010512)	-
	Push Button	-	-	-	-	<b>S3N-PH-5-M03-OZ</b> (95B010900)
Red Laser Through beam emitter and receiver 0...30 m	2 Trimmers (Adj.+ L/D)	<b>S3N-PH-2-FG01-P</b> (95B010522)	<b>S3N-PH-2-FG01-N</b> (95B010532)	<b>S3N-PH-5-FG01-P</b> (95B010542)	<b>S3N-PH-5-FG01-N</b> (95B010552)	-
	Push Button	-	-	-	-	<b>S3N-PR-5-FG03-OZ</b> (95B010890)

RESPONSE DIAGRAMS (LED EMISSION)

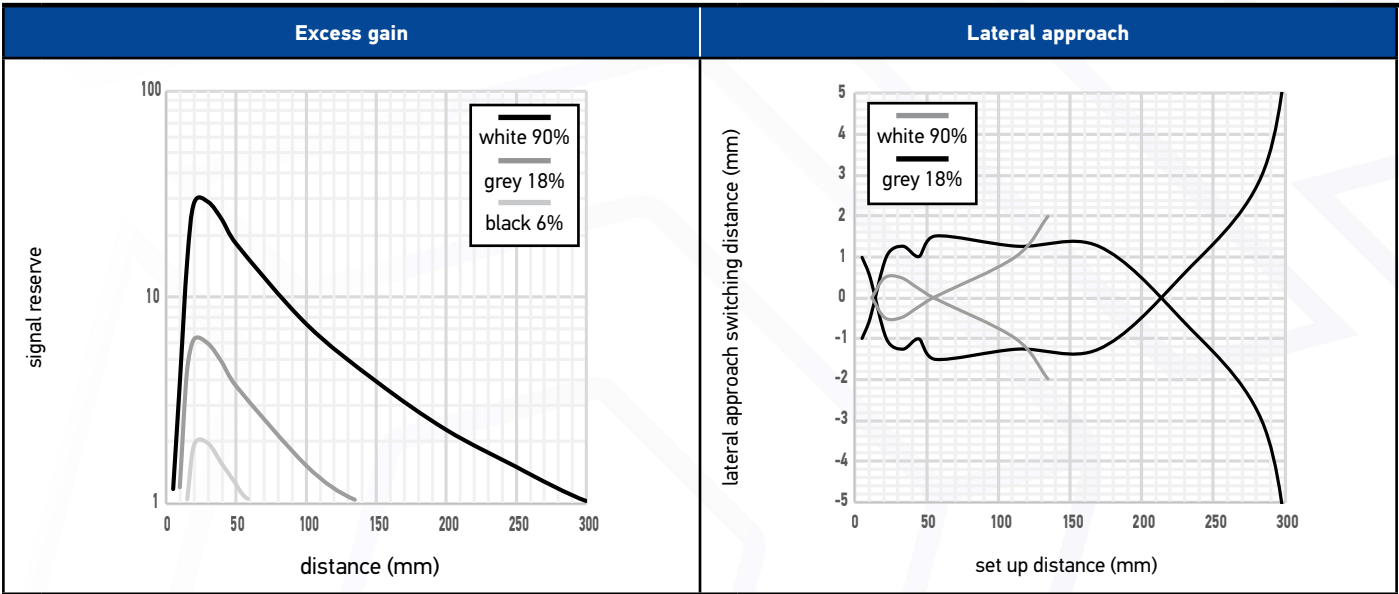
S3N - PR - \* - FG\*\* - \*\*



S3N - PR - \* - B\*\* - \*\*

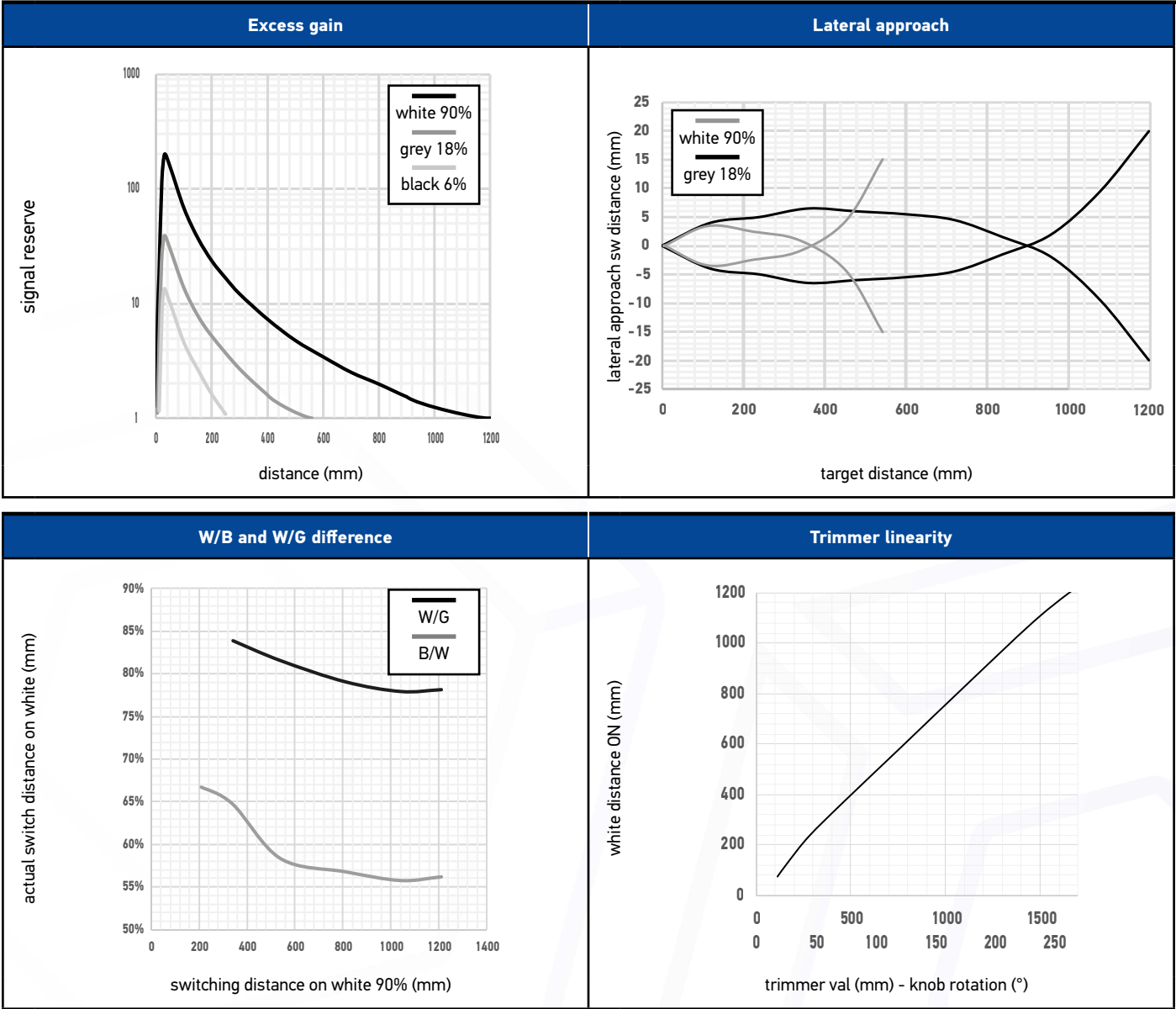


S3N - PR - \* - C0\* - \*\*

