



ML3 Series Ultraminiature Sensors

- Self-contained ultraminiature sensors
- Wide range of aperture attachments
- Visible red and infrared light sources
- Vertical and horizontal styles



Convergent Beam Mode

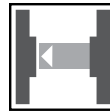
See pages 432-434

Features:

- Fixed sensing range
- Visible red or infrared LED light sources

Sensing Range: 30 mm

Outputs: NPN, PNP



Thru-Beam Mode

See pages 435-438

Features:

- Long-range scanning
- Separate transmitter and receiver housing

Sensing Range: 1.5 m



Outputs: NPN, PNP

See pages 439-440 for ML3 Series wiring and dimensions.



Convergent Beam Mode

Photoelectric ML3 Series Ultraminiature

Specifications		
SENSING RANGE	30 mm	30 mm
SENSITIVITY ADJUSTMENT	Yes	Yes
DIRECTIONAL MOUNTING	Vertical	Vertical
MODEL NUMBER(S)	ML3-8-C-30-RT/25/115/148 ⚡ ML3-8-C-30-RT/25/115/149	ML3-8-C-30-IR/25/115/148 —
OUTPUT: Transistor, /148 Open collector /149	1 NPN 1 PNP	1 NPN —
LOAD CURRENT	80 mA max.	80 mA max.
VOLTAGE DROP	1 VDC	1 VDC
SHORT CIRCUIT AND OVERLOAD PROTECTION	No	No
REVERSE POLARITY PROTECTION	Yes	Yes
SUPPLY VOLTAGE	10.8-26.4 VDC	10.8-26.4 VDC
VOLTAGE RIPPLE	10% max.	10% max.
LED(s)	Yes (1)*	Yes (1)*
CURRENT CONSUMPTION	≤ 20 mA	≤ 20 mA
OPERATING MODE	Light on	Light on
RESPONSE TIME	≤ 1 ms	≤ 1 ms
SWITCHING FREQUENCY	500 Hz	500 Hz
PROTECTION (IEC)	IP40	IP40
LIGHT SOURCE	Visible red LED	Infrared LED
AMBIENT LIGHT RESISTANCE	≤ 10,000 lux	≤ 10,000 lux
TEMPERATURE RANGE	WORKING: -4 °F to +122 °F STORAGE: -40 °F to +158 °F	-4 °F to +122 °F -40 °F to +158 °F
HOUSING MATERIAL	Polycarbonate	Polycarbonate
LENS	Polycarbonate	Polycarbonate
WEIGHT	≈ 0.7 oz	≈ 0.7 oz
STANDARDS	EN 60947-5-2	EN 60947-5-2
APPROVALS	CE	CE
ELECTRICAL CONNECTION	 2-meter cable, PVC covered, 3-conductor, #28 AWG	 2-meter cable, PVC covered, 3-conductor, #28 AWG
ADDITIONAL DATA	See pages 439-440	

