



ML4.2 Series Subminiature Sensors

- Glass lens and antistatic coating suited for printing and paper environments
- Metal-reinforced mounting holes
- Cross-talk immune
- 4-in-1 output
- Diagnostic LEDs on front and back of housing
- Automatic LED intensity adjustment improves efficiency



Diffuse Mode with Background Suppression

See pages 442-444

Features:

- Precision sensing range cut-off
- Consistent detection of light and dark objects
- Ignores background surfaces

Sensing Ranges: 20 mm, 40 mm, 60 mm, 80 mm

Output: 4-in-1



4 output options from 1 sensor:
NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

See page 445-448 for ML4.2 Series wiring and dimensions.



Diffuse Mode with Background Suppression

Specifications		7-20 mm	7-20 mm	10-40 mm	10-40 mm
SENSING RANGE		7-20 mm	7-20 mm	10-40 mm	10-40 mm
SENSITIVITY ADJUSTMENT		No	No	No	No
BACKGROUND SUPPRESSION		from 25 mm	from 25 mm	from 50 mm	from 50 mm
BLACK/WHITE DIFFERENTIAL		≈ 1 mm*	≈ 1 mm*	≈ 3 mm*	≈ 3 mm*
MODEL NUMBER(S)		ML4.2-8-H-20-RT/40b/110/115 ML4.2-8-H-20-IR/40b/110/115	ML4.2-8-H-20-RT/40b/95/110 • ML4.2-8-H-20-IR/40b/95/110 •	ML4.2-8-H-40-RT/40b/110/115 ML4.2-8-H-40-IR/40b/110/115	ML4.2-8-H-40-RT/40b/95/110 • ML4.2-8-H-40-IR/40b/95/110
OUTPUT /128		4-in-1†	4-in-1†	4-in-1†	4-in-1†
LOAD CURRENT		100 mA max.	100 mA max.	100 mA max.	100 mA max.
VOLTAGE DROP		≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC
SHORT CIRCUIT AND OVERLOAD PROTECTION		Yes	Yes	Yes	Yes
REVERSE POLARITY PROTECTION		Yes	Yes	Yes	Yes
SUPPLY VOLTAGE		10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
VOLTAGE RIPPLE		10%	10%	10%	10%
LED(s)		Yes (2)†	Yes (2)†	Yes (2)†	Yes (2)†
CURRENT CONSUMPTION		≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
OPERATING MODE		Light on/dark on	Light on/dark on	Light on/dark on	Light on/dark on
RESPONSE TIME		≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms
SWITCHING FREQUENCY		1 kHz	1 kHz	1 kHz	1 kHz
STANDARDS		EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
PROTECTION (IEC)		IP67	IP67	IP67	IP67
LIGHT SPOT DIAMETER		≈ 1.5 mm at a range of 25 mm	≈ 1.5 mm at a range of 25 mm	≈ 3 mm at a range of 40 mm	≈ 3mm at a range of 40 mm
LIGHT BEAM ANGLE		≈ 5°	≈ 5°	≈ 5°	≈ 5°
LIGHT SOURCE <i>-RT</i>		Visible red LED 660 nm	Visible red LED 660 nm	Visible red LED 660 nm	Visible red LED 660 nm
<i>-IR</i>		Infrared LED 880 nm	Infrared LED 880 nm	Infrared LED 880 nm	Infrared LED 880 nm
AMBIENT LIGHT RESISTANCE		≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux
TEMPERATURE RANGE <i>WORKING</i>		-4 °F to +140 °F	-4 °F to +140 °F	-4 °F to +140 °F	-4 °F to +140 °F
<i>STORAGE</i>		-4 °F to +167 °F	-4 °F to +167 °F	-4 °F to +167 °F	-4 °F to +167 °F
HOUSING MATERIAL		ABS GV5	ABS GV5	ABS GV5	ABS GV5
<i>LENS</i>		Glass	Glass	Glass	Glass
WEIGHT		1.5 oz	0.4 oz	1.5 oz	0.4 oz
APPROVALS					
ELECTRICAL CONNECTION		2-meter cable, PUR covered, 4-conductor, #24 AWG	Quick disconnect type V31	2-meter cable, PUR covered, 4-conductor, #24 AWG	Quick disconnect type V31
ADDITIONAL DATA		See pages 445-448			

*Difference in sensing range between 90% white test card and 6% black test card.

†See dimensional drawings for LED functions.