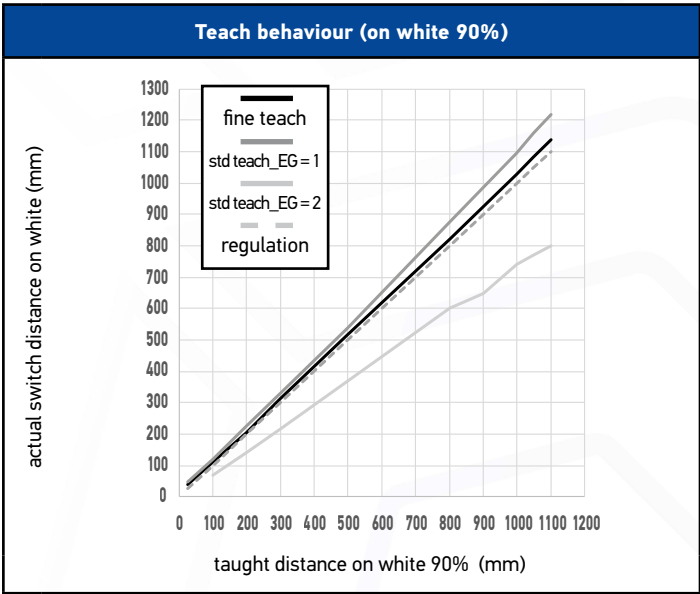


# RESPONSE DIAGRAMS (LED EMISSION)

S3N - PR - \* - C1\* - \*\*



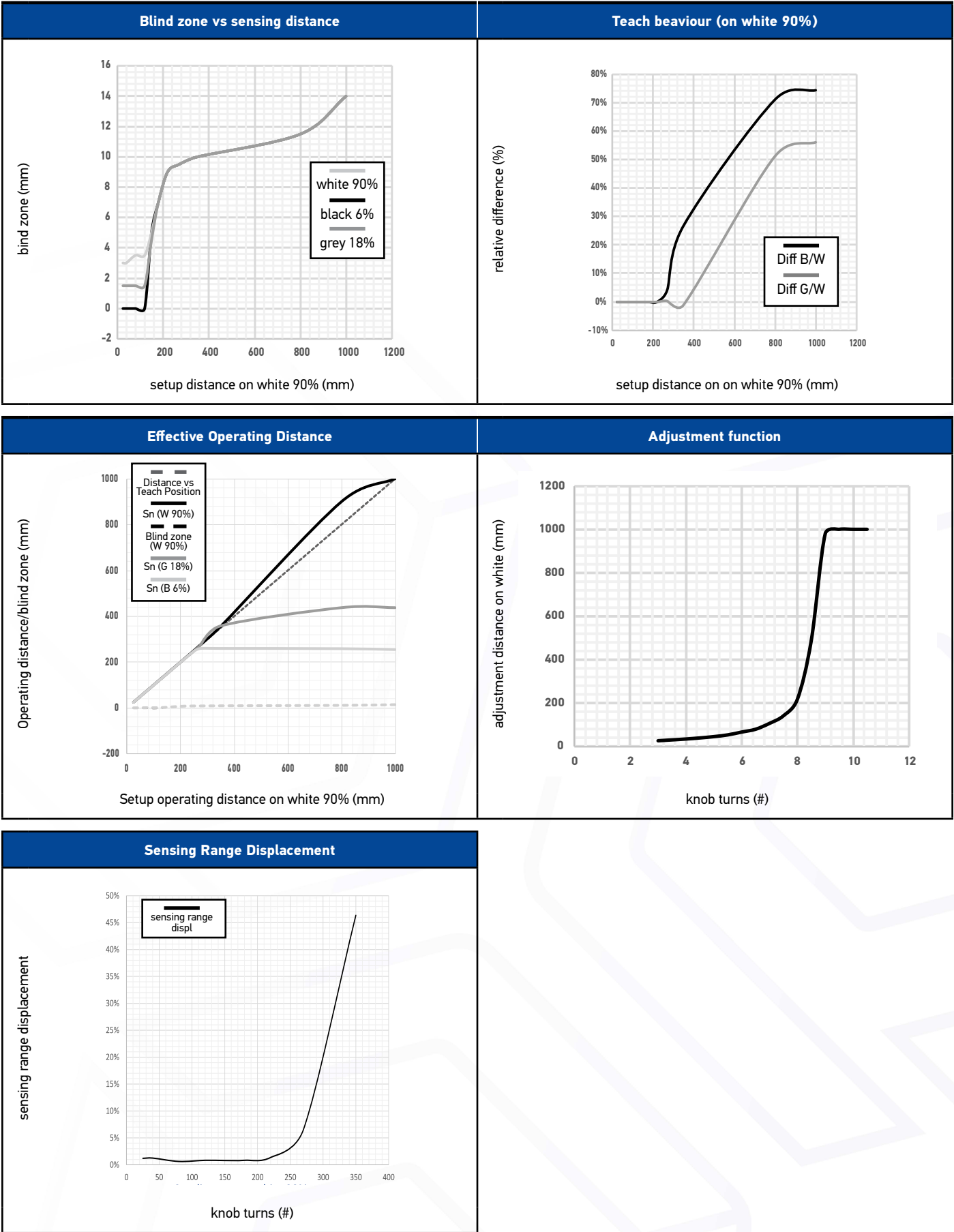
S3N - PR - \* - C03 - \*\*





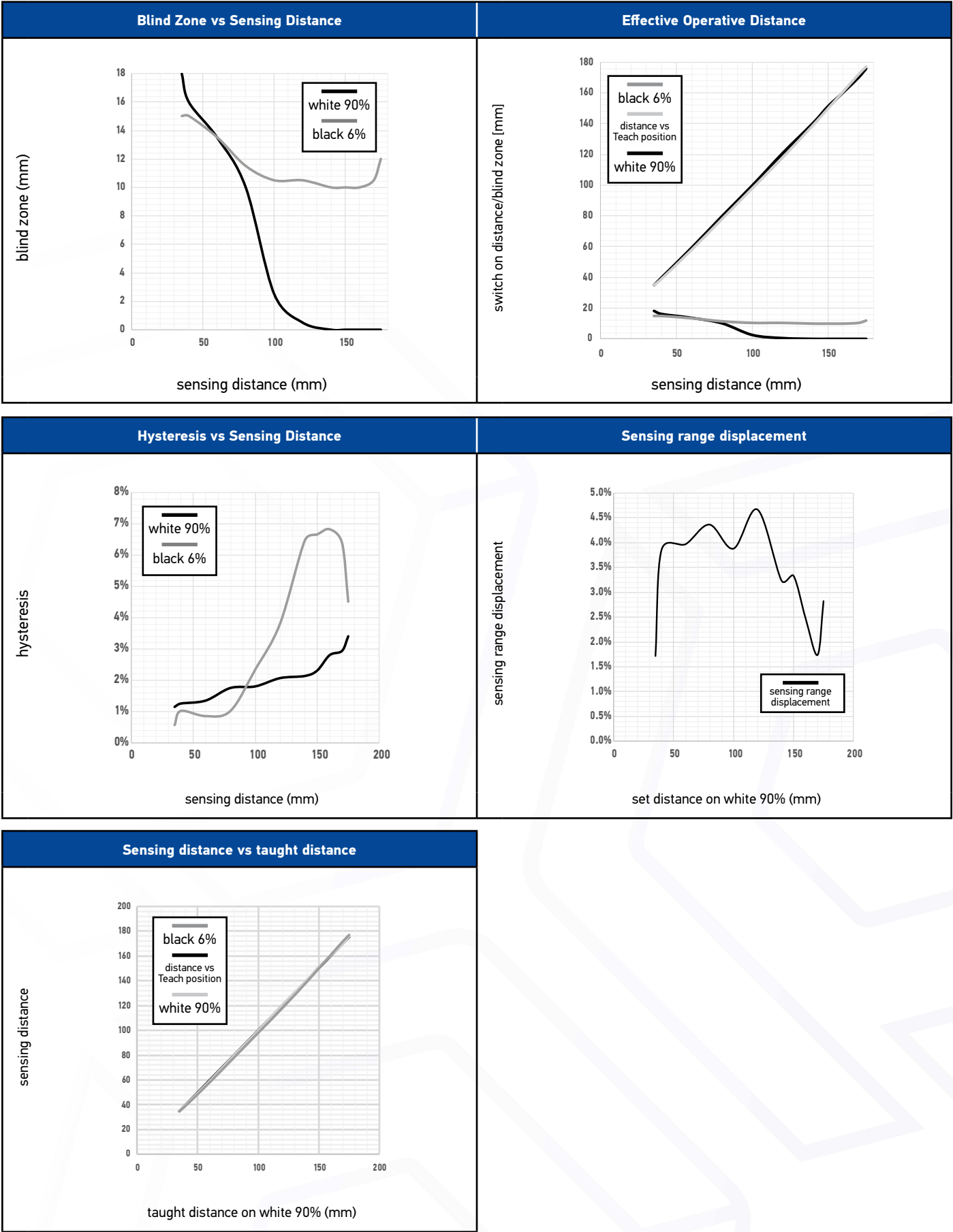
# RESPONSE DIAGRAMS (LED EMISSION)

