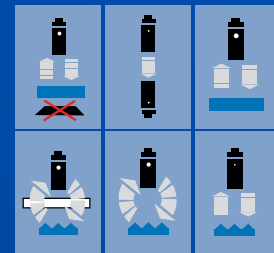




# QM series

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 12.8x21x31.2 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
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 <sup>(1)</sup>
	VF	M8 3 pin pig tail output <sup>(1)</sup>
cable	VG	M8 4 pin pig tail output <sup>(1)</sup>
	80	20 cm cable length (pig-tail models) <sup>(1)</sup>
		Standard model

<sup>(1)</sup> pig-tail models



# available models (\*)

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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
	1.000 mm	red		cable		QMI7/0P-0A	QMI7/07-0A	
				connector M8		QMI7/0P-0F	QMI7/0N-0F	
	1.500 mm	IR		cable		QMR8/0P-0A	QMR8/0N-0A	
				connector M8		QMR8/0P-0F	QMR8/0N-0F	
	polarized	5 m		red		cable	QMI9/0P-0A	QMI9/0N-0A
						connector M8	QMI9/0P-0F	QMI9/0N-0F
	retroreflection	7 m		IR		cable	QMRN/0P-0A	QMRN/0N-0A
						connector M8	QMRN/0P-0F	QMRN/0N-0F
for transparent objects	0,05...1,5 m	red	cable	QMIG/0P-0A	QMIG/0N-0A			
			connector M8	QMIG/0P-0F	QMIG/0N-0F			
	0,05...1,0 m	IR	cable	QMIG/0P-0A	QMIG/0N-0A			
			connector 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	20 m		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	30 m	IR	cable	QMIH/00-0A				
connector M8			QMIH/00-0F					
receiver	30 m	IR	cable	QMID/0P-0A	QMID/0N-0A			
connector M8			QMID/0P-0F	QMID/0N-0F				
emitter + receiver	30 - 200 mm	red	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

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	QMRB/0*-0*	QMR7/0*-0*	QMR8/0*-0*	QMI7/0*-0*	QMI9/0*-0*
					
nominal sensing distance	100 mm <sup>(1)</sup>	400 mm <sup>(1)</sup>	1,000 mm <sup>(2)</sup>	400 mm <sup>(1)</sup>	1,500 mm <sup>(2)</sup>
minimum sensing distance	-				
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) <sup>(3)</sup>				
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 <sup>(4)</sup>				
weight (approximate)	10 g connector / 52 g cable				

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



	QMRS/0*-0*	QMIS/0*-0*
nominal sensing distance	30...200 mm <sup>(1)</sup>	30...400 mm <sup>(1)</sup>
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) <sup>(2)</sup>	
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 <sup>(3)</sup>	
weight (approximate)	10 g connector / 52 g cable	

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



	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) <sup>(1)</sup>		
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 <sup>(2)</sup>		
weight (approximate)	10 g connector / 52 g cable		

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



## technical specification

polarized models

## technical specification

retroreflection models


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	QMRN/0*-0*
nominal sensing distance	5 m <sup>(1)</sup>
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) <sup>(2)</sup>
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 <sup>(3)</sup>
weight (approximate)	10 g connector / 52 g cable

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

	QMIC/0*-0*
nominal sensing distance	7 m <sup>(1)</sup>
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) <sup>(2)</sup>
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 <sup>(3)</sup>
weight (approximate)	10 g connector / 52 g cable

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

	QMRH/0*-0*	QMRD/0*-0*	QMIH/0*-0*	QMID/0*-0*
				
nominal sensing distance	20 m <sup>(1)</sup>		30 m <sup>(1)</sup>	
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 pulses	-	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) <sup>(2)</sup>			
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 <sup>(3)</sup>			
weight (approximate)	10 g connector / 52 g cable			

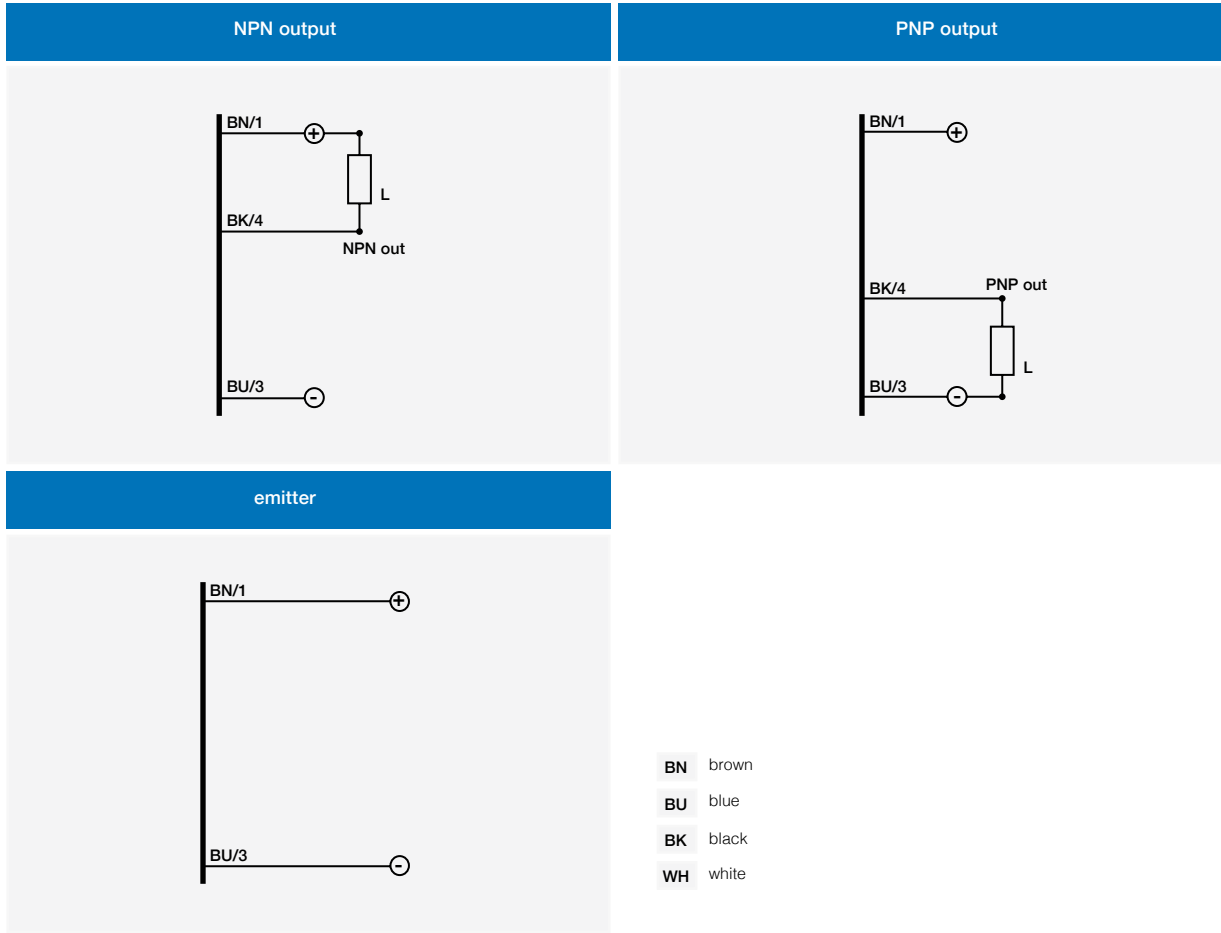
<sup>(1)</sup> White target Kodak 90% 200 x 200 mm <sup>(2)</sup> Protection guaranteed only with plug cable well mounted <sup>(3)</sup> Screws, nuts and mounting brackets are not included with the sensor (accessories)



