



QM series

Miniaturized photoelectric sensors
with high performance

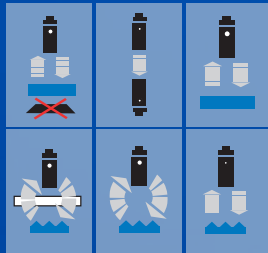


features

- Cubic miniaturized photoelectric high-performance sensors with long sensing distance
- 2 kHz switching frequency, background suppression with mechanical adjustment
- Wide range of models: diffuse reflection with short, medium and long sensing distance, polarized, reflective for transparent objects, through-beam and background suppression
- Available with cable and M8 plug exit or with M8-M12 pig-tail
- Selectable LO/DO output state
- Completely filled with resin (except background suppression models)
- Complete protection against electrical damages

web content

- Application notes
- Photos
- Catalogue / Manuals



High performances
miniaturized



code description

QM R 8 / 0 P - 0 A VE 80

series	QM	Miniaturized cubic photoelectric sensor 13x21x31.2 mm
emission	R	RED emission
	I	Infrared emission
type	B	Direct diffuse with sens. adj. 100 mm
	7	Direct diffuse with sens. adj. 400 mm
	8	Direct diffuse with sens. adj. 1,000 mm
	9	Direct diffuse with sens. adj. 1,500 mm
	N	5 m polarized with sensitive adjustment
	C	7 m reflective with sensitive adjustment
	G	0.05...1.5 m or 0.05...1.0 m for transparent objects with adjustment (R)
	L	0.4...4 m for transparent objects with adjustment
	HD	20 m or 30 m emitter + receiver kit with adjustment (R)
	H	Emitter with adjustment
	D	20 m or 30 m receiver without adjustment
	S	30...200 mm or 30...400 mm background suppression (R)
emitter	0	Emitter without check, LO/DO selectable
PNP / NPN output	0	Emitter
	P	PNP output
	N	NPN output
housing	0	Plastic housing
cable / plug output	A	2 m cable exit
	F	M8 4 pin plug cable exit
pig tail plug output		Standard model
	VE	M12 pig-tail output ⁽¹⁾
	VF	M8 3 pin pig tail output ⁽¹⁾
	VG	M8 4 pin pig tail output ⁽¹⁾
cable	80	20 cm cable length (pig-tail models) ⁽¹⁾
		Standard model

⁽¹⁾ pig-tail models



available models (*)

function	distance	emission	adjustment	output type	housing	models		
						PNP + NO / NC	NPN + NO / NC	
direct diffuse	100 mm	red	●	cable	plastic	QMRB/0P-0A	QMRB/0N-0A	
				connector M8		QMRB/0P-0F	QMRB/0N-0F	
	400 mm			IR		cable	QMR7/0P-0A	QMR7/07-0A
						connector M8	QMR7/0P-0F	QMR7/0N-0F
		cable				QMI7/0P-0A	QMI7/07-0A	
		connector M8				QMI7/0P-0F	QMI7/0N-0F	
	1.000 mm	red		cable		QMR8/0P-0A	QMR8/0N-0A	
				connector M8		QMR8/0P-0F	QMR8/0N-0F	
		1.500 mm		IR		cable	QMI9/0P-0A	QMI9/0N-0A
						connector M8	QMI9/0P-0F	QMI9/0N-0F
	polarized	5 m		red		cable	QMRN/0P-0A	QMRN/0N-0A
						connector M8	QMRN/0P-0F	QMRN/0N-0F
retroreflection	7 m	IR		cable		QMIC/0P-0A	QMIC/0N-0A	
				connector M8		QMIC/0P-0F	QMIC/0N-0F	
for transparent objects	0,05...1,5 m	red		cable		QMRG/0P-0A	QMRG/0N-0A	
				connector M8		QMRG/0P-0F	QMRG/0N-0F	
	0,05...1,0 m	IR	cable	QMIG/0P-0A		QMIG/0N-0A		
			connettore M8	QMIG/0P-0F		QMIG/0N-0F		
	0,4...4 m		cable	QMRL/0P-0A		QMRL/0N-0A		
			connector M8	QMRL/0P-0F		QMRL/0N-0F		
emitter	20 m	red	cable	QMRH/00-0A				
connector M8			QMRH/00-0A					
receiver			-	cable		QMRD/0P-0A	QMRD/0N-0A	
				connector M8		QMRD/0P-0F	QMRD/0N-0F	
emitter + receiver	30 m	IR	●	cable		QMRHD/0P-0A	QMRHD/0N-0A	
connector M8				QMRHD/0P-0F		QMRHD/0N-0F		
emitter						cable	QMIH/00-0A	
						connector M8	QMIH/00-0F	
receiver		-	cable	QMID/0P-0A		QMID/0N-0A		
			connector M8	QMID/0P-0F		QMID/0N-0F		
emitter + receiver			cable	QMIHD/0P-0A		QMIHD/0N-0A		
			connector M8	QMIHD/0P-0F		QMIHD/0N-0F		
background suppression	30 - 200 mm	red	●	cable		QMRS/0P-0A	QMRS/0N-0A	
				connector M8		QMRS/0P-0F	QMRS/0N-0F	
	30 - 400 mm	IR		cable		QMIS/0P-0A	QMIS/0N-0A	
				connector M8		QMIS/0P-0F	QMIS/0N-0F	

(*) pig tail available models:

QM**/0*-0AVE80 (pig-tail M12)

QM**/0*-0AVF80 (pig-tail M8, 3 wires)

QM**/0*-0AVG80 (pig-tail M8, 4 wires)



technical specification

direct diffuse models

	QMRB/0*-0*	QMR7/0*-0*	QMR8/0*-0*	QMI7/0*-0*	QMI9/0*-0*
					
nominal sensing distance	100 mm ⁽¹⁾	400 mm ⁽¹⁾	1,000 mm ⁽²⁾	400 mm ⁽¹⁾	1,500 mm ⁽²⁾
minimum sensing distance	5 mm	-			
sensibility adjustment	●				
emission	red (660 nm)			infrared (850 nm)	
hysteresis	≤ 10 %				
repeatability	5 %				
rotary switch	●				
operating voltage	10...30 Vdc				
power on delay	≤ 100 ms				
ripple	≤ 10 %				
no-load supply current	≤ 30 mA			≤ 45 mA	
load current	≤ 100 mA				
supply current	≤ 10 µA				
output voltage drop	2 V max. @ 100 mA				
maximum load current	≤ 100 mA				
output type	PNP or NPN NO or NC				
switching frequency	1 kHz	2 kHz	1 kHz	2 kHz	1 kHz
power on delay	≤ 100 ms				
power supply protections	polarity reversal, over voltage pulses				
output protection	short circuit (auto reset), over voltage pulses				
operating temperature range	- 25°C...+ 70°C (without freeze)				
temperature range	- 30°C...+ 80°C				
temperature drift	10%				
protection degree	IP67 (EN60529) ⁽³⁾				
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 (LO/DO output state) green (excess gain)				
housing material	PA66				
optic material	PMMA				
tightening torque	1 Nm ⁽⁴⁾				
weight (approximate)	10 g connector / 52 g cable				