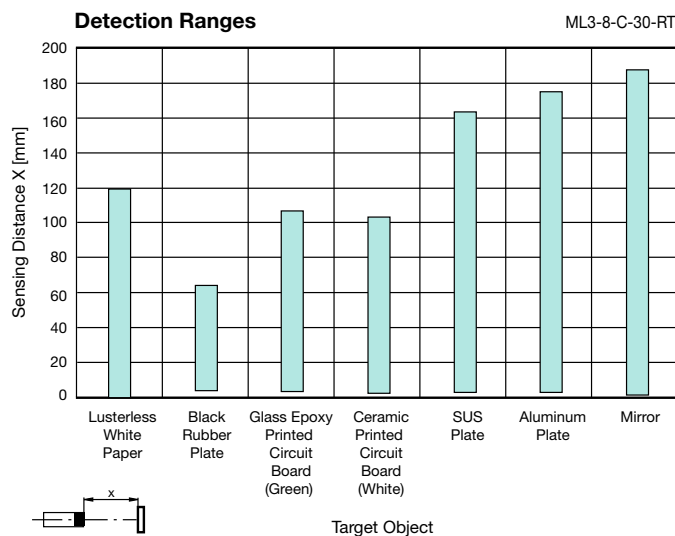
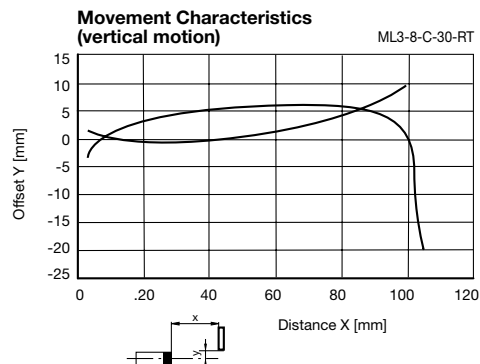
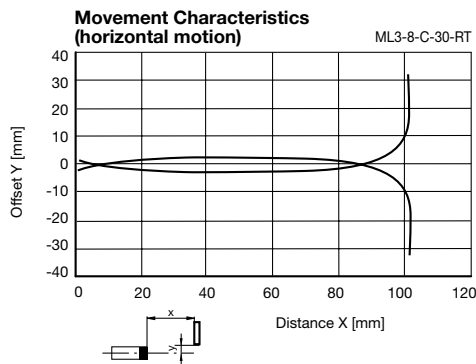
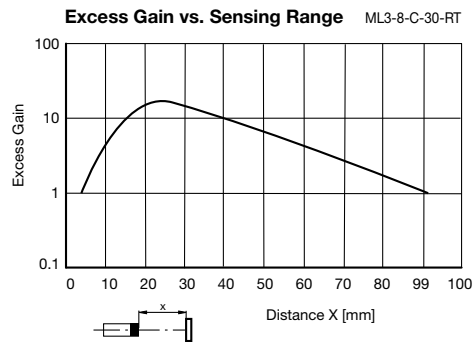
- ⚡ Stocked item
- Typical delivery 4 weeks or less
Consult factory for all other models

*See dimensional drawings for LED functions.



Convergent Beam Mode

Sensing Characteristics

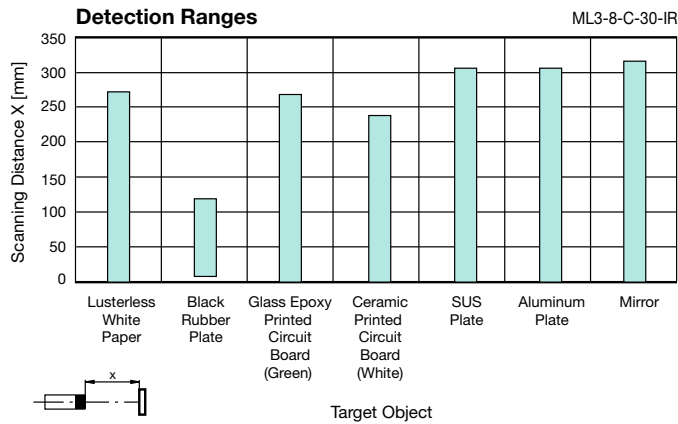
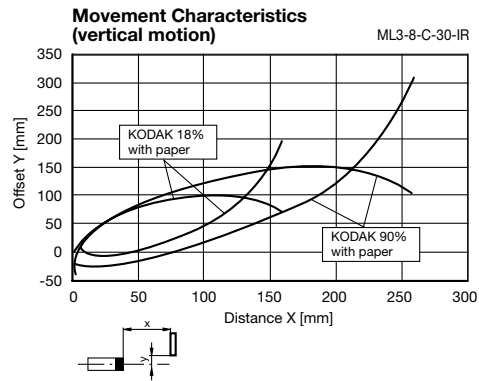
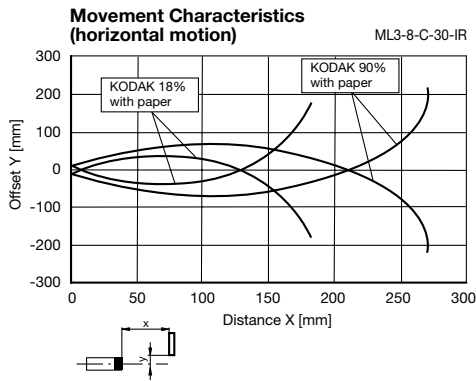
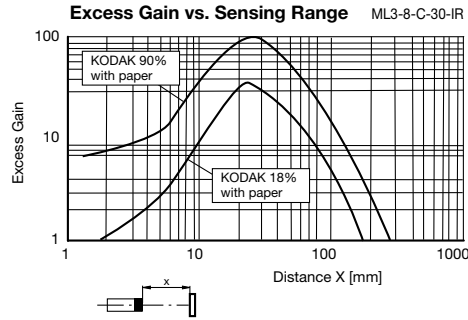




