



## ML6 Series Subminiature Sensors

- All-purpose miniature background suppression
- 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 450-452

**Features:**

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

**Sensing Ranges:** 20 mm, 40 mm, 60 mm, 80 mm, 120 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 453-456 for ML6 Series wiring and dimensions.



## Diffuse Mode with Background Suppression

Specifications		7-20 mm	10-40 mm	10-60 mm	10-80 mm
<b>SENSING RANGE</b>		7-20 mm	10-40 mm	10-60 mm	10-80 mm
<b>SENSITIVITY ADJUSTMENT</b>		No	No	No	No
<b>BACKGROUND SUPPRESSION</b>		from 25 mm	from 50 mm	from 80 mm	from 100 mm
<b>BLACK/WHITE DIFFERENTIAL</b>		≈ 1 mm*	≈ 3 mm*	≈ 10 mm*	≈ 15 mm*
<b>MODEL NUMBER(S)</b>		ML6-8-H-20-RT/59/115/136 • ML6-8-H-20-RT/59/95/136	ML6-8-H-40-RT/59/115/136 • ML6-8-H-40-RT/59/95/136 ⚡	ML6-8-H-60-RT/59/115/136 ⚡ ML6-8-H-60-RT/59/95/136 •	ML6-8-H-80-RT/59/115/136 ⚡ ML6-8-H-80-RT/59/95/136
<b>OUTPUT</b>	/136	4-in-1†	4-in-1†	4-in-1†	4-in-1†
<b>LOAD CURRENT</b>		100 mA max.	100 mA max.	100 mA max.	100 mA max.
<b>VOLTAGE DROP</b>		≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC	≤ 2.5 VDC
<b>SHORT CIRCUIT AND OVERLOAD PROTECTION</b>		Yes	Yes	Yes	Yes
<b>REVERSE POLARITY PROTECTION</b>		Yes	Yes	Yes	Yes
<b>SUPPLY VOLTAGE</b>		10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
<b>VOLTAGE RIPPLE</b>		10%	10%	10%	10%
<b>LED(s)</b>		Yes (2)†	Yes (2)†	Yes (2)†	Yes (2)†
<b>CURRENT CONSUMPTION</b>		≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA
<b>OPERATING MODE</b>		Light on/dark on	Light on/dark on	Light on/dark on	Light on/dark on
<b>RESPONSE TIME</b>		≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms	≤ 0.5 ms
<b>SWITCHING FREQUENCY</b>		1 kHz	1 kHz	1 kHz	1 kHz
<b>STANDARDS</b>		EN 60947-5-2	EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
<b>PROTECTION (IEC)</b>		IP67	IP67	IP67	IP67
<b>LIGHT SPOT DIAMETER</b>		≈ 1.5 mm at a range of 20 mm	≈ 3 mm at a range of 40 mm	≈ 4 mm at a range of 60 mm	≈ 6 mm at a range of 80 mm
<b>LIGHT BEAM ANGLE</b>		≈ 5°	≈ 5°	≈ 5°	≈ 5°
<b>LIGHT SOURCE</b>		Visible red LED 660 nm	Visible red LED 660 nm	Visible red LED 660 nm	Visible red LED 660 nm
<b>AMBIENT LIGHT RESISTANCE</b>		≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux	≤ 40,000 lux
<b>TEMPERATURE RANGE</b>	<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
<b>HOUSING MATERIAL</b>		ABS GV5	ABS GV5	ABS GV5	ABS GV5
	<i>LENS</i>	Plastic	Plastic	Plastic	Plastic
<b>WEIGHT</b>		0.4 oz (/95), 1.5 oz (/115)	0.4 oz (/95), 1.5 oz (/115)	0.4 oz (/95), 1.5 oz (/115)	0.4 oz (/95), 1.5 oz (/115)
<b>APPROVALS</b>					
<b>ELECTRICAL CONNECTION</b>	/115	2-meter cable, PUR covered, 4-conductor, #24 AWG	2-meter cable, PUR covered, 4-conductor, #24 AWG	2-meter cable, PUR covered, 4-conductor, #24 AWG	2-meter cable, PUR covered, 4-conductor, #24 AWG
	/95	Quick disconnect type V31	Quick disconnect type V31	Quick disconnect type V31	Quick disconnect type V31
<b>ADDITIONAL DATA</b>	<b>See pages 453-456</b>				