⁽¹⁾ White target Kodak 90% 200 x 200 mm ⁽²⁾ White target Kodak 90% 400 x 400 mm ⁽³⁾ Protection guaranteed only with plug cable well mounted ⁽⁴⁾ Screws, nuts and mounting brackets are not included with the sensor (accessories)



technical specification

background suppression models

High performances
miniaturized

	QMRS/0*-0*	QMIS/0*-0*
		
nominal sensing distance	30...200 mm ⁽¹⁾	30...400 mm ⁽¹⁾
minimum sensing distance	5 mm	
sensitivity adjustment	●	
emission	red (630 nm)	infrared (850 nm)
hysteresis	≤ 10 %	
repeatability	5 %	
rotary switch	●	
operating voltage	10...30 Vdc	
power on delay	≤ 10 ms	
ripple	≤ 10 %	
no-load supply current	≤ 30 mA	≤ 45 mA
load current	≤ 100 mA	
supply current	≤ 10 µA	
output voltage drop	2 V max. @ 100 mA	
maximum load current	≤ 100 mA	
output type	PNP or NPN NO or NC	
switching frequency	1 kHz	
power on delay	≤ 100 ms	
power supply protections	polarity reversal, over voltage pulses	
output protection	short circuit (auto reset), over voltage pulses	
operating temperature range	- 25°C...+ 70°C (without freeze)	
temperature range	- 30°C...+ 80°C	
temperature drift	10%	
protection degree	IP67 (EN60529) ⁽²⁾	
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 (output state LO/DO)	
housing material	PA66	
optic material	PMMA	
tightening torque	1 Nm ⁽³⁾	
weight (approximate)	10 g connector / 52 g cable	

⁽¹⁾ White target Kodak 90% 200 x 200 mm ⁽²⁾ White target Kodak 90% 400 x 400 mm ⁽³⁾ Protection guaranteed only with plug cable well mounted ⁽⁴⁾ Screws, nuts and mounting brackets are not included with the sensor (accessories)



technical specification

models for transparent objects

	QMRG/0*-0*	QMIG/0*-0*	QMRL/0*-0*
			
nominal sensing distance	1.5 m	1 m	4 m
minimum sensing distance	0.05 m		0.4 m
sensitivity adjustment	●		
emission	red (630 nm)	infrared (850 nm)	red (630 nm)
hysteresis	≤ 10 %		
repeatability	5 %		
rotary switch	●		
operating voltage	10...30 Vdc		
power on delay	≤ 100 ms		
ripple	≤ 10 %		
no-load supply current	≤ 30 mA	≤ 45 mA	≤ 30 mA
load current	≤ 100 mA		
supply current	≤ 10 µA		
output voltage drop	2 V max. @ 100 mA		
maximum load current	≤ 100 mA		
output type	PNP or NPN NO or NC		
switching frequency	2 kHz		
power on delay	≤ 100 ms		
power supply protections	polarity reversal, over voltage pulses		
output protection	short circuit (auto reset), over voltage pulses		
operating temperature range	- 25°C...+ 70°C (without freeze)		
temperature range	- 30°C...+ 80°C		
temperature drift	≤ 10%		
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 (output state LO/DO)		
housing material	PA66		
optic material	PMMA		
tightening torque	1 Nm ⁽²⁾		
weight (approximate)	10 g connector / 52 g cable		

⁽¹⁾ Protection guaranteed only with plug cable well mounted ⁽²⁾ Screws, nuts and mounting brackets are not included with the sensor (accessories)



technical specification

polarized models

	QMRN/0*-0*
nominal sensing distance	5 m ⁽¹⁾
minimum sensing distance	5 mm
sensibility adjustment	●
emission	red (630 nm)
hysteresis	≤ 10 %
repeatability	5 %
rotary switch	●
operating voltage	10...30 Vdc
power on delay	≤ 100 ms
ripple	≤ 10 %
no-load supply current	-
load current	≤ 100 mA
supply current	≤ 10 µA
output voltage drop	2 V max. @ 100 mA
maximum load current	≤ 100 mA
output type	PNP or NPN NO or NC
switching frequency	2 kHz
power on delay	≤ 100 ms
power supply protections	polarity reversal, over voltage pulses
output protection	short circuit (auto reset), over voltage pulses
operating temperature range	- 25°C...+ 70°C (without freeze)
temperature range	- 30°C...+ 80°C
temperature drift	≤ 10 %
protection degree	IP67 (EN60529) ⁽²⁾
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 (output state LO/DO) green (excess gain)
housing material	PA66
optic material	PMMA
tightening torque	1 Nm ⁽³⁾
weight (approximate)	10 g connector / 52 g cable

⁽¹⁾ With RL 110 reflector EG = 2; ⁽²⁾ protection guaranteed only with plug cable well mounted;
⁽³⁾ screws, nuts and mounting brackets are not included with the sensor (accessories).

technical specification

retroreflection models

	QMIC/0*-0*
nominal sensing distance	7 m ⁽¹⁾
minimum sensing distance	0,02 m @ RL 110
sensibility adjustment	●
emission	infrared (850 nm)
hysteresis	≤ 10 %
repeatability	5 %
rotary switch	●
operating voltage	10...30 Vdc
power on delay	≤ 100 ms
ripple	≤ 10 %
no-load supply current	≤ 45 mA
load current	≤ 100 mA
supply current	≤ 10 µA
output voltage drop	2 V max. @ 100 mA
maximum load current	≤ 100 mA
output type	PNP or NPN NO or NC
switching frequency	2 kHz
power on delay	≤ 100 ms
power supply protections	polarity reversal, over voltage pulses
output protection	short circuit (auto reset), over voltage pulses
operating temperature range	- 25°C...+ 70°C (without freeze)
temperature range	- 30°C...+ 80°C
temperature drift	≤ 10 %
protection degree	IP67 (EN60529) ⁽²⁾
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 (output state LO/DO) green (excess gain)
housing material	PA66
optic material	PMMA
tightening torque	1 Nm ⁽³⁾
weight (approximate)	10 g connector / 52 g cable

⁽¹⁾ With RL 110 reflector EG = 2; ⁽²⁾ protection guaranteed only with plug cable well mounted; ⁽³⁾ screws, nuts and mounting brackets are not included with the sensor (accessories).