Convergent Beam Mode




Sensing Characteristics

Photoelectric ML3 Series Ultraminiature



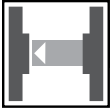


Thru-Beam Mode

Specifications				
SENSING RANGE		0-1.5 m	0-1.5 m	0-1.5 m
SENSITIVITY ADJUSTMENT		No	No	No
DIRECTIONAL MOUNTING		Horizontal	Vertical	Vertical
MODEL NUMBER(S)	Transmitter	M31/115	M3/115 ⚡	M3/115 ⚡
	Receiver	MV31/59/115/148	MV3/59/115/148 ⚡	MV3/25/115/148
		—	MV3/59/115/149	—
OUTPUT: Transistor, Open collector				
		/148	1 NPN	1 NPN
		/149	—	1 PNP
LOAD CURRENT		100 mA max.	100 mA max.	100 mA max.
VOLTAGE DROP		1 VDC	1 VDC	1 VDC
SHORT CIRCUIT AND OVERLOAD PROTECTION		No	No	No
REVERSE POLARITY PROTECTION		Yes	Yes	Yes
SUPPLY VOLTAGE		10.8-26.4 VDC	10.8-26.4 VDC	10.8-26.4 VDC
VOLTAGE RIPPLE		10% max.	10% max.	10% max.
LED(s)		Yes (1)*	Yes (1)*	Yes (1)*
CURRENT CONSUMPTION		≤ 40 mA	≤ 40 mA	≤ 40 mA
OPERATING MODE		Dark on	Dark on	Light on
RESPONSE TIME		≤ 1 ms	≤ 1 ms	≤ 1 ms
SWITCHING FREQUENCY		500 Hz	500 Hz	500 Hz
PROTECTION (IEC)		IP40	IP40	IP40
LIGHT SOURCE		Infrared LED	Infrared LED	Infrared LED
AMBIENT LIGHT RESISTANCE		≤ 10,000 lux	≤ 10,000 lux	≤ 10,000 lux
TEMPERATURE RANGE	WORKING	-4 °F to +122 °F	-4 °F to +122 °F	-4 °F to +122 °F
	STORAGE	-40 °F to +158 °F	-40 °F to +158 °F	-40 °F to +158 °F
HOUSING MATERIAL		Polycarbonate	Polycarbonate	Polycarbonate
LENS		Polycarbonate	Polycarbonate	Polycarbonate
WEIGHT		≈ 0.7 oz (per housing)	≈ 0.7 oz (per housing)	≈ 0.7 oz (per housing)
STANDARDS		EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
APPROVALS		CE	CE	CE
ELECTRICAL CONNECTION		 2-meter cable, PVC covered, 3-conductor, #28 AWG	 2-meter cable, PVC covered, 3-conductor, #28 AWG	 2-meter cable, PVC covered, 3-conductor, #28 AWG
ADDITIONAL DATA		See pages 439-440		