\*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	
<b>SENSING RANGE</b>	<b>15-120 mm</b>
<b>SENSITIVITY ADJUSTMENT</b>	Yes (30-120 mm)
<b>BLACK/WHITE DIFFERENTIAL</b>	< 10%*
<b>MODEL NUMBER(S)</b>	ML6-8-H-120-RT/59/65a/115/136 • ML6-8-H-120-RT/59/65a/95/136 ⚡
<b>OUTPUT</b>  /136	4-in-1†
<i>LOAD CURRENT</i>	100 mA max.
<i>VOLTAGE DROP</i>	≤ 2.5 VDC
<i>SHORT CIRCUIT AND OVERLOAD PROTECTION</i>	Yes
<i>REVERSE POLARITY PROTECTION</i>	Yes
<b>SUPPLY VOLTAGE</b>	10-30 VDC
<b>VOLTAGE RIPPLE</b>	10%
<b>LED(s)</b>	Yes (2)†
<b>CURRENT CONSUMPTION</b>	≤ 25 mA
<b>OPERATING MODE</b>	Light on/dark on
<b>RESPONSE TIME</b>	≤ 0.5 ms
<b>SWITCHING FREQUENCY</b>	1 kHz
<b>STANDARDS</b>	EN 60947-5-2
<b>PROTECTION (IEC)</b>	IP67
<b>LIGHT SPOT DIAMETER</b>	≈ 5 mm at a range of 120 mm
<b>LIGHT BEAM ANGLE</b>	≈ 5°
<b>LIGHT SOURCE</b>	Visible red LED 660 nm
<b>AMBIENT LIGHT RESISTANCE</b>	≤ 40,000 lux
<b>TEMPERATURE RANGE</b>	<i>WORKING</i> -4 °F to +140 °F <i>STORAGE</i> -4 °F to +167 °F
<b>HOUSING MATERIAL</b>	ABS GV5
<i>LENS</i>	Plastic
<b>WEIGHT</b>	0.4 oz (/95), 1.5 oz (/115)
<b>APPROVALS</b>	
<b>ELECTRICAL CONNECTION</b>	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">/115</div>  <div>2-meter cable, PUR covered, 4-conductor, #24 AWG</div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;">/95</div>  <div>Quick disconnect type V31</div> </div>
<b>ADDITIONAL DATA</b>	<b>See pages 453-456</b>