S3N - PR - \* - M01 - \*\*



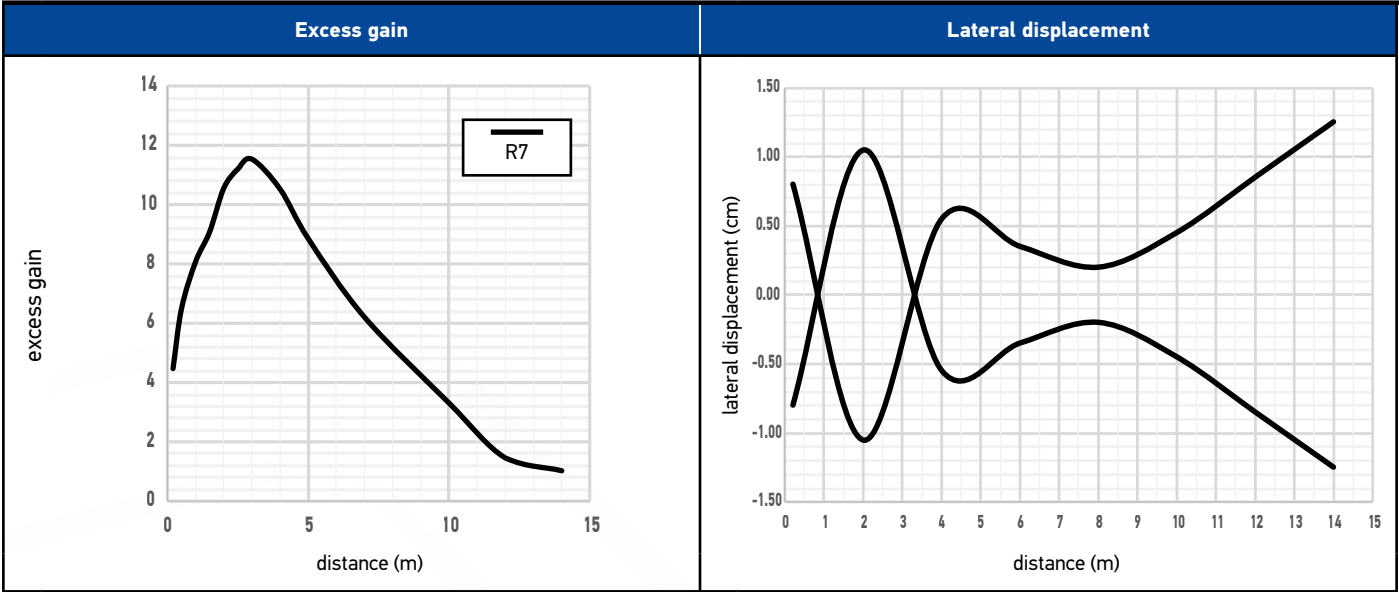
# RESPONSE DIAGRAMS (LED EMISSION)