‡NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed














⚡ Stocked item

• Typical delivery 4 weeks or less

Consult factory for all other models



Diffuse Mode with Background Suppression

Specifications		10-60 mm	10-60 mm	10-80 mm	10-80 mm
SENSING RANGE		10-60 mm	10-60 mm	10-80 mm	10-80 mm
SENSITIVITY ADJUSTMENT		No	No	No	No
BACKGROUND SUPPRESSION		from 80 mm	from 80 mm	from 100 mm	from 100 mm
BLACK/WHITE DIFFERENTIAL		≈ 10mm*	≈ 10 mm*	≈ 15 mm*	≈ 15 mm*
MODEL NUMBER(S)		ML4.2-8-H-60-RT/40b/110/115 ML4.2-8-H-60-IR/40b/110/115	ML4.2-8-H-60-RT/40b/95/110 ML4.2-8-H-60-IR/40b/95/110	ML4.2-8-H-80-RT/40b/110/115 ML4.2-8-H-80-IR/40b/110/115	ML4.2-8-H-80-RT/40b/95/110 ML4.2-8-H-80-IR/40b/95/110
OUTPUT  /128		4-in-1†	4-in-1†	4-in-1†	4-in-1†
LOAD CURRENT		100 mA max.	100 mA max.	100 mA max.	100 mA max.
VOLTAGE DROP		≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC
SHORT CIRCUIT AND OVERLOAD PROTECTION		Yes	Yes	Yes	Yes
REVERSE POLARITY PROTECTION		Yes	Yes	Yes	Yes
SUPPLY VOLTAGE		10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
VOLTAGE RIPPLE		10%	10%	10%	10%
LED(s)		Yes (2)†	Yes (2)†	Yes (2)†	Yes (2)†
CURRENT CONSUMPTION		≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
OPERATING MODE		Light on/dark on	Light on/dark on	Light on/dark on	Light on/dark on
RESPONSE TIME		≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms
SWITCHING FREQUENCY		1 kHz	1 kHz	1 kHz	1 kHz
STANDARDS		EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
PROTECTION (IEC)		IP67	IP67	IP67	IP67
LIGHT SPOT DIAMETER		≈ 4 mm at a range of 60 mm	≈ 4 mm at a range of 60 mm	≈ 6 mm at a range of 80 mm	≈ 6 mm at a range of 80 mm
LIGHT BEAM ANGLE		≈ 5°	≈ 5°	≈ 5°	≈ 5°
LIGHT SOURCE		-RT Visible red LED 660 nm -IR Infrared LED 880 nm	Visible red LED 660 nm Infrared LED 880 nm	Visible red LED 660 nm Infrared LED 880 nm	Visible red LED 660 nm Infrared LED 880 nm
AMBIENT LIGHT RESISTANCE		≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux
TEMPERATURE RANGE		WORKING -4 °F to +140 °F STORAGE -4 °F to +167 °F	-4 °F to +140 °F -4 °F to +167 °F	-4 °F to +140 °F -4 °F to +167 °F	-4 °F to +140 °F -4 °F to +167 °F
HOUSING MATERIAL		ABS GV5	ABS GV5	ABS GV5	ABS GV5
LENS		Glass	Glass	Glass	Glass
WEIGHT		1.5 oz	0.4 oz	1.5 oz	0.4 oz
APPROVALS		 	 	 	 
ELECTRICAL CONNECTION		 2-meter cable, PUR covered, 4-conductor, #24 AWG	 Quick disconnect type V31	 2-meter cable, PUR covered, 4-conductor, #24 AWG	 Quick disconnect type V31
ADDITIONAL DATA		See pages 445-448			