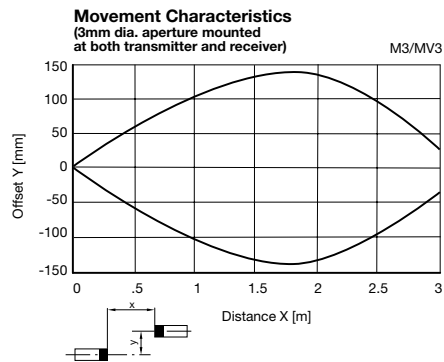
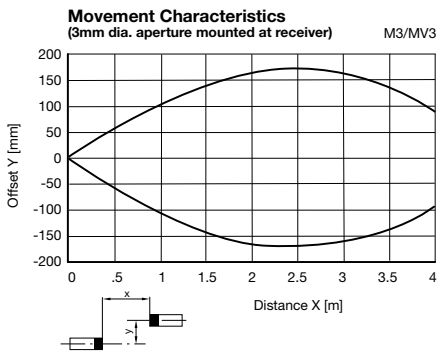
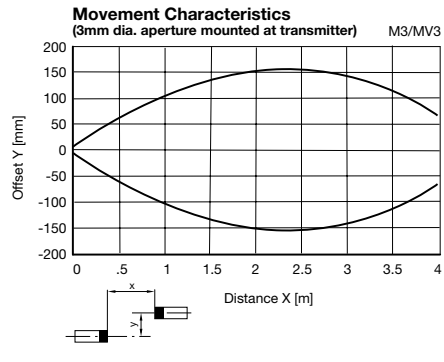
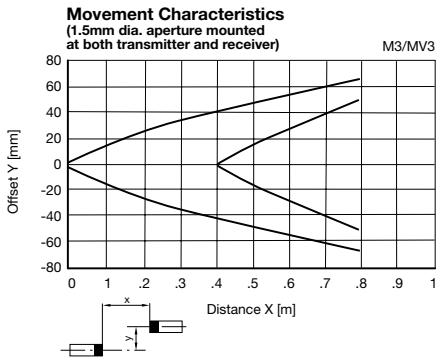
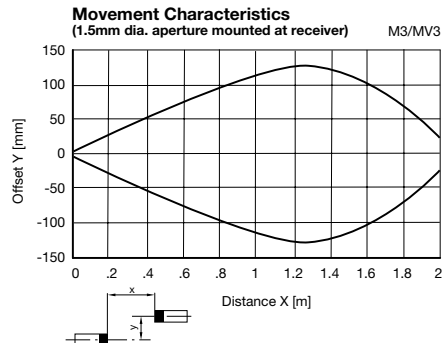
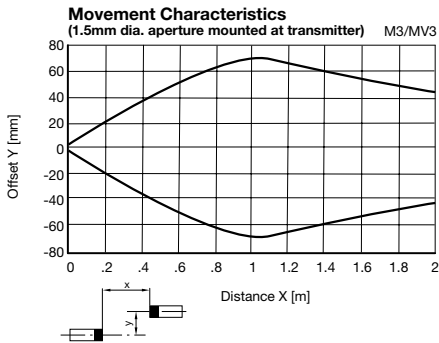
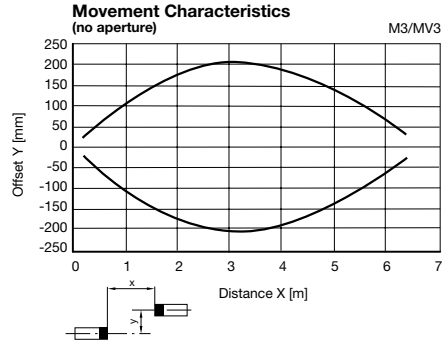
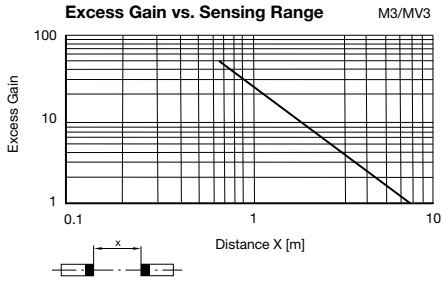
*See dimensional drawings for LED functions.