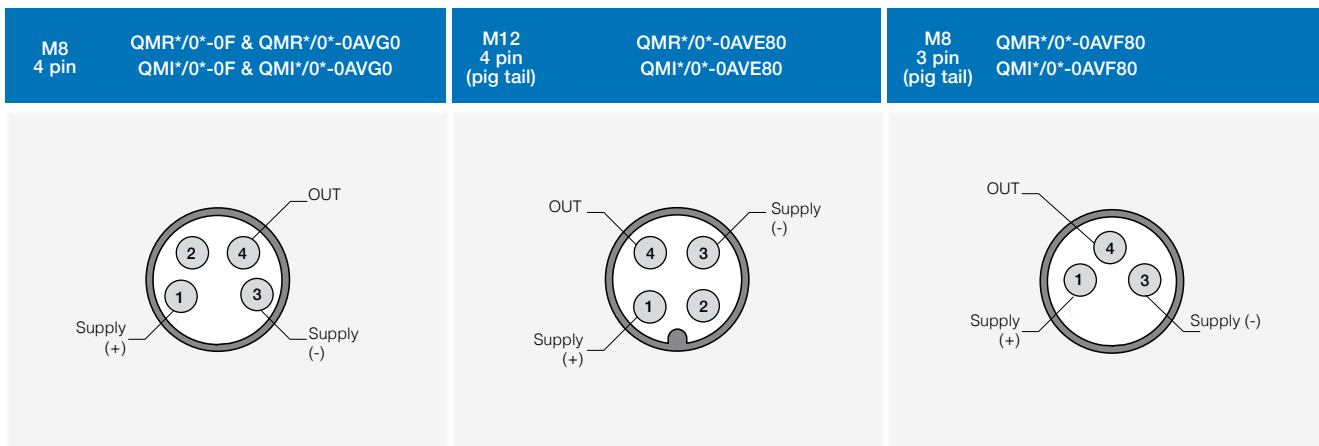
# response diagrams

LO/DO selectable output

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## plug



QM

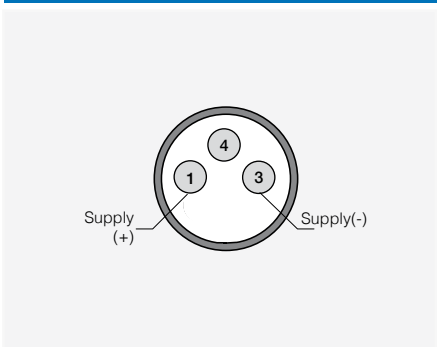
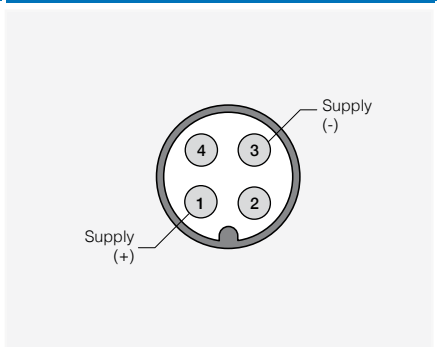
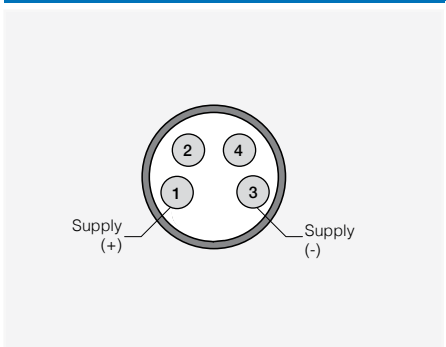




M8  
4 pin  
QM\*H/00-0F & QM\*H/00-0AVG80

M12  
4 pin  
(pig tail)  
QM\*H/0\*-0AVE80

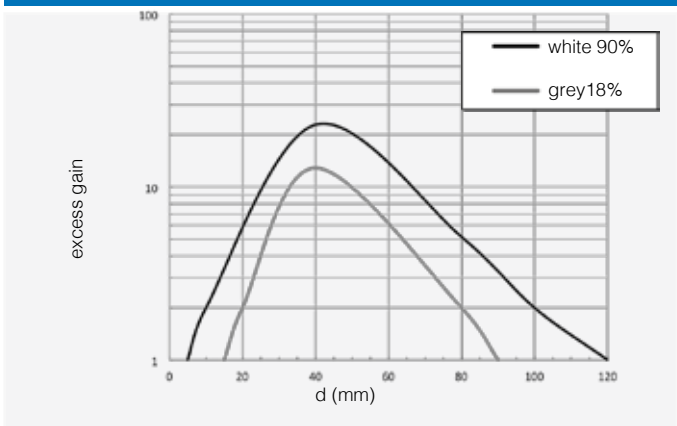
M8  
3 pin  
(pig tail)  
QM\*H/0\*-0AVF80