technical specification

through beam models

	QMRH/0*-0*	QMRD/0*-0*	QMIH/0*-0*	QMID/0*-0*
				
nominal sensing distance	20 m ⁽¹⁾		30 m ⁽¹⁾	
minimum sensing distance	-			
sensibility adjustment	●			
emission	red (630 nm)	-	infrared (850 nm)	-
hysteresis	≤ 10 %			
repeatability	5 %			
rotary switch	-	●	-	●
operating voltage	10...30 Vdc			
power on delay	≤ 100 ms			
ripple	≤ 10 %			
no-load supply current	≤ 30 mA		≤ 45 mA	
load current	-	≤ 100 mA	-	≤ 100 mA
supply current	-	≤ 10 µA	-	≤ 10 µA
output voltage drop	-	2 V max. @ 100 mA	-	2 V max. @ 100 mA
maximum load current	-	≤ 100 mA	-	≤ 100 mA
output type	-	PNP or NPN NO or NC	-	PNP or NPN NO or NC
switching frequency	2 kHz	-	2 kHz	-
power on delay	≤ 100 ms			
power supply protections	-	polarity reversal, over voltage pulses	-	polarity reversal, over voltage pulses
output protection	-	polarity reversal, over voltage pulsesi	-	polarity reversal, over voltage pulses
operating temperature range	- 25°C...+ 70°C (without freeze)			
temperature range	- 30°C...+ 80°C			
temperature drift	≤ 10 %			
protection degree	IP67 (EN60529) ⁽²⁾			
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 (output state LO/DO), 10,000 lux (sunlight)			
housing material	PA66			
optic material	PMMA			
tightening torque	1 Nm ⁽³⁾			
weight (approximate)	10 g connector / 52 g cable			

⁽¹⁾ White target Kodak 90% 200 x 200 mm ⁽²⁾ Protection guaranteed only with plug cable well mounted ⁽³⁾ Screws, nuts and mounting brackets are not included with the sensor (accessories)



High performances
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response diagrams

LO/DO selectable output

NPN output

PNP output

emitter

BN brown

BU blue

BK black

WH white

plug

M8 4 pin

QMR*/0*-0F & QMR*/0*-0AVG0
QMI*/0*-0F & QMI*/0*-0AVG0

M12 4 pin (pig tail)

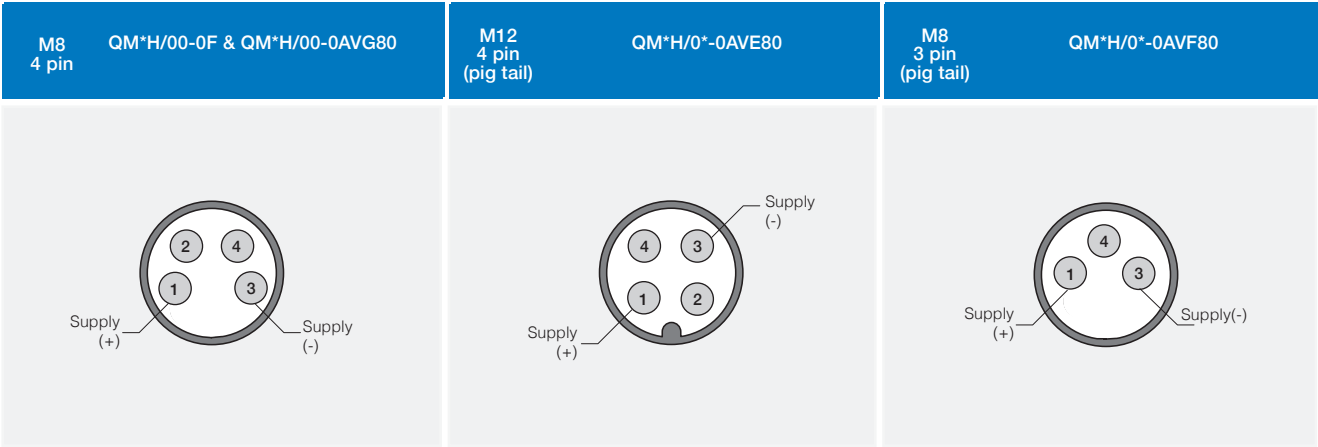
QMR*/0*-0AVE80
QMI*/0*-0AVE80

M8 3 pin (pig tail)

QMR*/0*-0AVF80
QMI*/0*-0AVF80

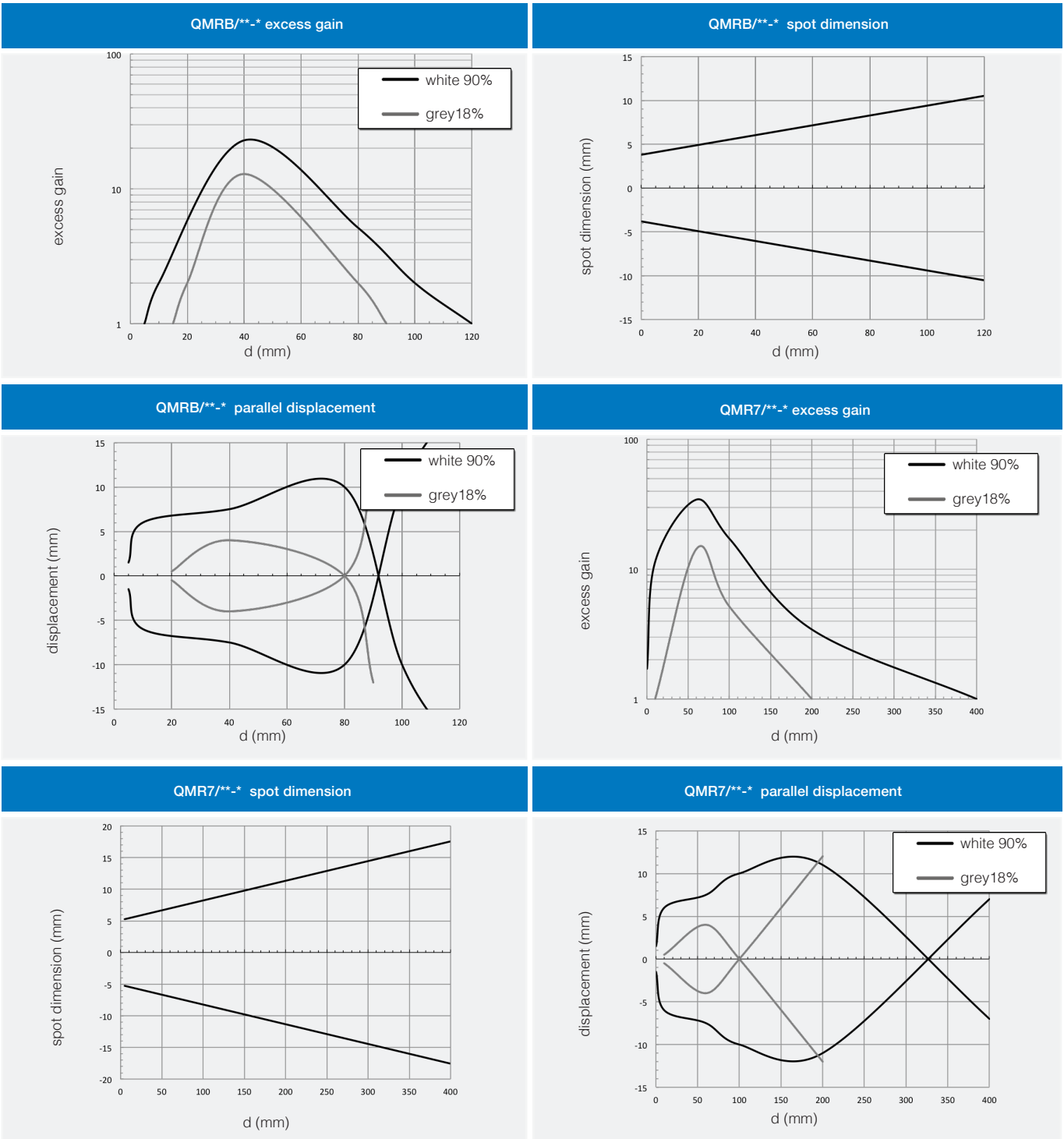


High performances
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response diagrams