\*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

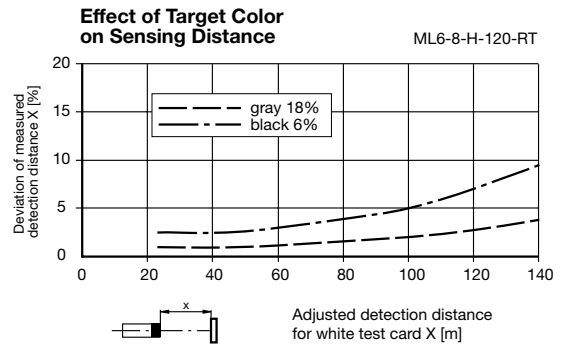
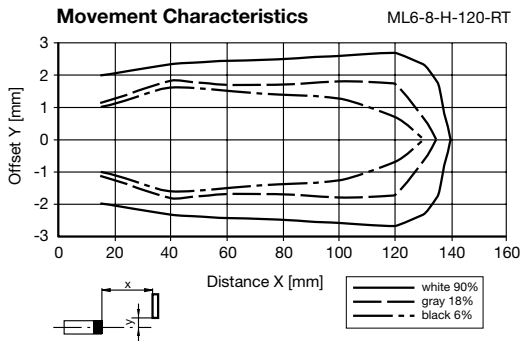
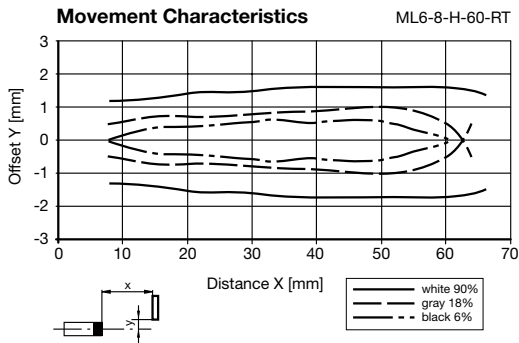
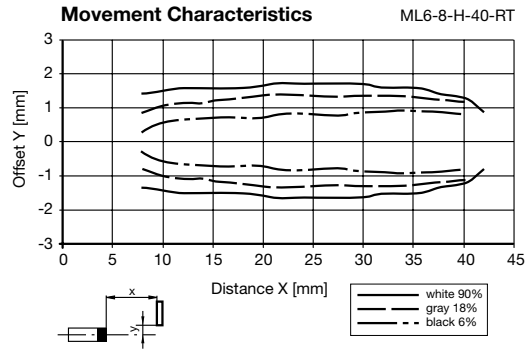
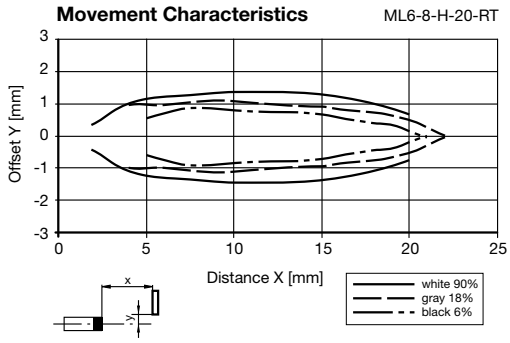
- Typical delivery 4 weeks or less  
Consult factory for all other models