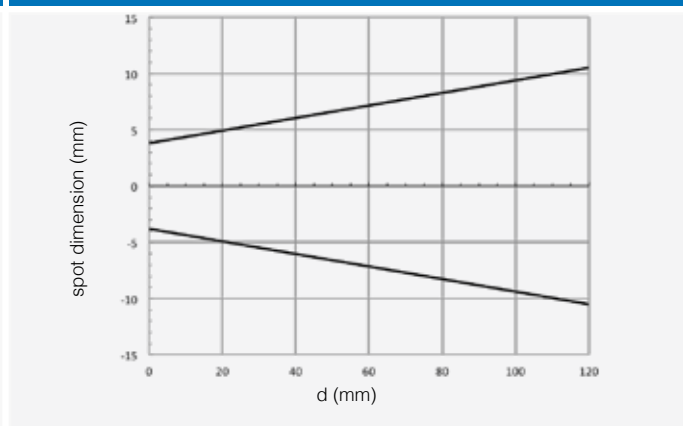
## response diagrams

direct diffuse models

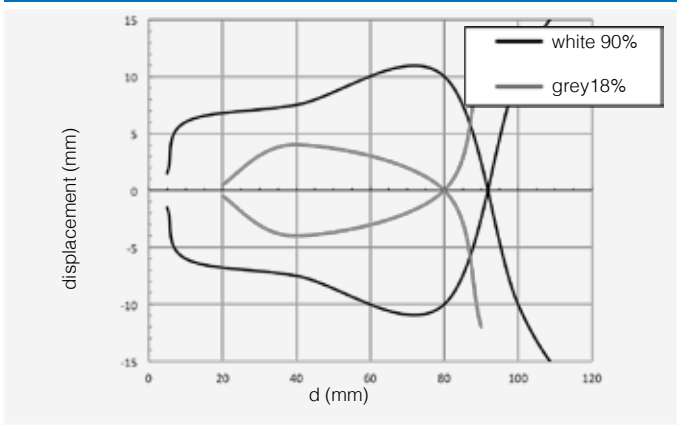
QMRB/\*\*-\* excess gain



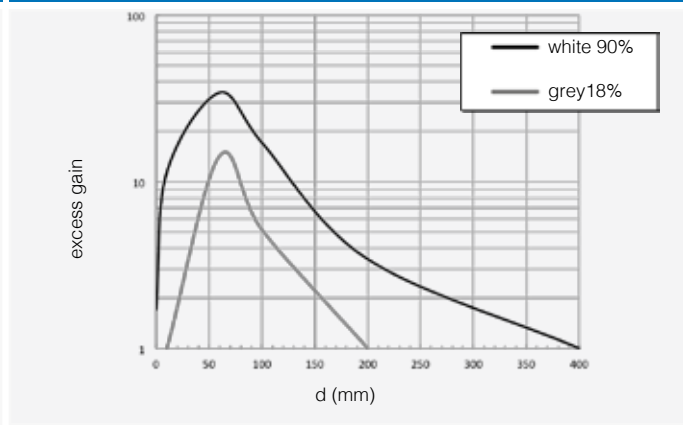
QMRB/\*\*-\* spot dimension



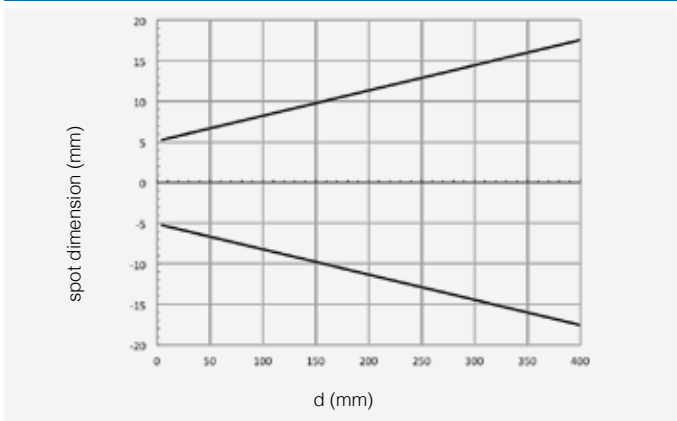
QMRB/\*\*-\* parallel displacement



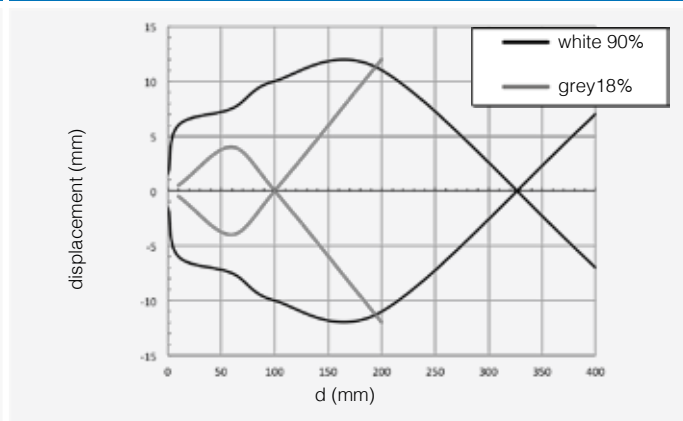
QMR7/\*\*-\* excess gain



QMR7/\*\*-\* spot dimension



QMR7/\*\*-\* parallel displacement



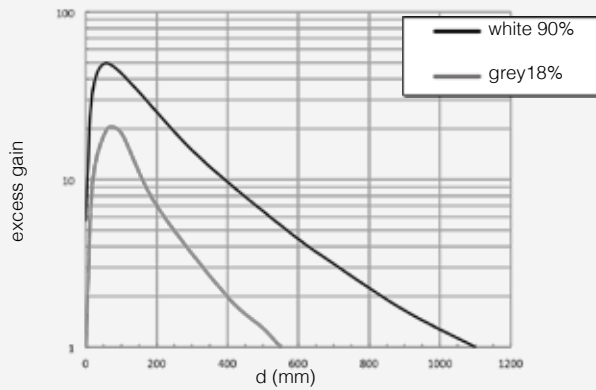


# response diagrams

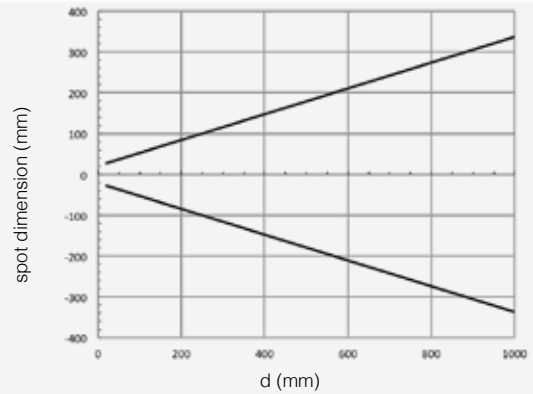
direct diffuse models

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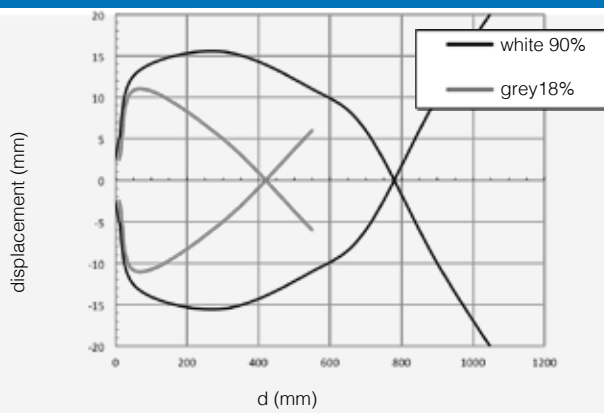
QMR8/\*\*-\* excess gain