direct diffuse models



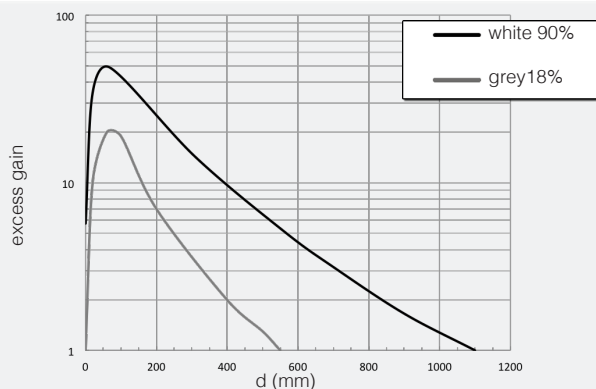


response diagrams

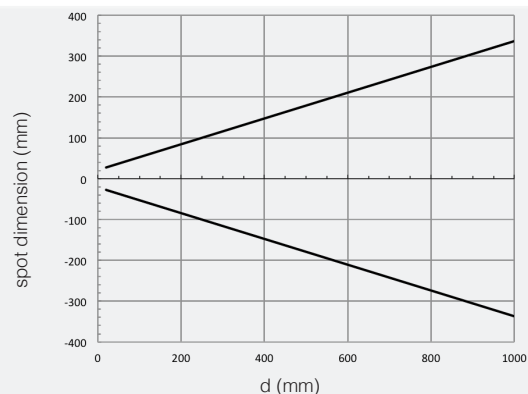
direct diffuse models

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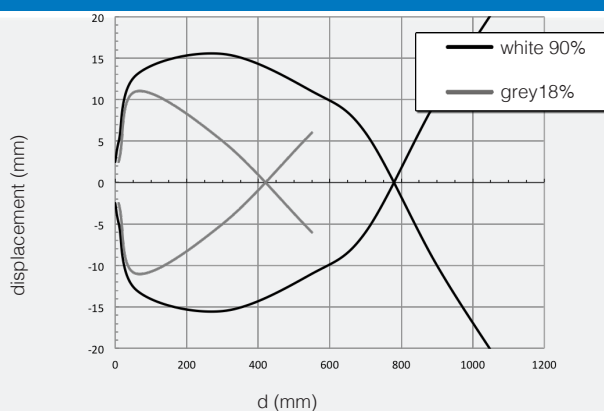
QMR8/**-* excess gain