S3N - PR -5 \* - M03-0Z

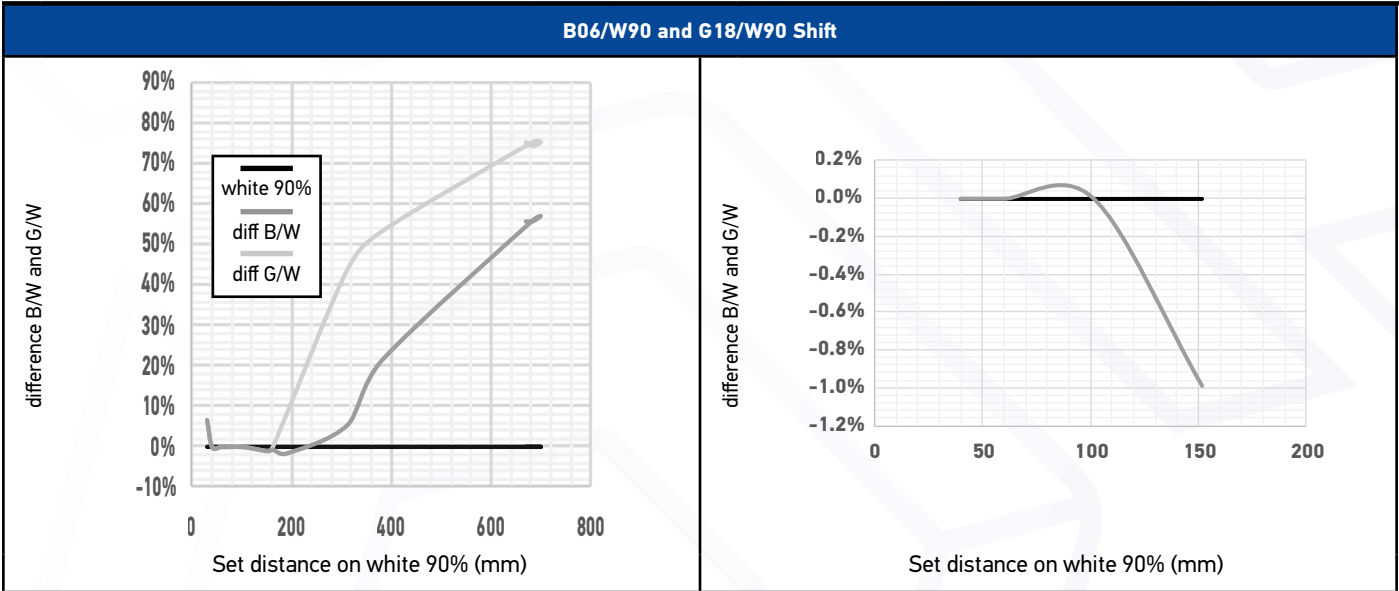
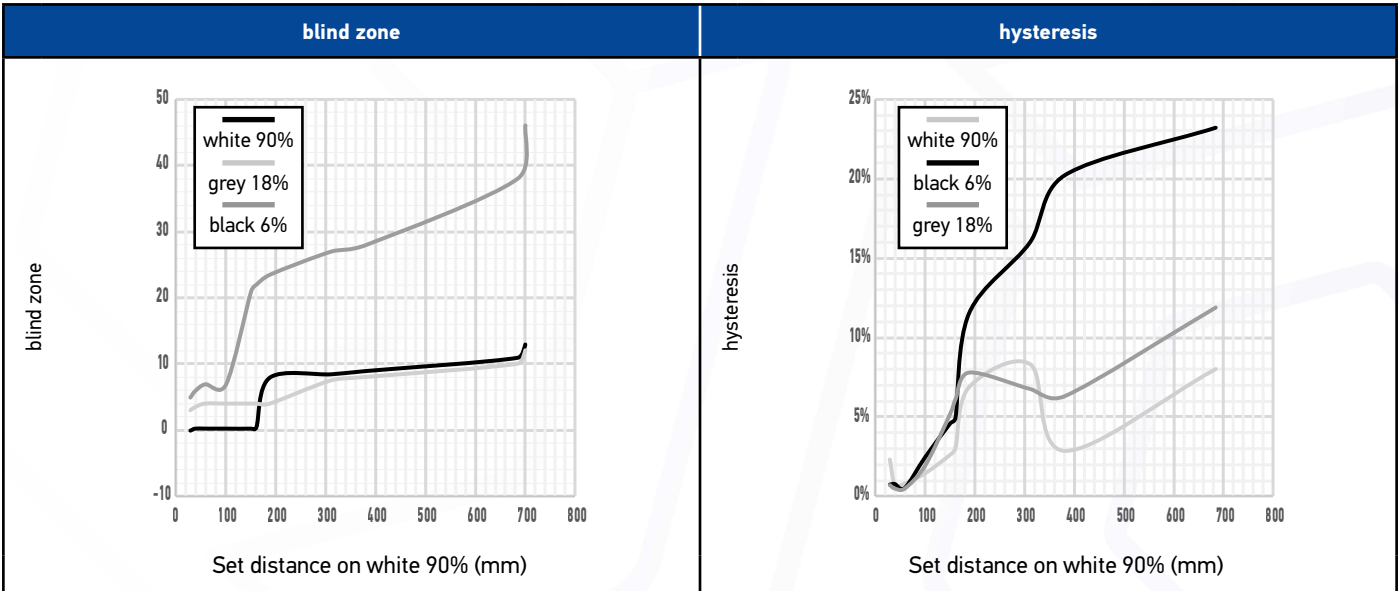