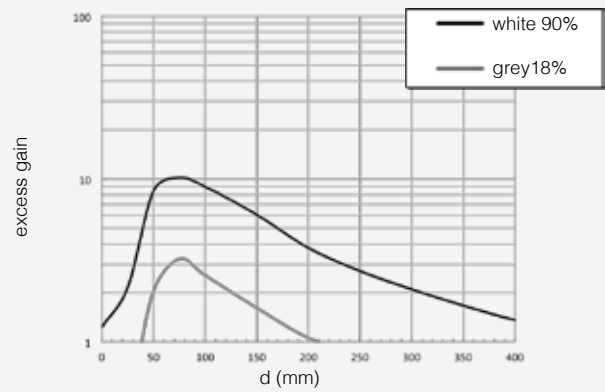
QMR8/\*\*-\* spot dimension



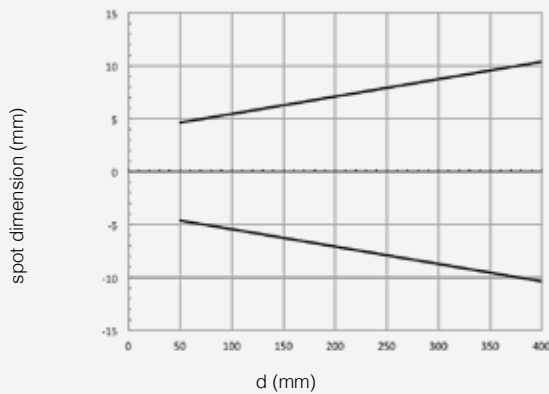
QMR8/\*\*-\* parallel displacement



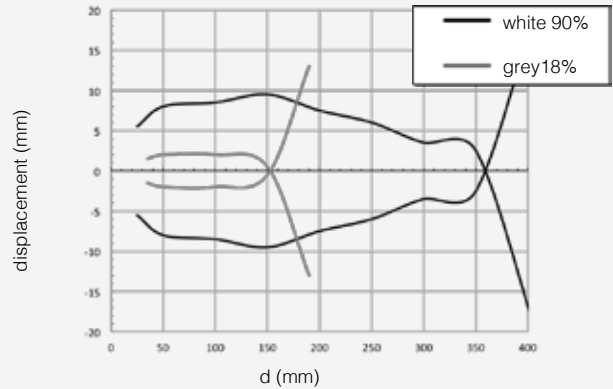
QMI7/\*\*-\* excess gain



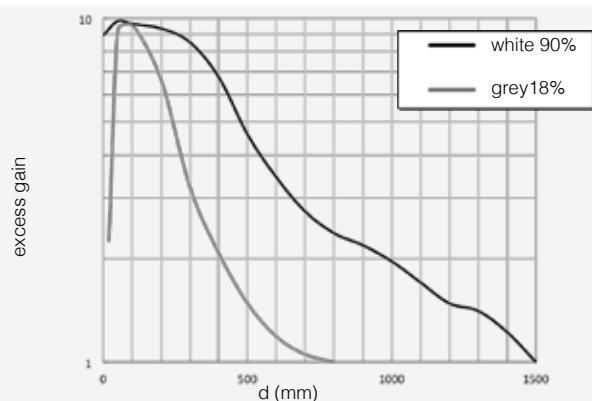
QMI7/\*\*-\* spot dimension



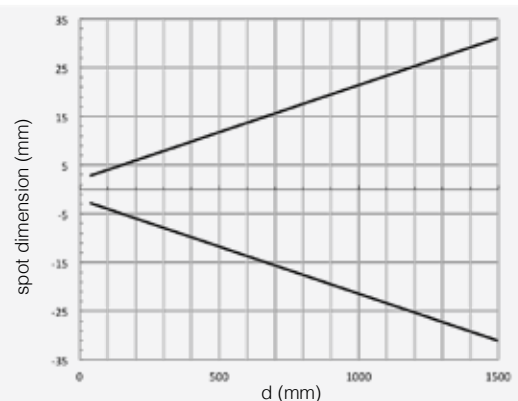
QMI7/\*\*-\* parallel displacement

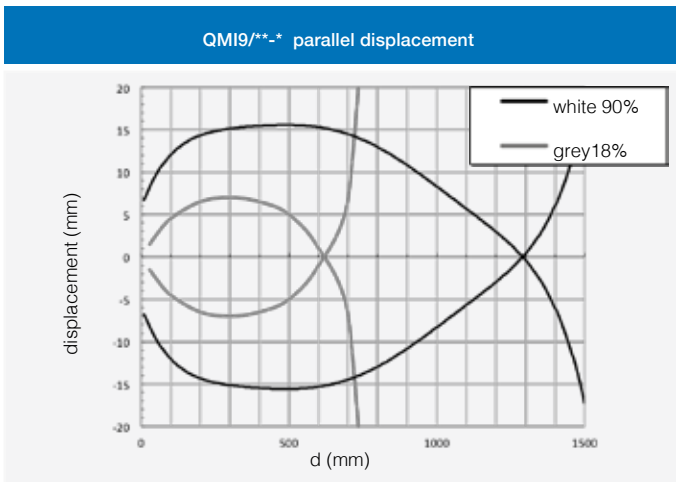


QMI9/\*\*-\* excess gain



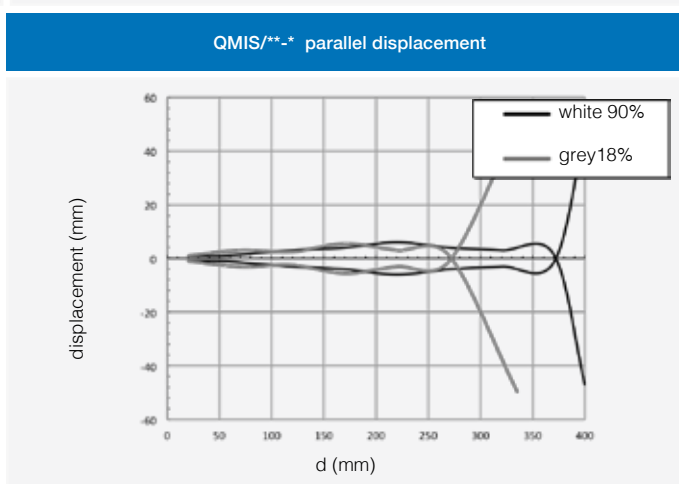
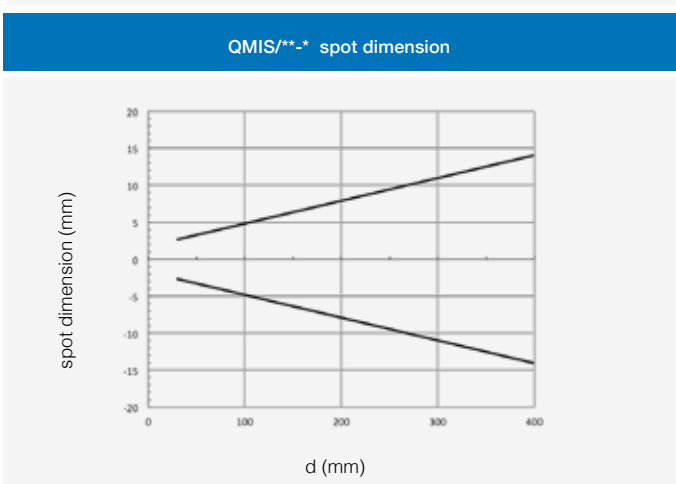