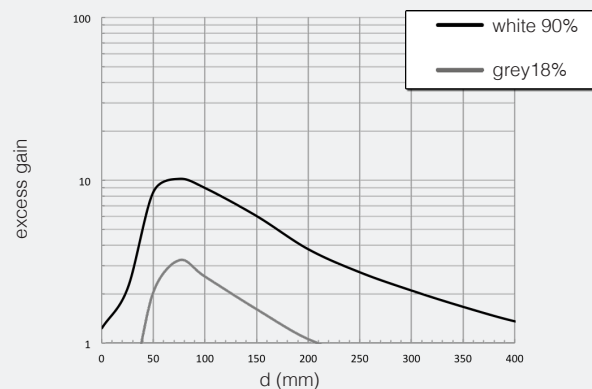
QMR8/**-* spot dimension



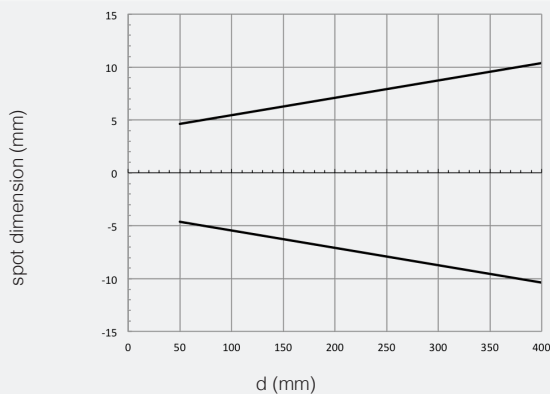
QMR8/**-* parallel displacement



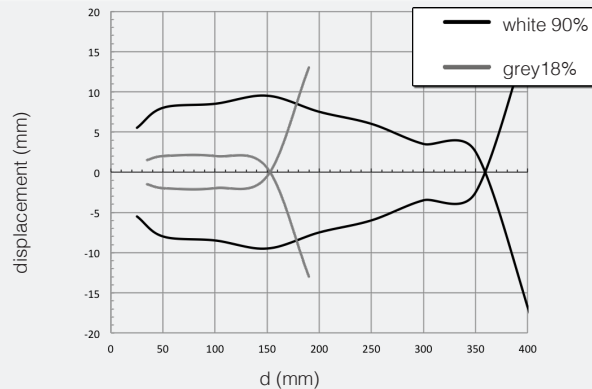
QMI7/**-* excess gain



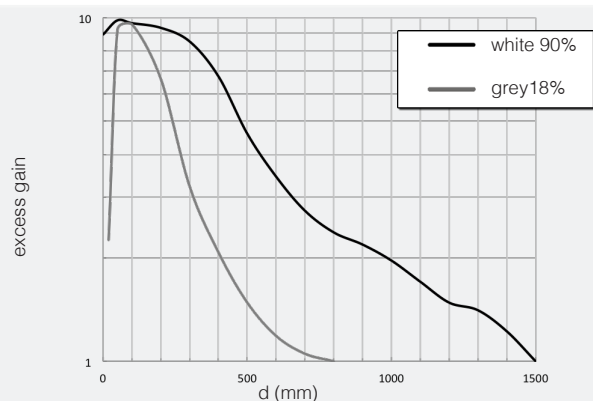
QMI7/**-* spot dimension



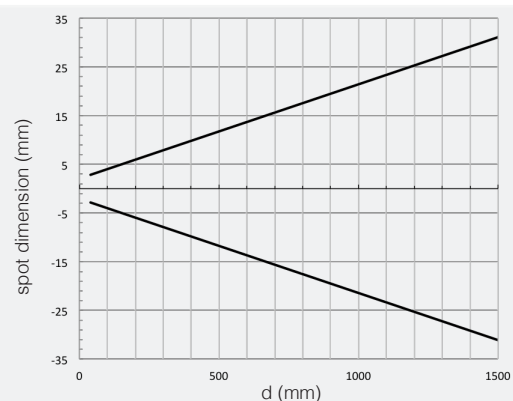
QMI7/**-* parallel displacement



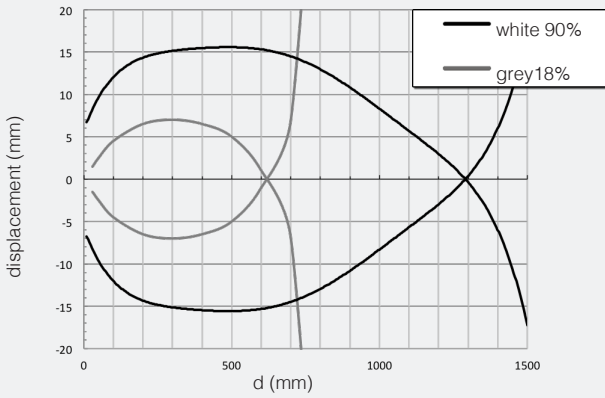
QMI9/**-* excess gain



QMI9/**-* spot dimension



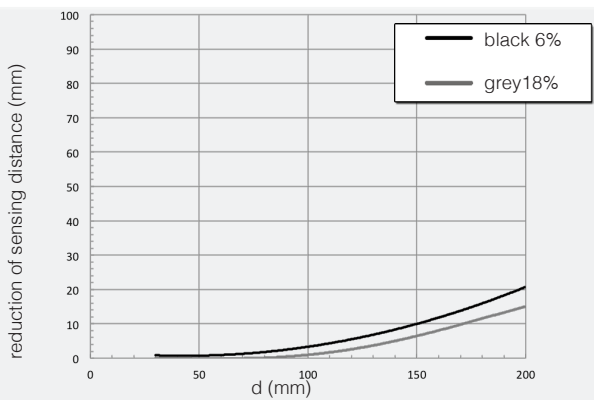
QMI9/**-* parallel displacement



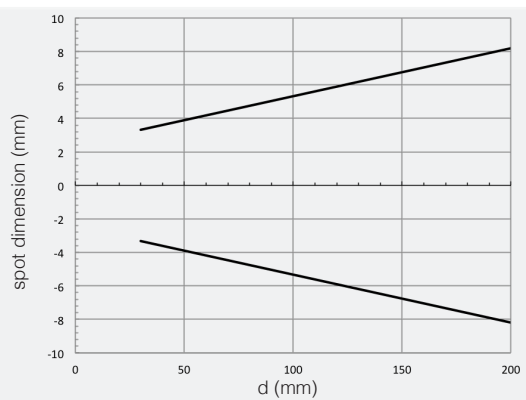
response diagrams

background suppression models

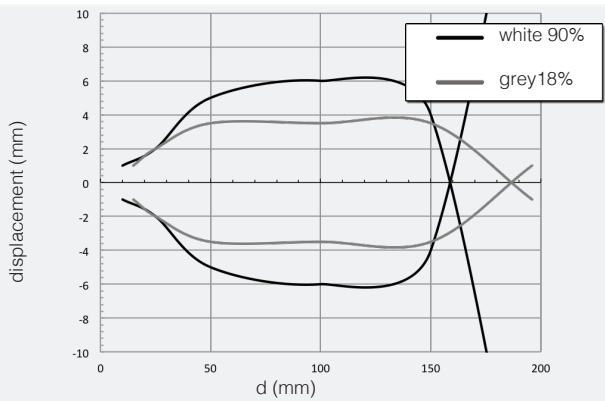
QMRS/**-* reduction of sensing distance



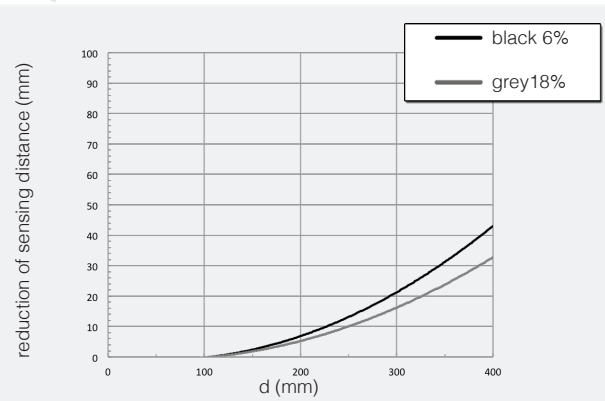
QMRS/**-* spot dimension



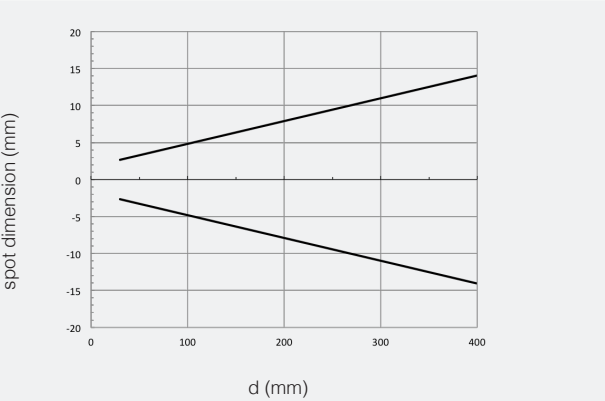
QMRS/**-* parallel displacement



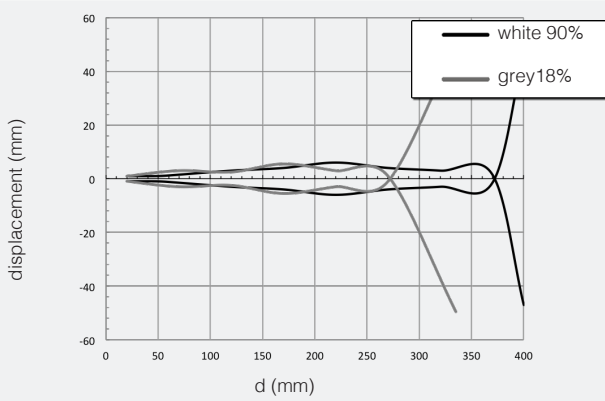
QMIS/**-* reduction of sensing distance



QMIS/**-* spot dimension



QMIS/**-* parallel displacement



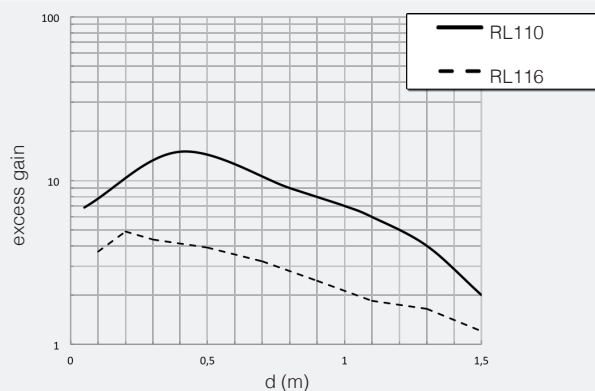


response diagramss

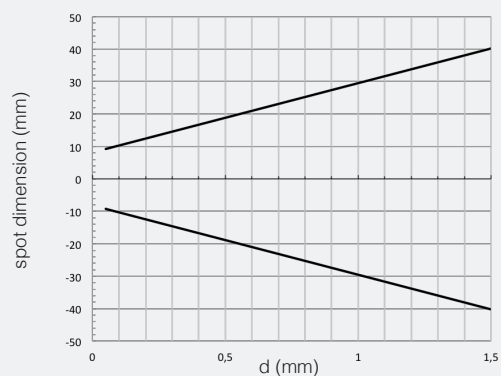
models for transparent objects

High performances
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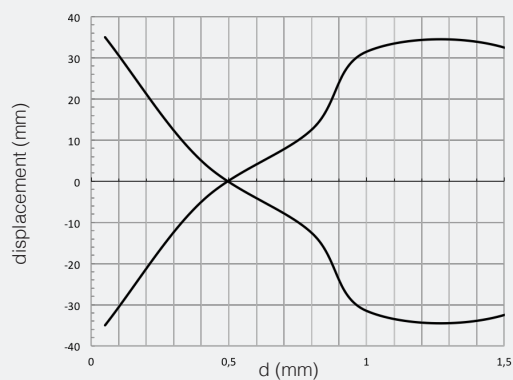
QMRG/**-* excess gain