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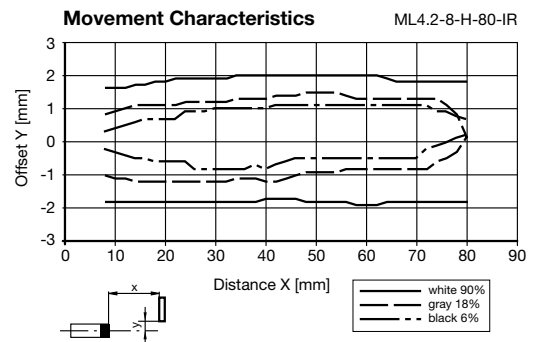
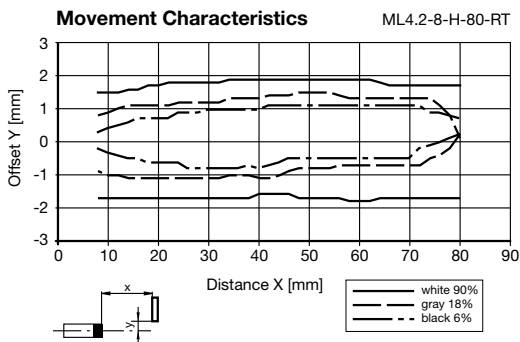
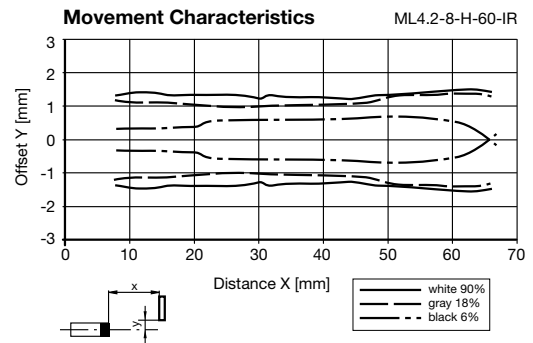
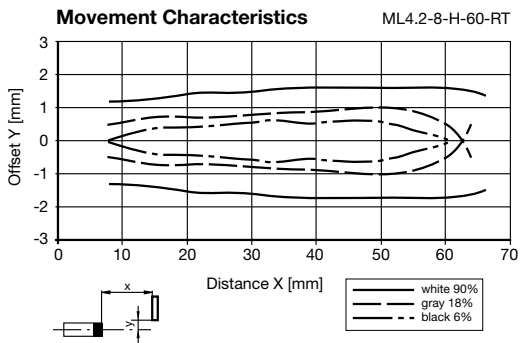
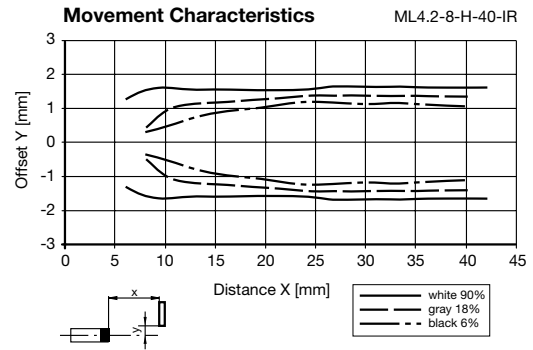
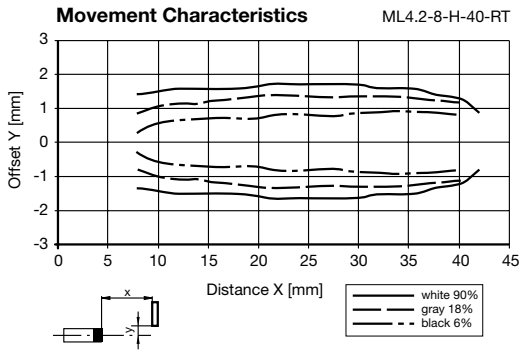
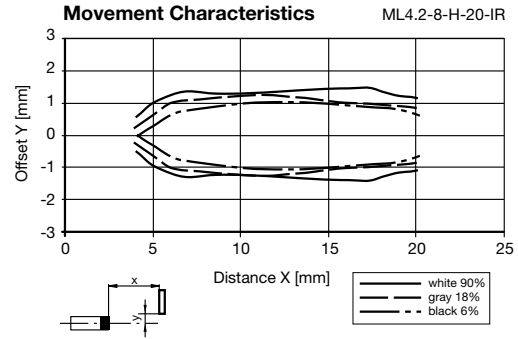
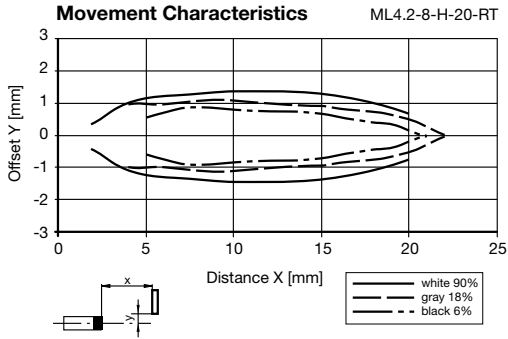
Consult factory for all other models



Diffuse Mode with Background Suppression

Sensing Characteristics

Photoelectric ML4.2 Series Subminiature



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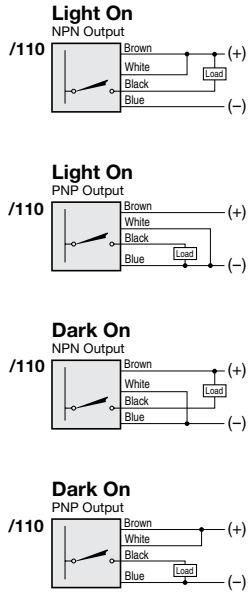