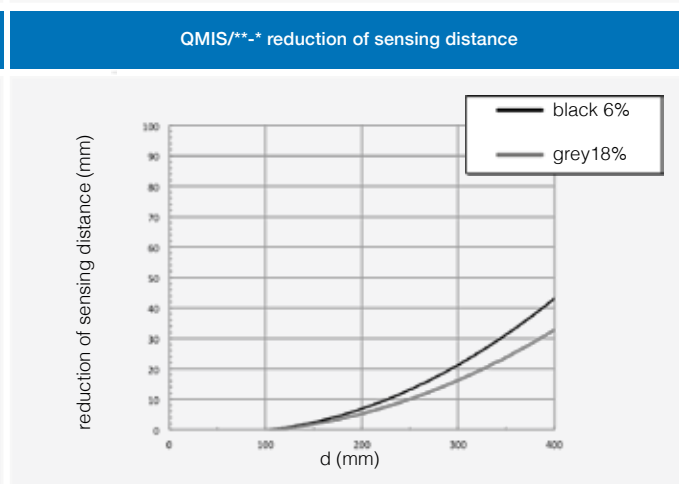
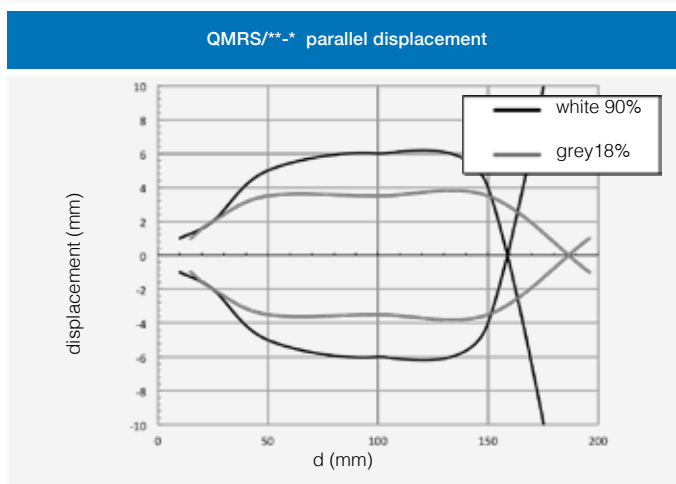
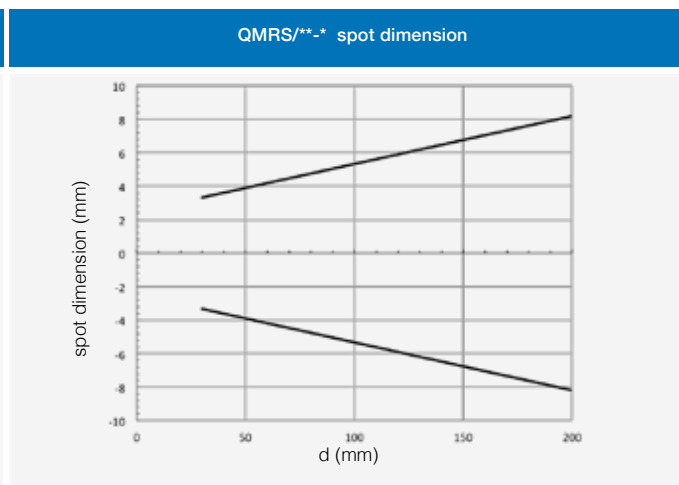
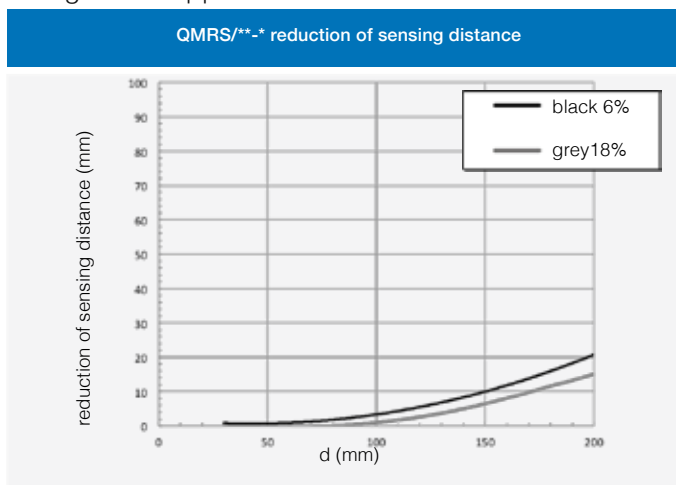
QMI9/\*\*-\* spot dimension





## response diagrams

background suppression models



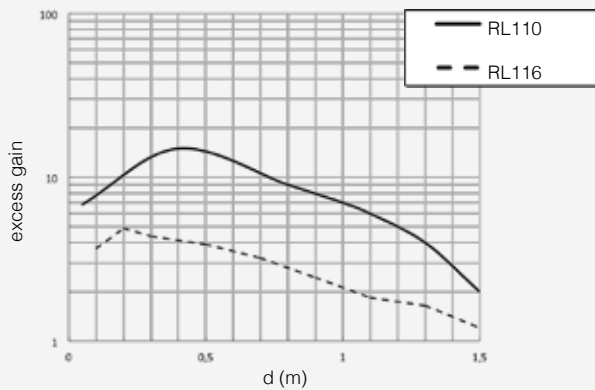


# response diagrams

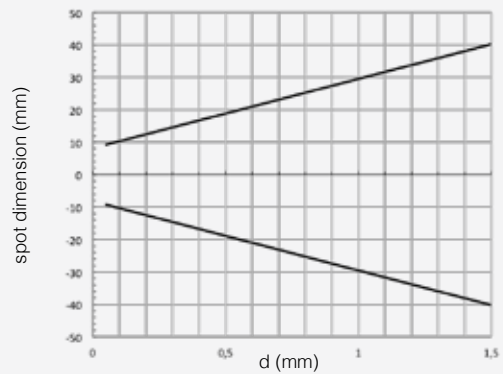
models for transparent objects

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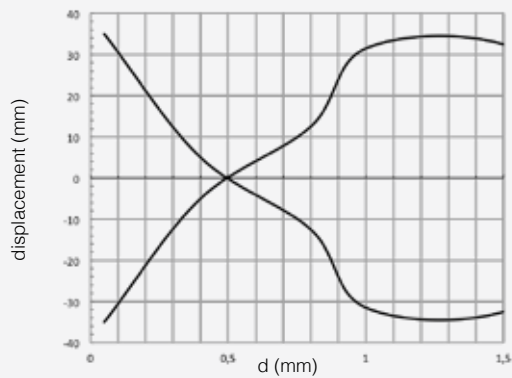
QMRG/\*\*-\* excess gain