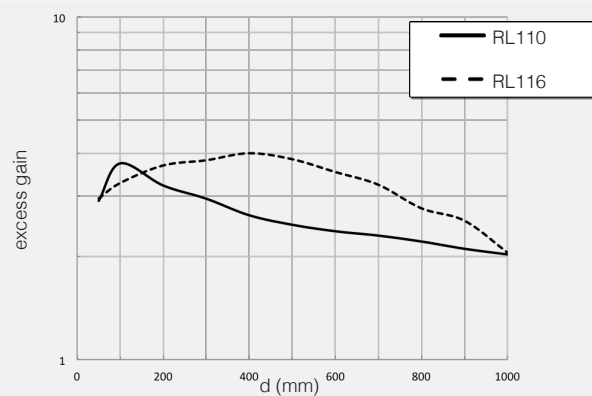
QMRG/**-* spot dimension



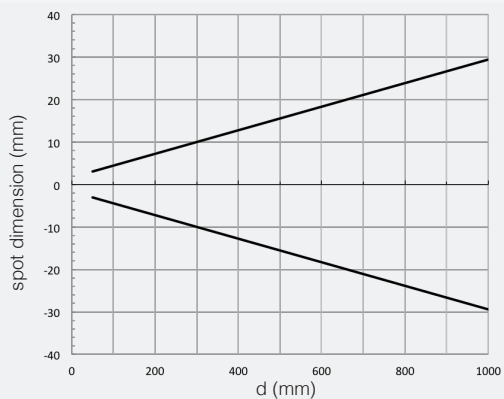
QMRG/**-*parallel displacement



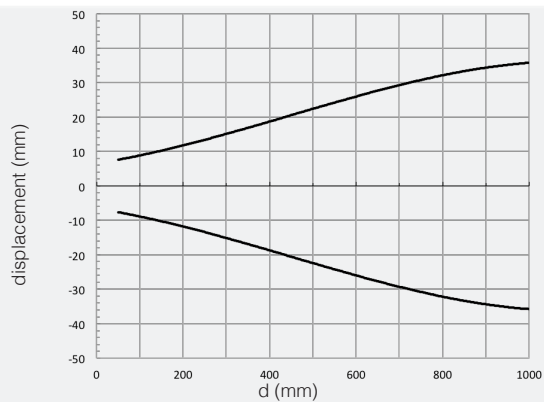
QMIG/**-* excess gain



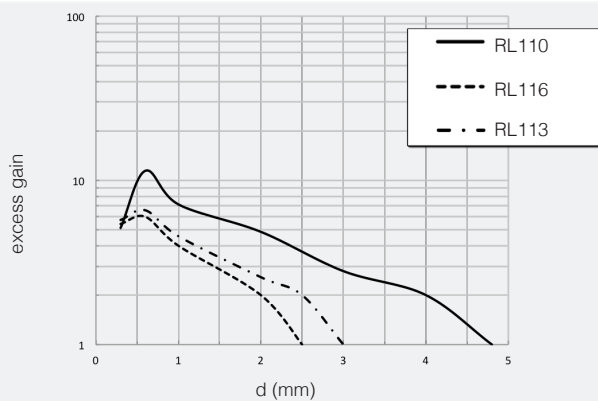
QMIG/**-* spot dimension



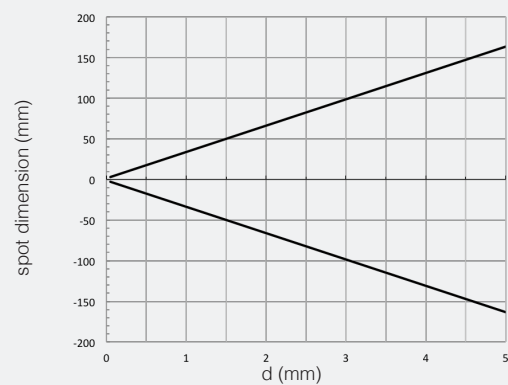
QMIG/**-*parallel displacement



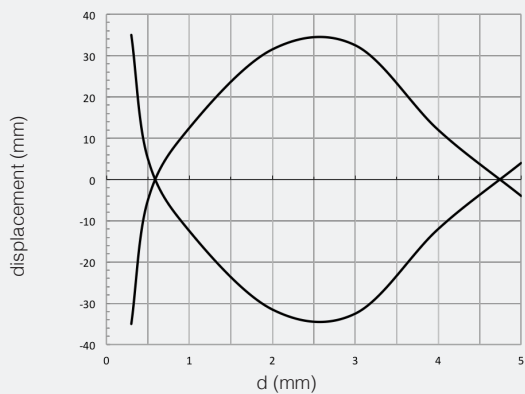
QMRL/**-* excess gain



QMRL/**-* spot dimension



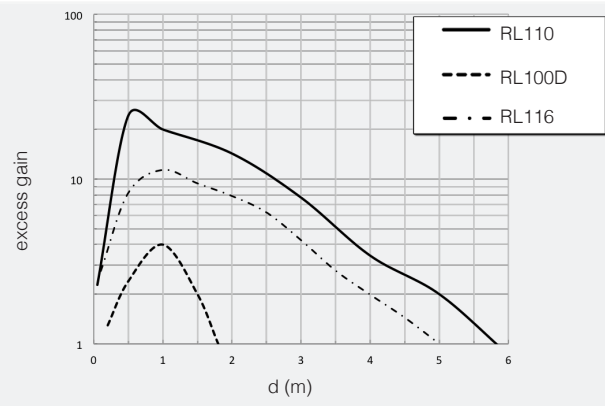
QMRL/**-*parallel displacement



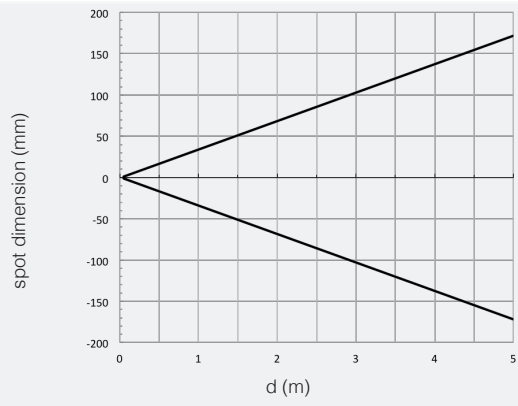
response diagramss

retroreflective polarized models

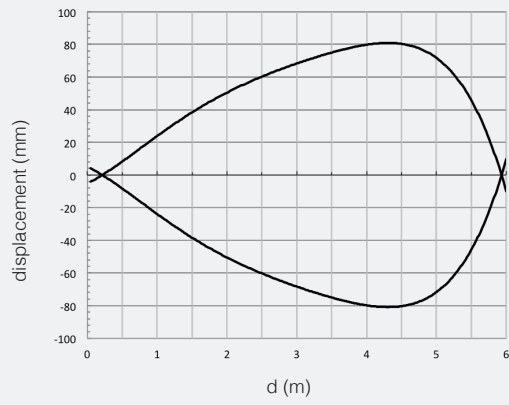
QMRN/**-* excess gain



QMRN/**-* spot dimension



QMRN/**-*parallel displacement

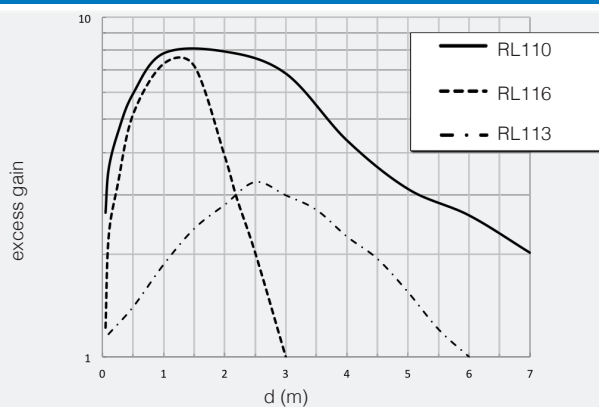




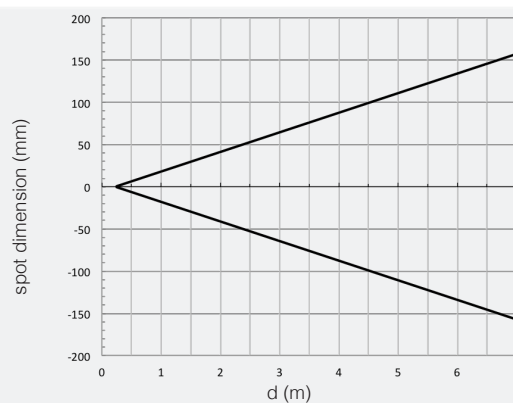
response diagramss

retro-reflective models

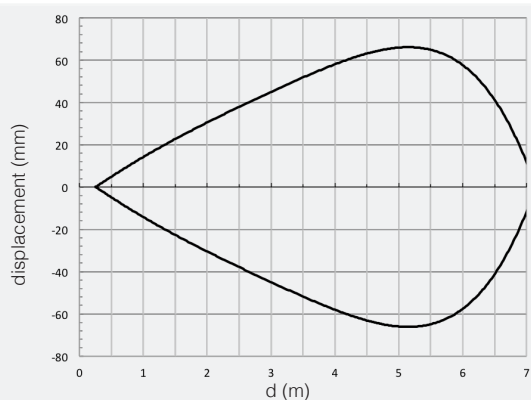
QMIC/**-* excess gain



QMIC/**-* spot dimension



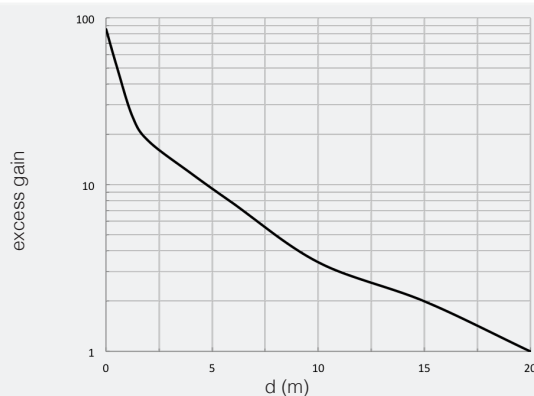
QMIC/**-* parallel displacement



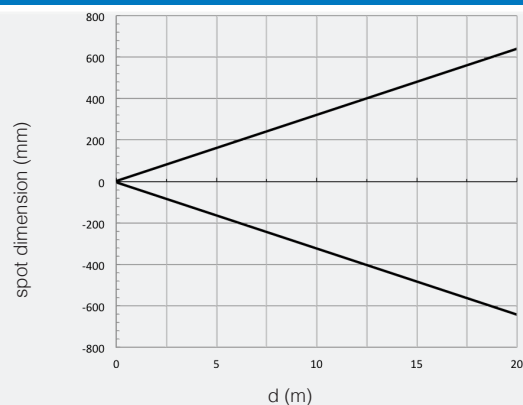
response diagramss

through beam models

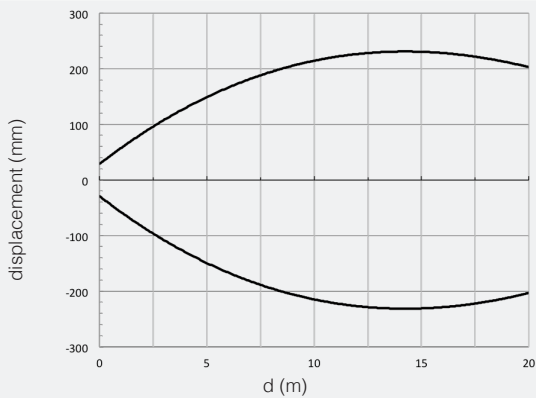
QMRHD/**-* excess gain