## Diffuse Mode with Background Suppression

### Sensing Characteristics

Photoelectric ML6 Series Subminiature

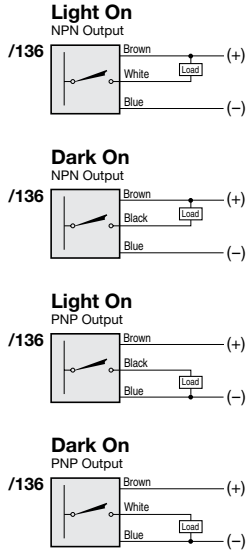


## Wiring Diagrams

DC



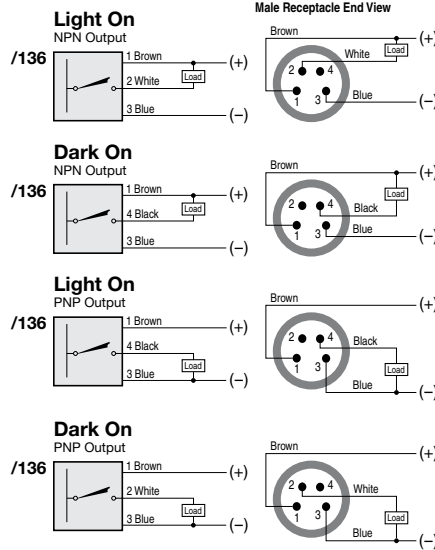
### Cable Connection



### Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V31 Type



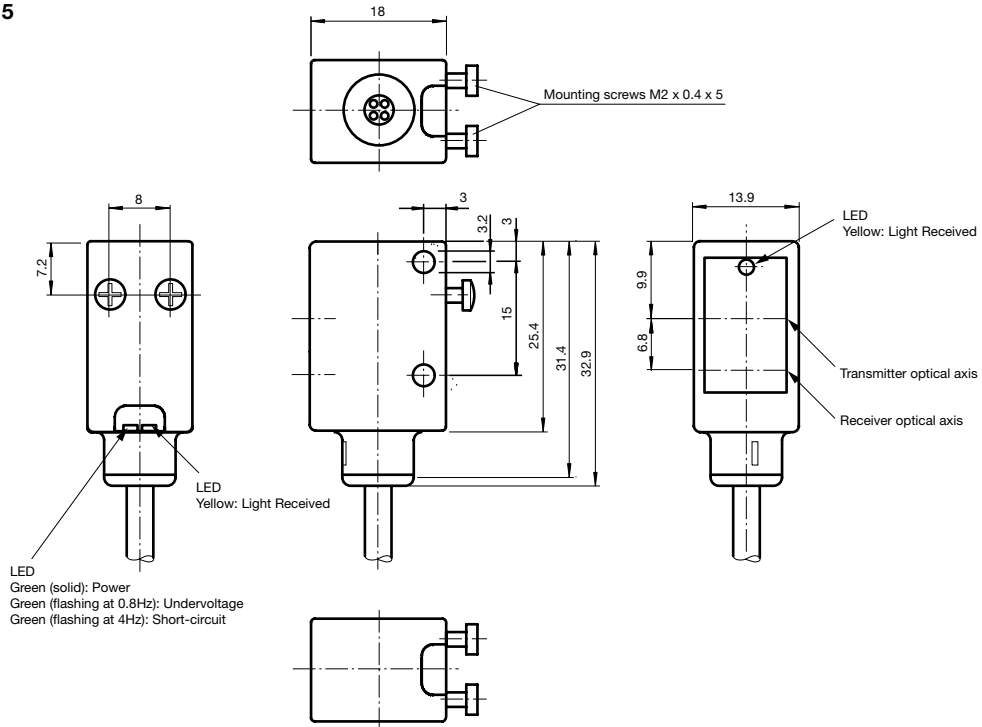
## 4-in-1 Output

The 4-in-1 output offers one normally open and one normally closed output, both of which automatically detect the connected load, so the outputs either source or sink current depending on the load. A single sensor can operate as NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed.