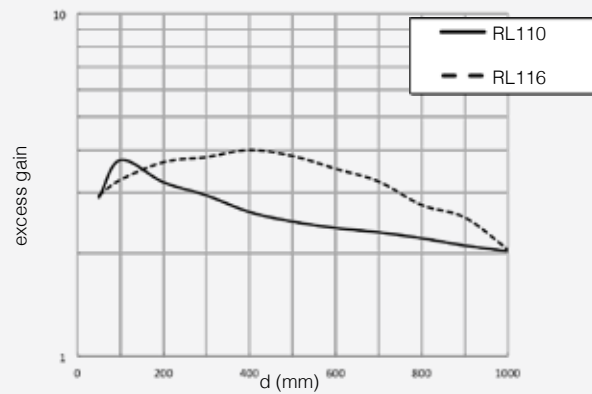
QMRG/\*\*-\* spot dimension



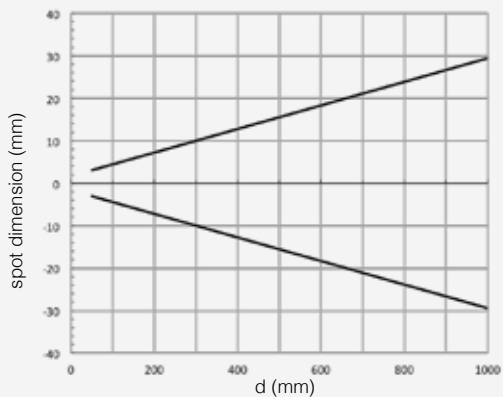
QMRG/\*\*-\*parallel displacement



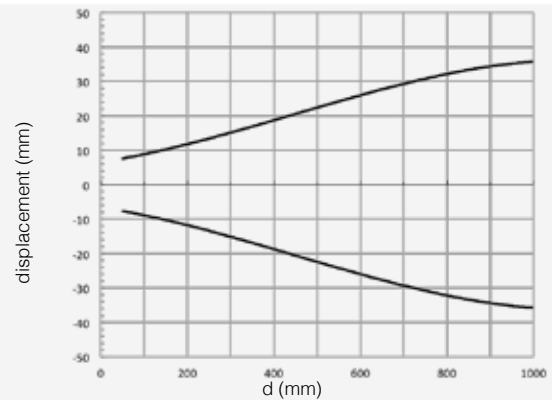
QMIG/\*\*-\* excess gain



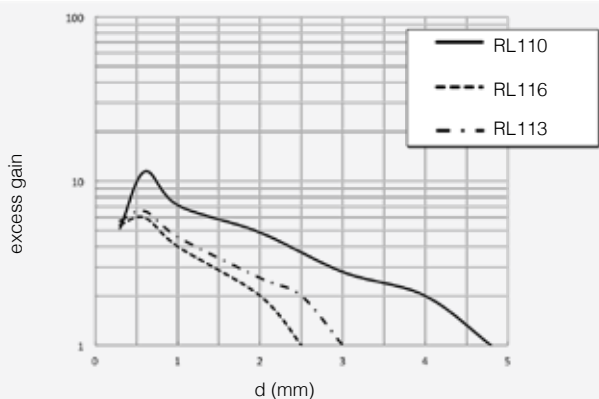
QMIG/\*\*-\* spot dimension



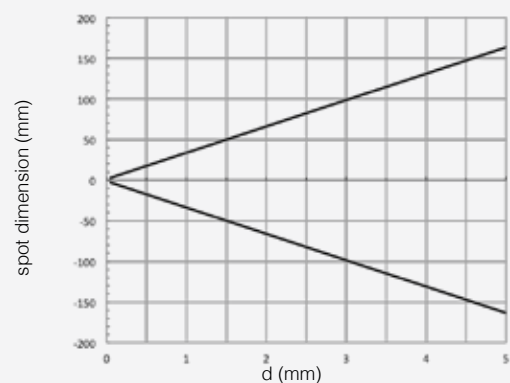
QMIG/\*\*-\*parallel displacement



QMRL/\*\*-\* excess gain



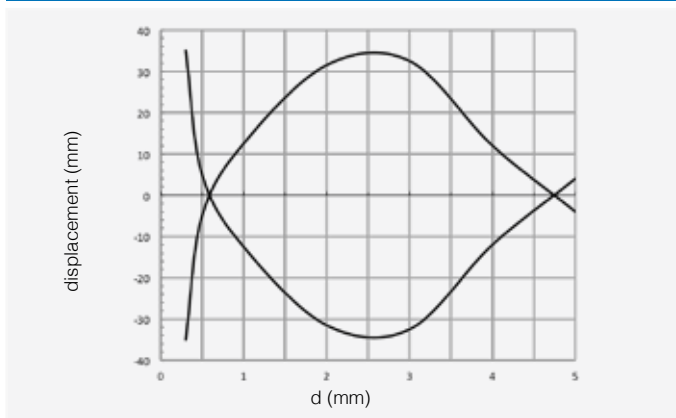
QMRL/\*\*-\* spot dimension



QM



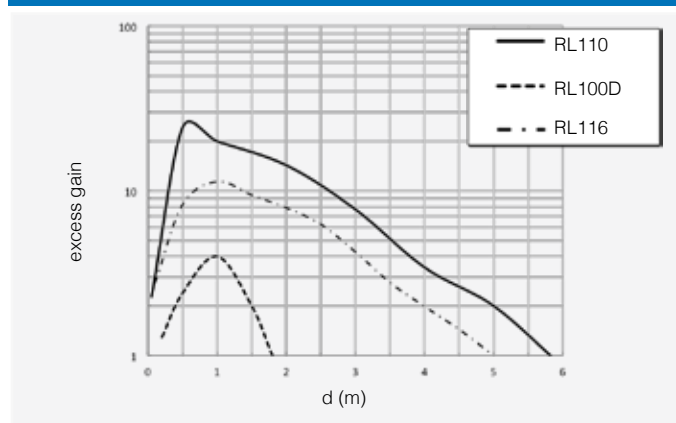
QMRL/\*\*-\*parallel displacement



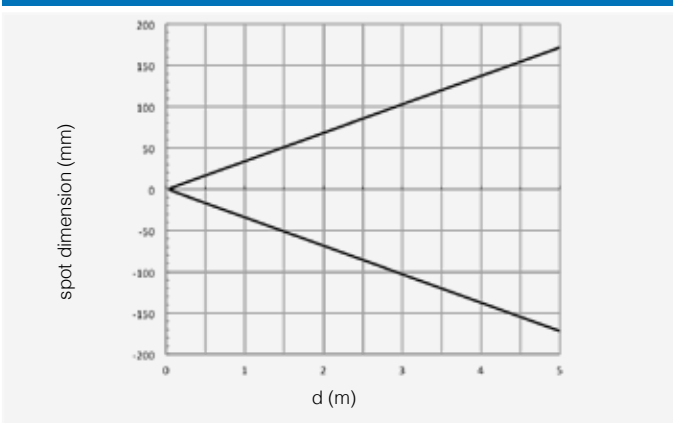