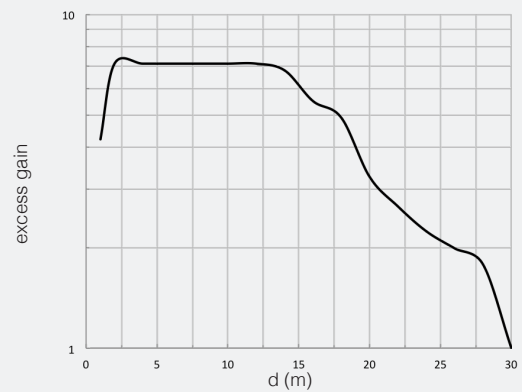
QMRHD/**-* spot dimension



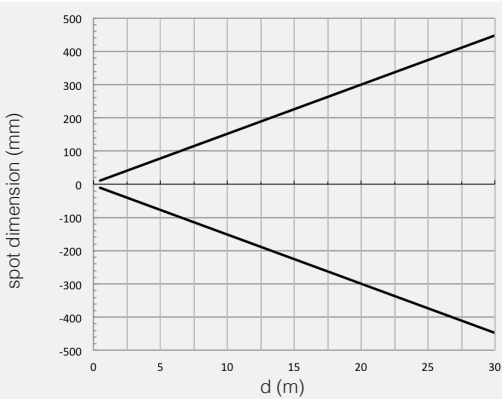
QMRHD/**-*parallel displacement



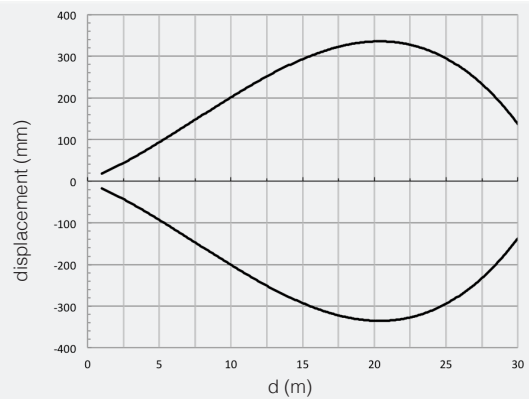
QMIHD/**-* excess gain



QMIHD/**-* spot dimension

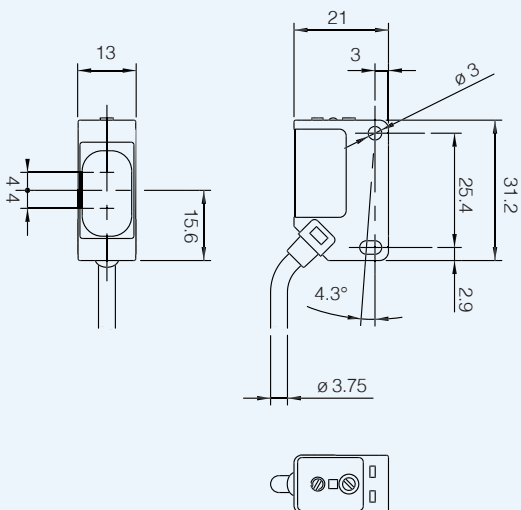


QMIHD/**-*parallel displacement

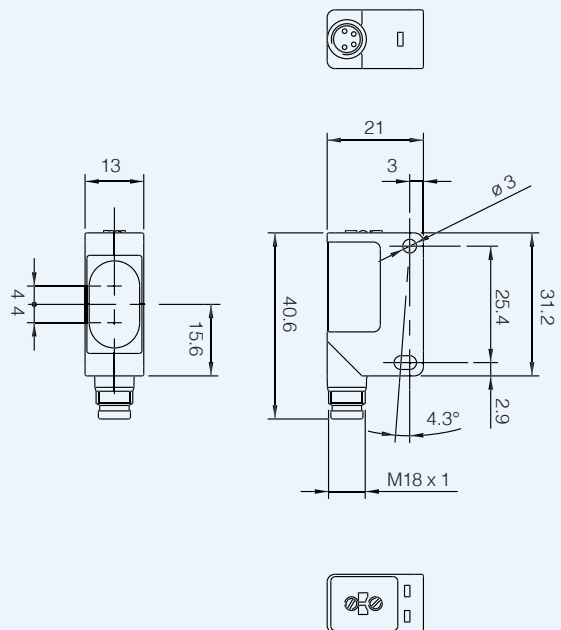


dimensions (mm)

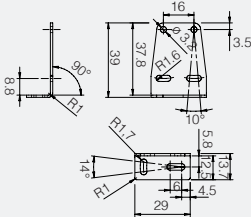
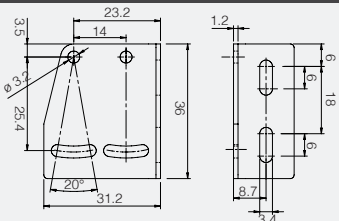
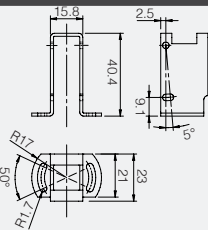
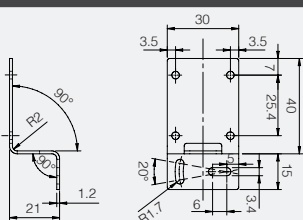
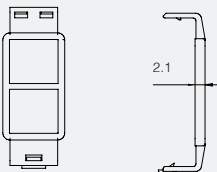
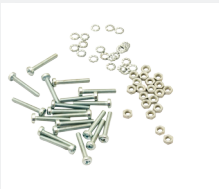
QM**/**-0A



QM**/**-0E





ST 101 / L vertical mounting bracket																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		• $\pm 5^\circ$ tip • $\pm 7^\circ$ swivel • stainless steel																
ST 102 / L side mounting bracket																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		• $\pm 10^\circ$ tip • stainless steel																
ST 103 ⁽¹⁾ / Vertical mounting bracket with protective cover																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM Sensors		• $\pm 25^\circ$ swivel • stainless steel																