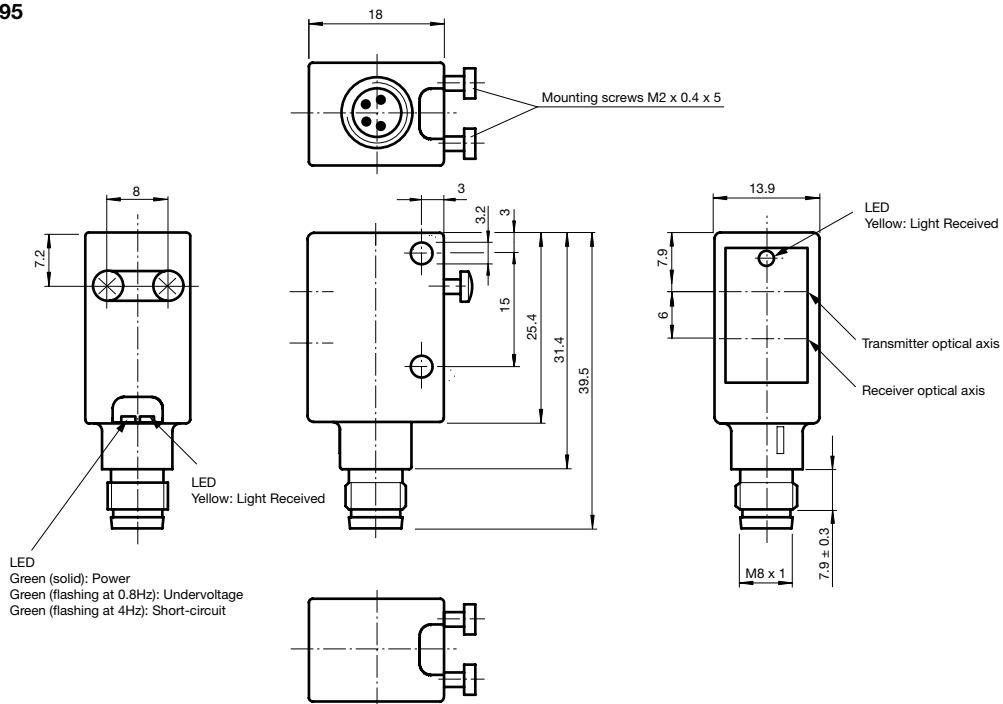


## Dimensions (mm)

**ML6.../115**

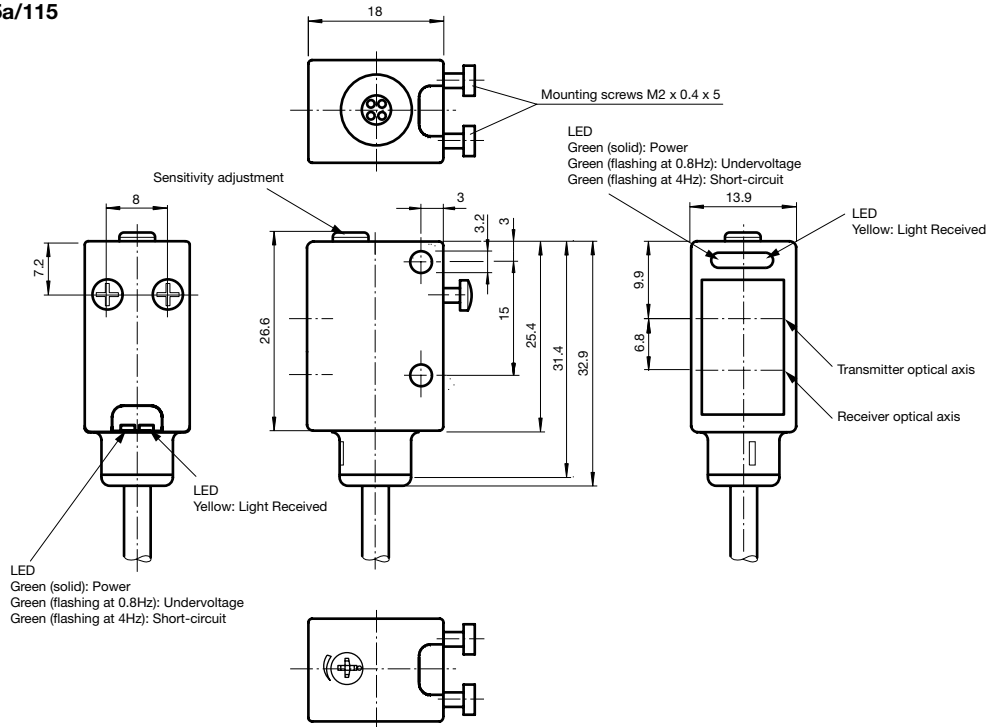


**ML6.../95**

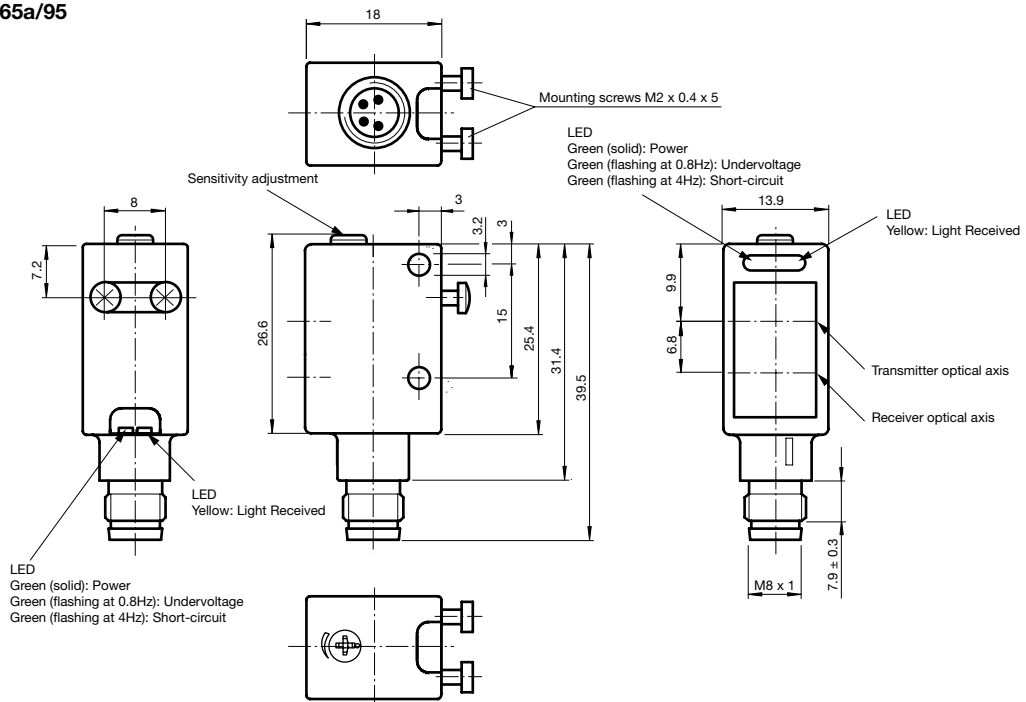


Dimensions (mm)

ML6.../65a/115



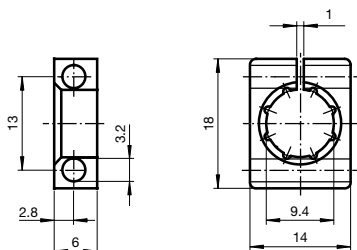