# RESPONSE DIAGRAMS (LASER EMISSION)

S3N - PH - \* - B\*\* - \*\*

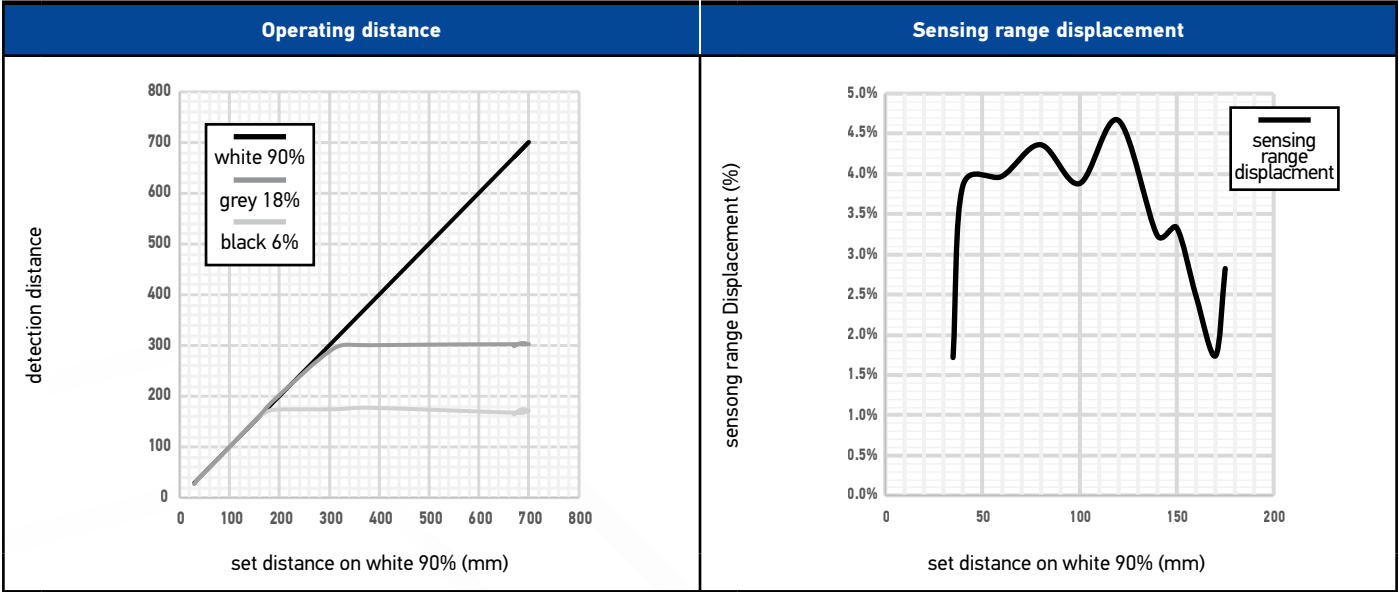


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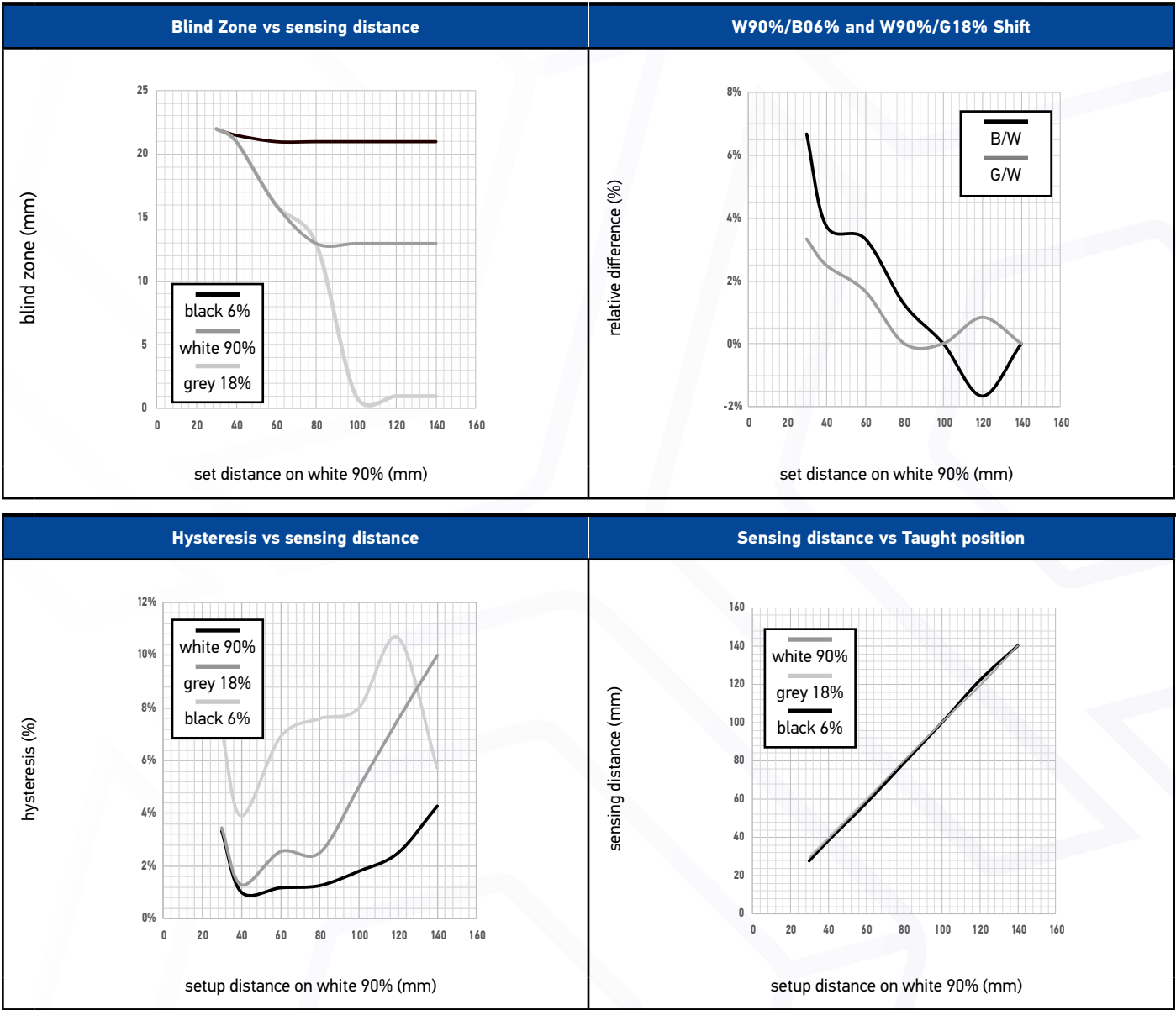


# RESPONSE DIAGRAMS (LASER EMISSION)

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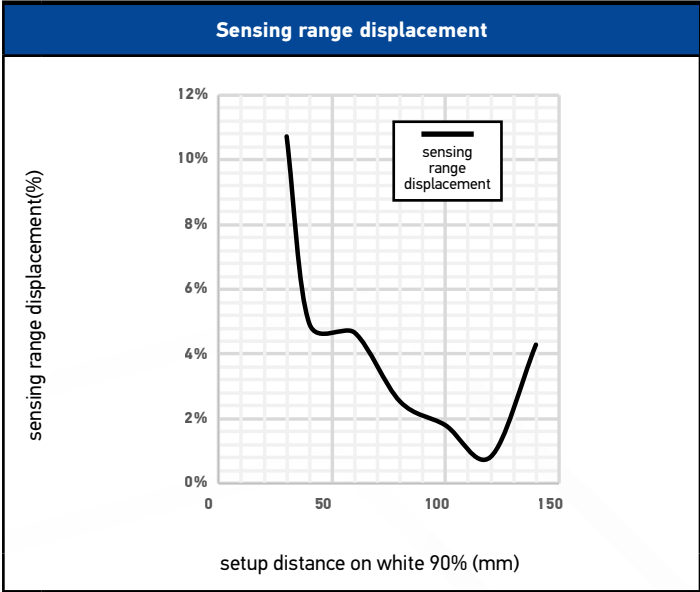