Wiring Diagrams

DC



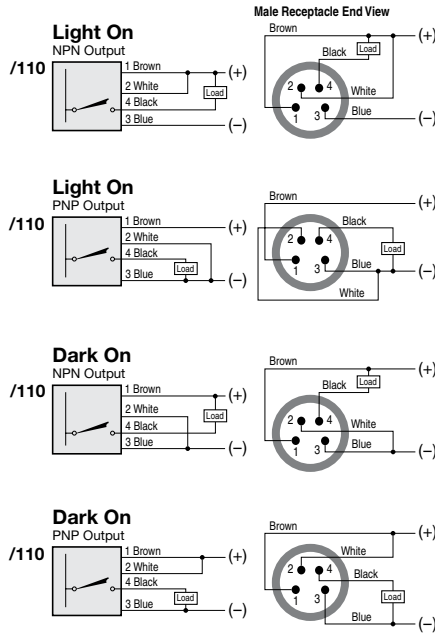
Cable Connection



Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V31 Type



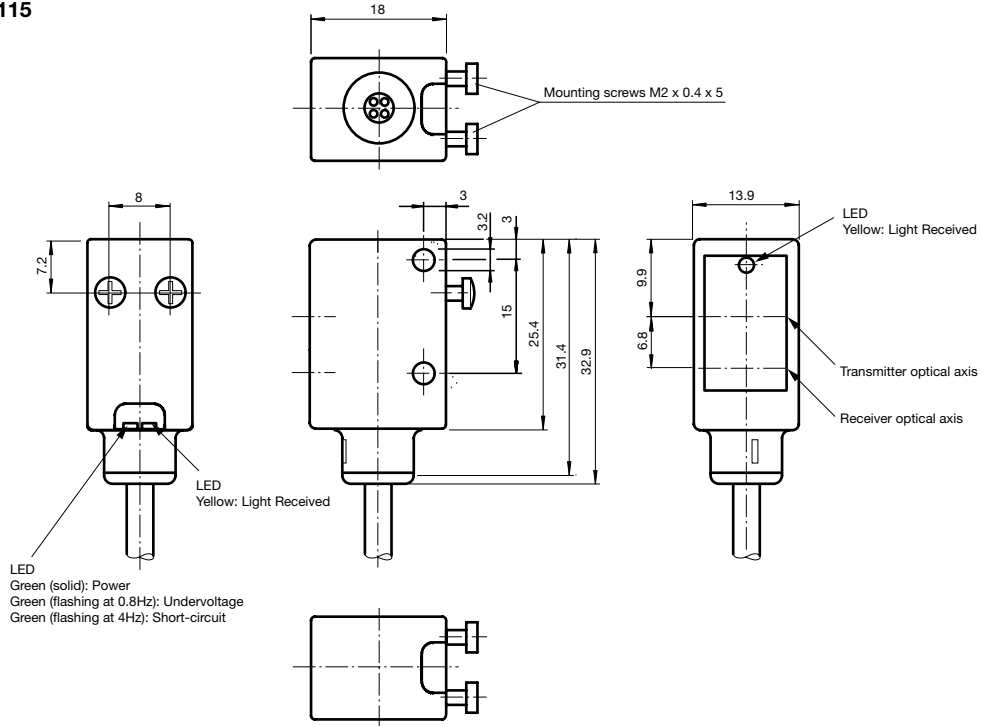
4-in-1 Output

The 4-in-1 output automatically detects the connected load, so the output either sources or sinks current depending on the load. A second wire connected to either side of the supply selects normally open or normally closed mode. A single sensor can operate as NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed.