ML6.../65a/95



## Accessories

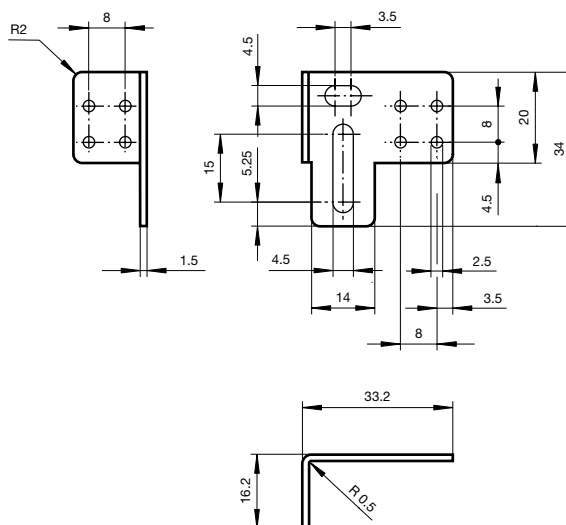
(Dimensions in mm)

### Mounting Collar Model OMH-4.1



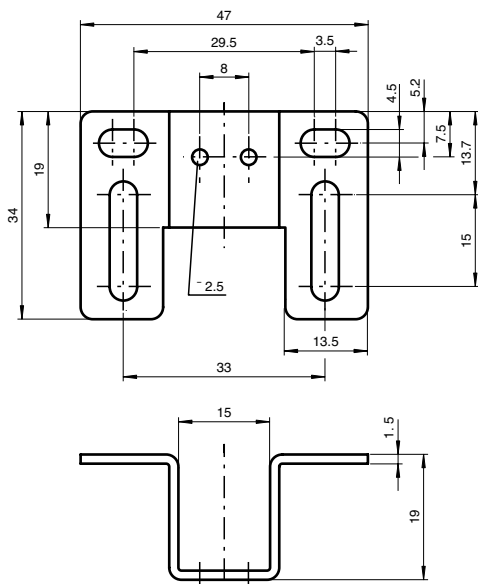
Material: Plastic

### 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