## response diagrams

retroreflective polarized models

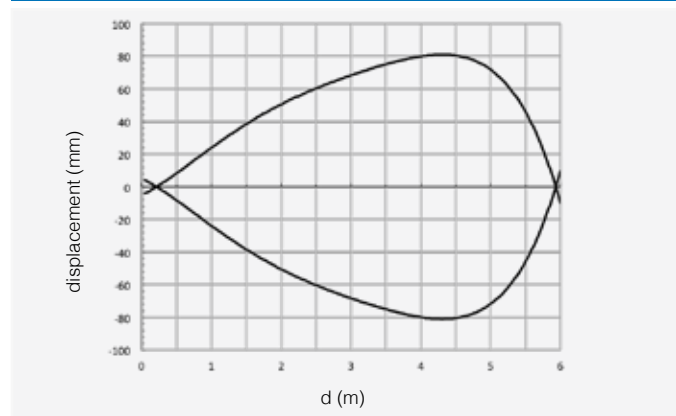
QMRN/\*\*-\* excess gain



QMRN/\*\*-\* spot dimension



QMRN/\*\*-\*parallel displacement



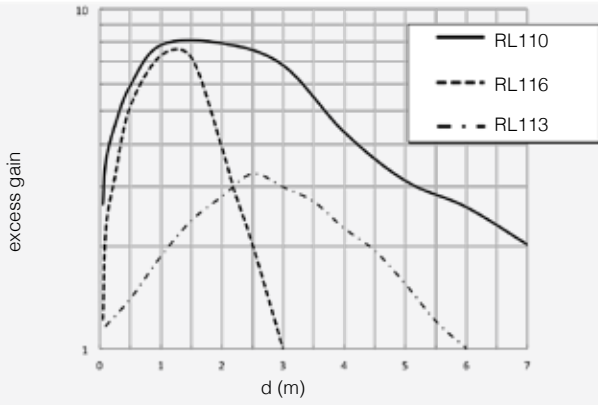


# response diagramss

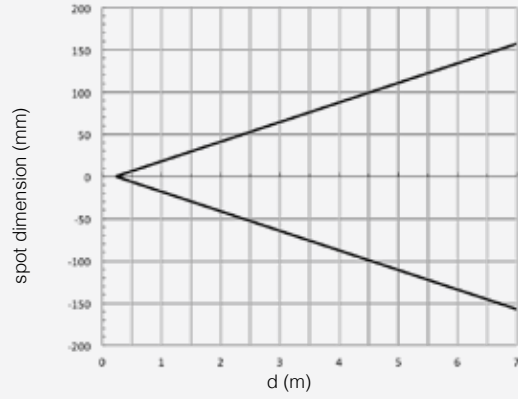
retro-reflective models

High performances  
miniaturized

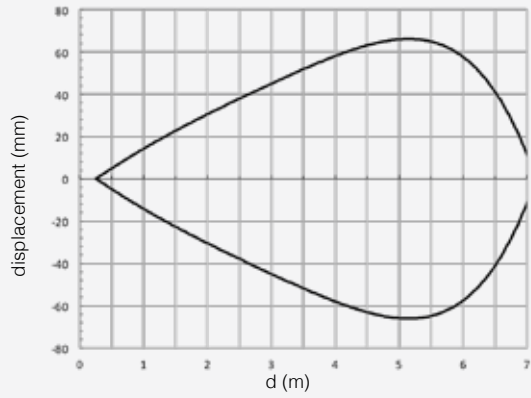
QMIC/\*\*-<sup>+</sup> excess gain



QMIC/\*\*-<sup>+</sup> spot dimension



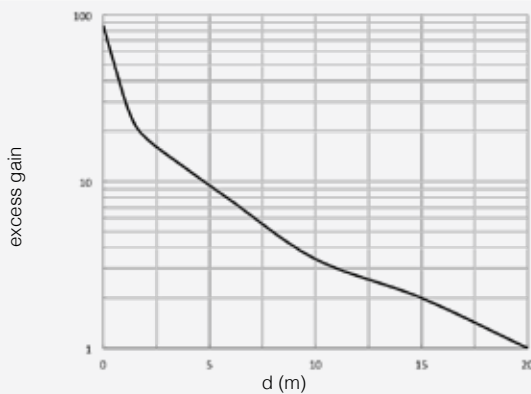
QMIC/\*\*-<sup>+</sup> parallel displacement