S3N - PH - \* - M03 - \*\*

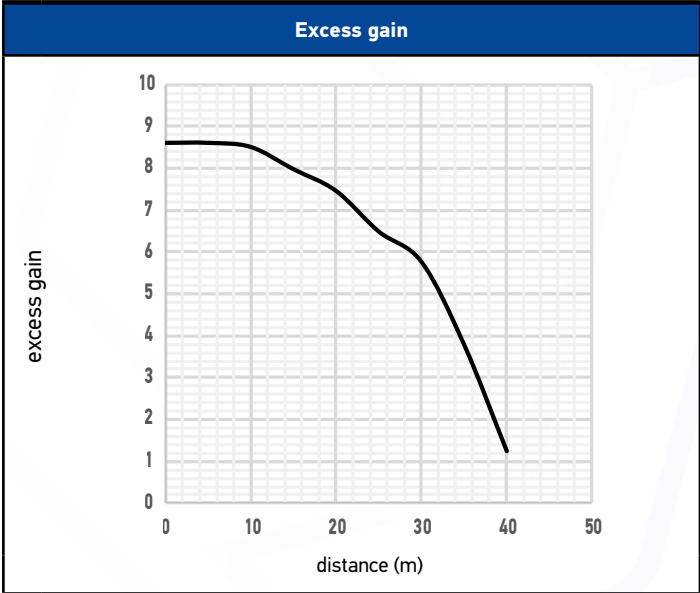


# RESPONSE DIAGRAMS (LASER EMISSION)

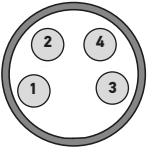
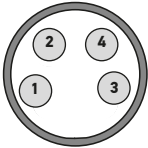
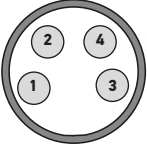
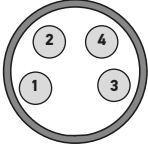
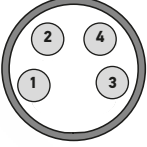
S3N - PH - \* - M03 - \*\*



S3N - PH - \* - FG\*\* - \*\*

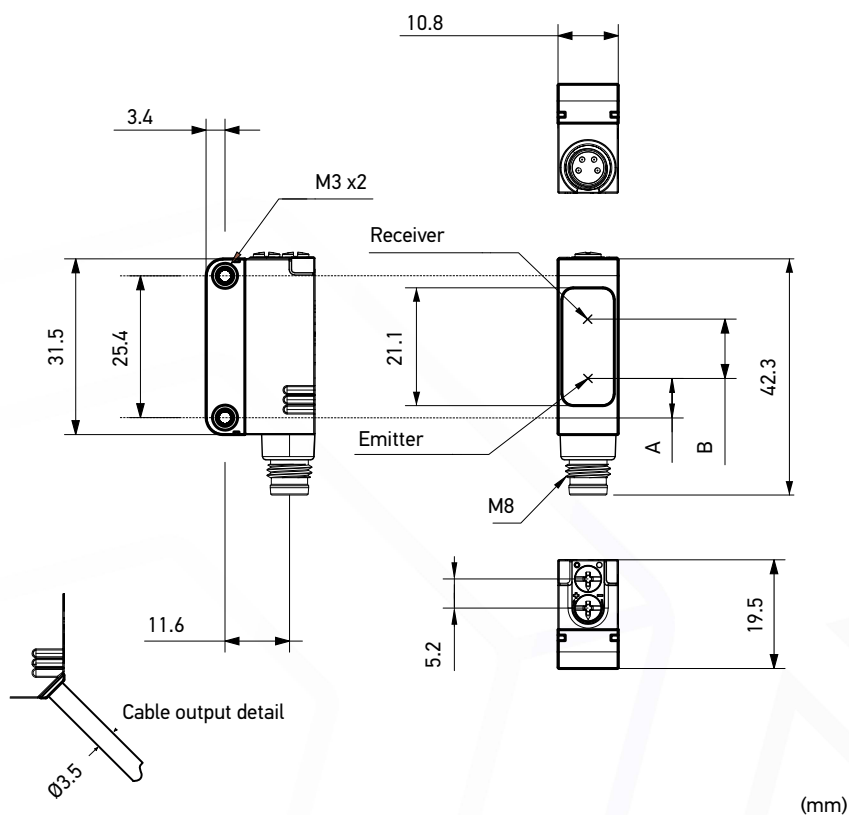


# CONNECTION DIAGRAMS

<div><div>S3N-P*-*-***-N*</div><div><div><div>BN</div><div>1</div><div></div><div>+10...30 VDC</div></div><div><div>BK</div><div>4</div><div></div><div>NPN OUT</div></div><div><div>BU</div><div>3</div><div></div><div>0V</div></div><div><div>WH</div><div>2</div><div></div><div>NC</div></div></div></div>	<div><div>S3N-P*-*-***-P*</div><div><div><div>BN</div><div>1</div><div></div><div>+10...30 VDC</div></div><div><div>BK</div><div>4</div><div></div><div>PNP OUT</div></div><div><div>BU</div><div>3</div><div></div><div>0V</div></div><div><div>WH</div><div>2</div><div></div><div>NC</div></div></div></div>
<div><div>S3N-P*-5-*03-OZ</div><div><div><div>BN</div><div>1</div><div></div><div>+10...30 VDC</div></div><div><div>BK</div><div>4</div><div></div><div>C/Q</div></div><div><div>BU</div><div>3</div><div></div><div>0V</div></div><div><div>WH</div><div>2</div><div></div><div>NPN/PNP OUT</div></div></div></div>	<div><div>S3N-P*-*-G03-OZ</div><div><div><div>BN</div><div>1</div><div></div><div>PIN 1: 10...30 VDC</div></div><div><div>BK</div><div>4</div><div></div><div>PIN 4: C/Q</div></div><div><div>BU</div><div>3</div><div></div><div>PIN 3: 0 V</div></div><div><div>WH</div><div>2</div><div></div><div>PIN 2: NC</div></div></div></div>
<div><div>S3N-P*-*-G**-**</div><div><div><div>BN</div><div>1</div><div></div><div>PIN 1: 10...30 VDC</div></div><div><div>BK</div><div>4</div><div></div><div>PIN 4: 0 V or NC</div></div><div><div>BU</div><div>3</div><div></div><div>PIN 3: 0 V</div></div><div><div>WH</div><div>2</div><div></div><div>PIN 2: NC</div></div></div></div>	