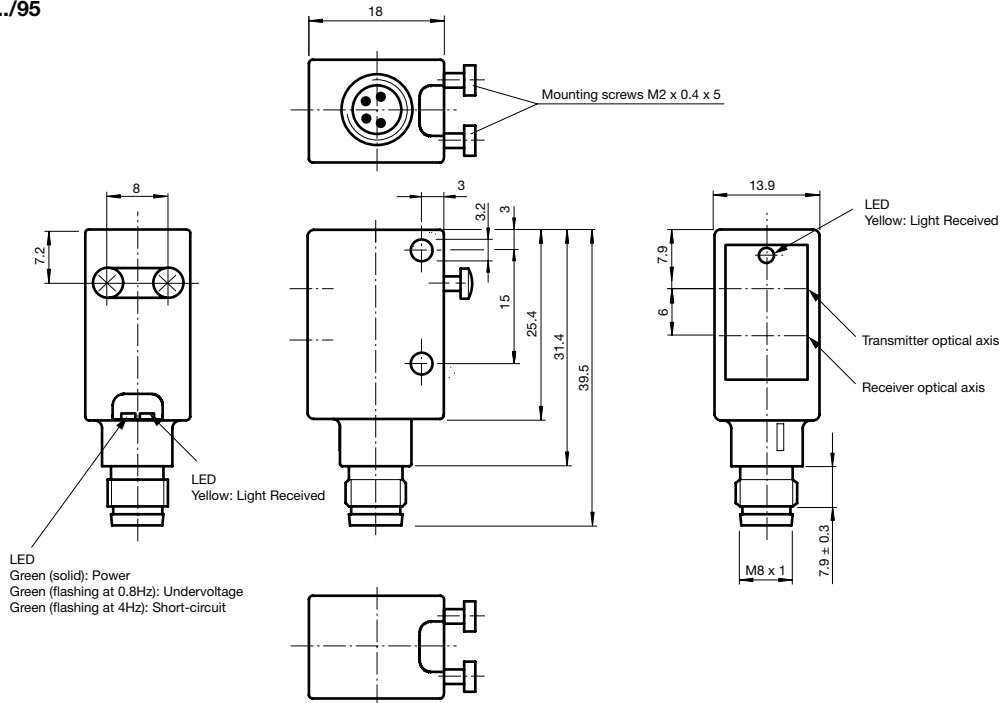


Dimensions (mm)

ML4.2.../115



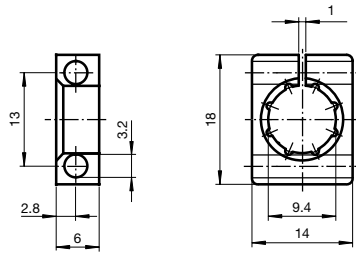
ML4.2.../95



Accessories

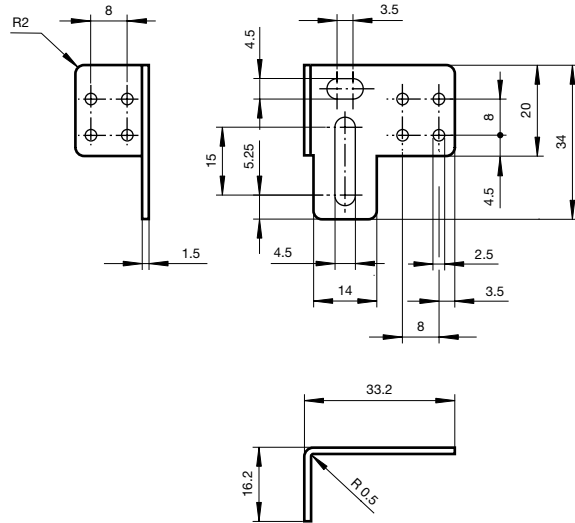
(Dimensions in mm)

Mounting Collar Model OMH-4.1



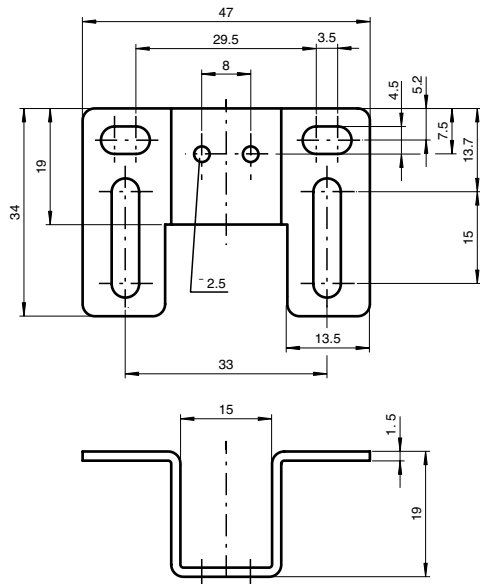
Material: Plastic

Right Angle Mounting Bracket Model OMH-ML6



Material: Nickel-plated stainless steel

Shroud Mounting Bracket Model OMH-ML6-U



Material: Nickel-plated stainless steel



See pages
803-854 for
cordsets



See pages 865-872
for additional
accessories

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