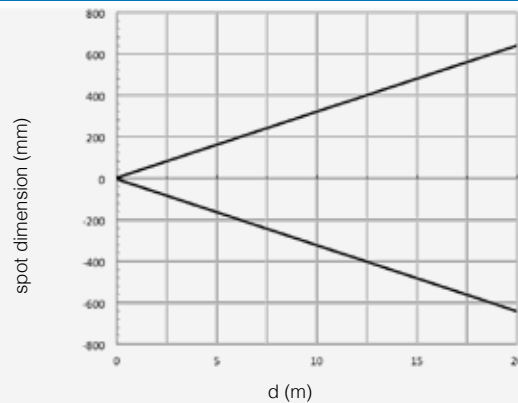
# response diagramss

through beam models

QMRHD/\*\*-<sup>+</sup> excess gain



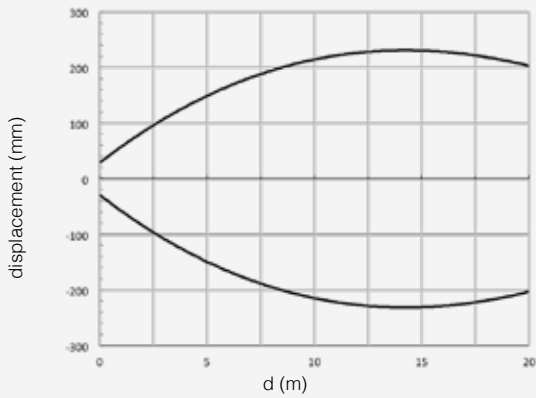
QMRHD/\*\*-<sup>+</sup> spot dimension



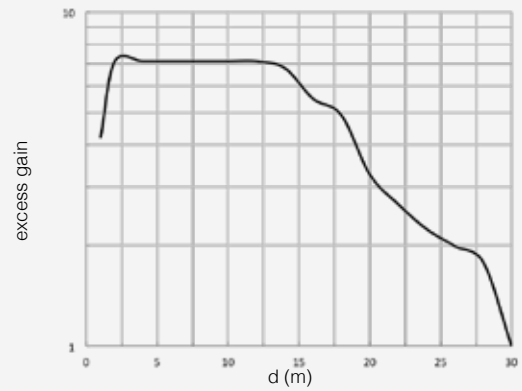
QM



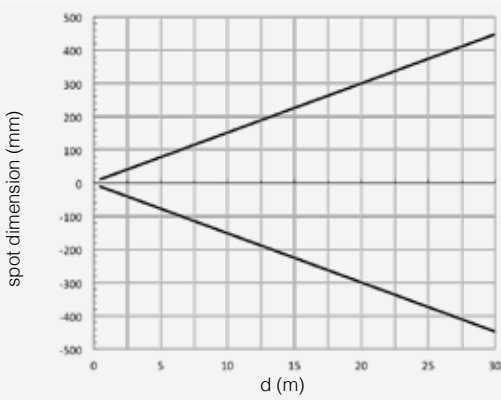
QMRHD/\*\*-\*parallel displacement



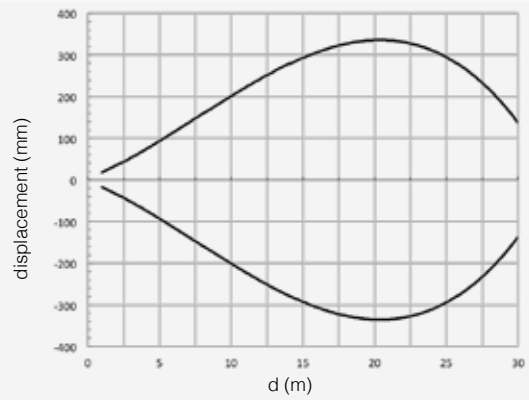
QMIHD/\*\*-\* excess gain



QMIHD/\*\*-\* spot dimension

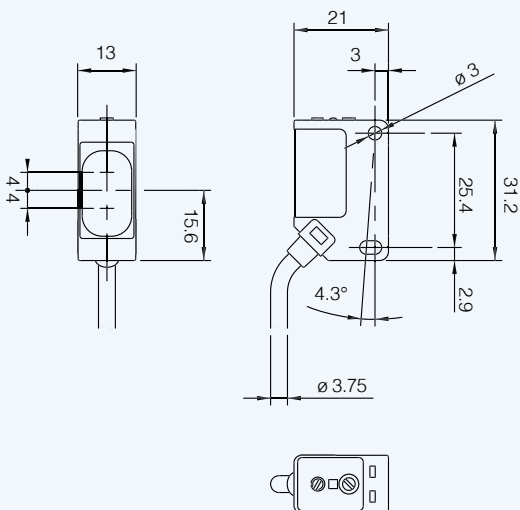


QMIHD/\*\*-\*parallel displacement

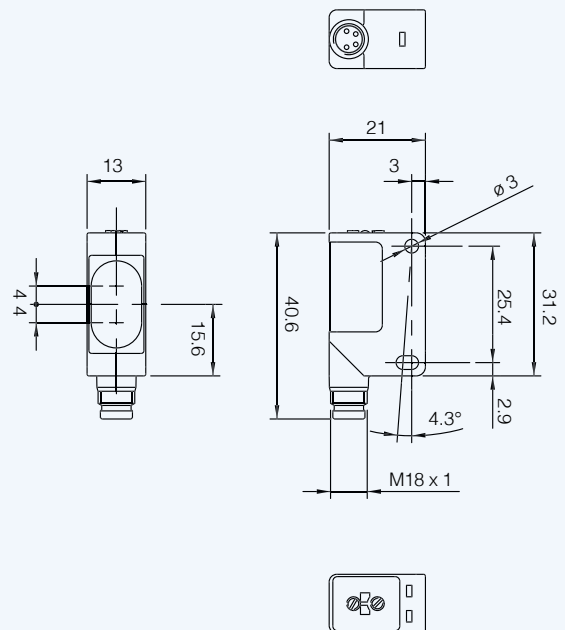


## dimensions (mm)


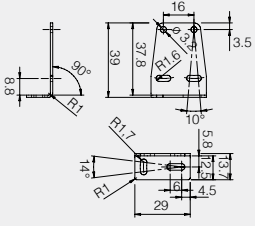

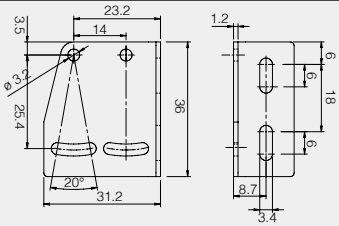

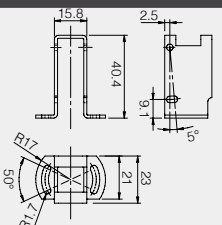

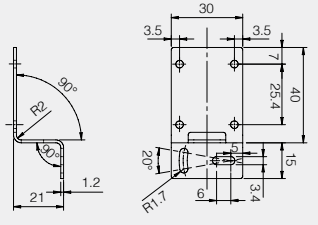

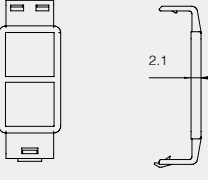

QM\*\*/\*\*-0A



QM\*\*/\*\*-0E





ST 101 / L vertical mounting bracket																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		<ul style="list-style-type: none"> <li>± 5° tip</li> <li>± 7° swivel</li> <li>stainless steel</li> </ul>																
ST 102 / L side mounting bracket																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		<ul style="list-style-type: none"> <li>± 10° tip</li> <li>stainless steel</li> </ul>																
ST 103 <sup>(1)</sup> / Vertical mounting bracket with protective cover																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM Sensors		<ul style="list-style-type: none"> <li>± 25° swivel</li> <li>stainless steel</li> </ul>																
ST 104 <sup>(1)</sup> / Horizontal mounting bracket with protective cover																			
product	to be used with	dimensions (mm)	description / installation																
	QM Sensors		<ul style="list-style-type: none"> <li>± 10° swivel</li> <li>stainless steel</li> </ul>																
STQM0 / Vertical and horizontal shutters																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM*HD Sensors		<ul style="list-style-type: none"> <li>Vertical and horizontal diaphragms (0.5 - 1.2)</li> <li>Packing units 2</li> </ul> <table border="1"> <thead> <tr> <th>dia.</th> <th>0.5</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <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> </tbody> </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																
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Min. Ø	0.8 mm	1.5 mm	2.5 mm																
STQMS <sup>(2)</sup> / Screws - nuts - lockwashers																			
prodotto	to be used with	dimensions (mm)	description / installation																
	QM Sensors	-	<ul style="list-style-type: none"> <li>20 Cross-slotted screw M3x20</li> <li>20 Hexagon nuts M3</li> <li>20 Lockwashers Ø3</li> </ul>																

<sup>(1)</sup> It can be used only for cable or pig-tail exit models <sup>(2)</sup> Components not present in standard sensors packaging  
201601\_MD\_Product Catalogue