## DIMENSIONS

### S3N-PR-\*\_\*\_\*\_\*\_\*

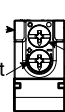


#### User interface specifications

##### Dual trimmer Models

Green LED:  
M01: Power ON  
Others: Stability  
Sensitivity adjust  
M01: 6 turns  
Others: 1 turn

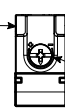
Yellow LED:  
Output status  
L/D selection



##### Single trimmer Models

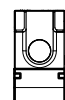
Yellow LED:  
Output status

Green LED:  
M01: Power ON  
Others: Stability  
Sensitivity adjust  
M01: 6 turns  
Others: 1 turn



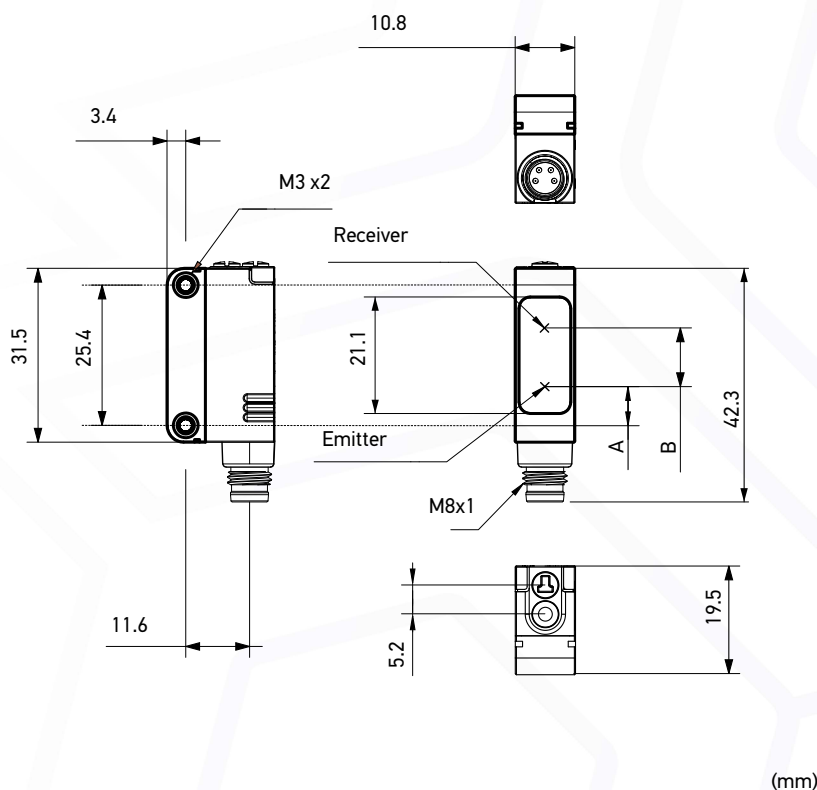
##### G01 model

Green LED:  
Power ON



version	A	B
S3N-PR-*_*-B0*_*	8.25	7.2
S3N-PR-*_*-T5*_*	10.3	7.2
S3N-PR-*_*-C0*_*	6.3	7.2
S3N-PR-*_*-C1*_*	7	7.2
S3N-PR-*_*-M03*_*	10.2	7.2
S3N-PR-*_*-M01*_*	10.65	7.2
S3N-PR-*_*-FG0*_* (EMITTER)	-	13.6
S3N-PR-*_*-FG0*_* (RECEIVER)	7	7.2

### S3N-PR-5-\*\_\*\_\*\_\*\_\*-OZ



#### User interface specifications

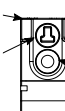
##### IO-Link models

Green LED:  
Power ONU\_I  
interactions

Yellow LED:  
Output status  
U\_I interactions

Teach Button

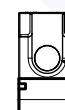
Blue LED:  
IO-Link activity



##### G03

Green LED:  
Power ON

Blue LED:  
IO-Link activity



version	A	B
S3N-PR-5-B03-OZ	8.25	7.2
S3N-PH-5-B03-OZ	6.2	7.2
S3N-PR-5-T53-OZ (Coaxial optics)	-	17.5
S3N-PR-5-C03-OZ	6.3	7.2
S3N-PR-5-C13-OZ	7	7.2
S3N-PR-5-M03-OZ	10.2	7.2
S3N-PH-5-M03-OZ	10.2	7.2
S3N-PR-5-FG03-OZ (EMITTER)	-	13.6
S3N-PH-5-FG03-OZ (EMITTER)	-	13.6
S3N-PX-5-FG03-OZ (RECEIVER)	7	7.2

DIMENSIONS