ST 104 ⁽¹⁾ / Horizontal mounting bracket with protective cover																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		• $\pm 10^\circ$ swivel • stainless steel																
STQM0 / Vertical and horizontal shutters																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM*HD Sensors		• Vertical and horizontal diaphragms (0.5 - 1.2) • Packing units 2 <table><tr><th>dia.</th><th>0.5</th><th>1</th><th>2</th></tr><tr><td>Sn (EG=1)</td><td>1.5 m</td><td>2 m</td><td>4.5 m</td></tr><tr><td>Sn (EG=2)</td><td>1 m</td><td>1.5 m</td><td>4 m</td></tr><tr><td>Min. Ø</td><td>0.8 mm</td><td>1.5 mm</td><td>2.5 mm</td></tr></table>	dia.	0.5	1	2	Sn (EG=1)	1.5 m	2 m	4.5 m	Sn (EG=2)	1 m	1.5 m	4 m	Min. Ø	0.8 mm	1.5 mm	2.5 mm
dia.	0.5	1	2																
Sn (EG=1)	1.5 m	2 m	4.5 m																
Sn (EG=2)	1 m	1.5 m	4 m																
Min. Ø	0.8 mm	1.5 mm	2.5 mm																
STQMS ⁽²⁾ / Screws - nuts - lockwashers																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM Sensors	-	• 20 Cross-slotted screw M3x20 • 20 Hexagon nuts M3 • 20 Lockwashers Ø3																

⁽¹⁾ It can be used only for cable or pig-tail exit models ⁽²⁾ Components not present in standard sensors packaging