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



Thru-Beam Mode

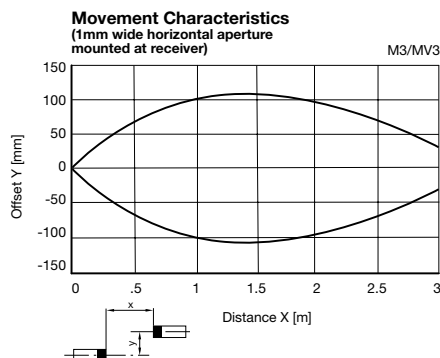
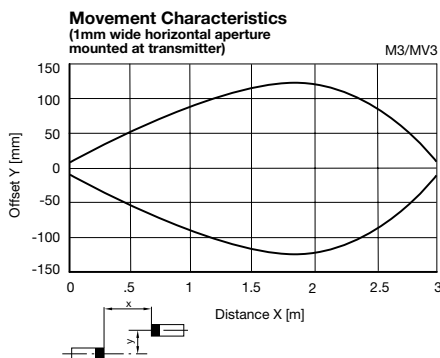
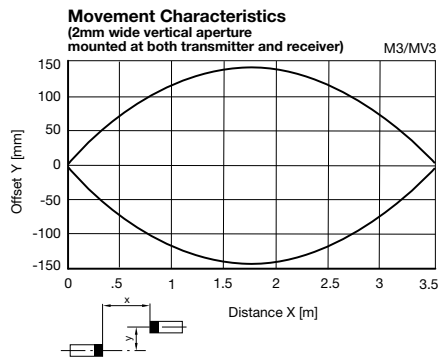
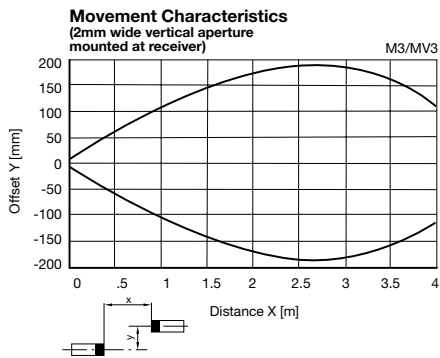
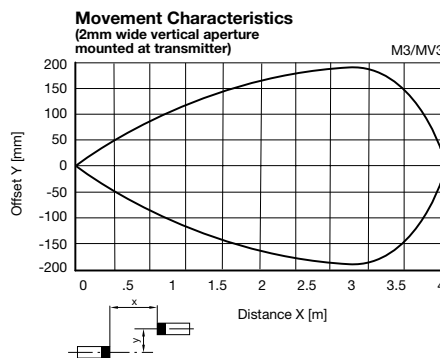
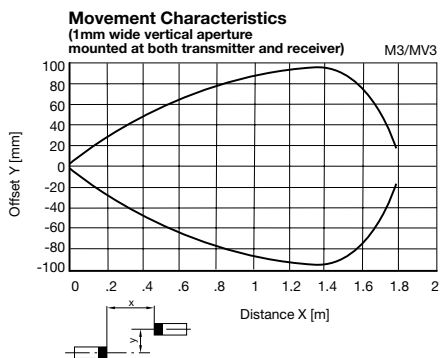
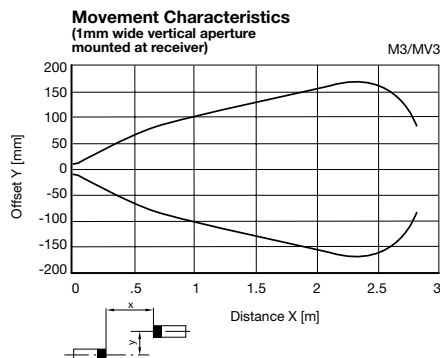
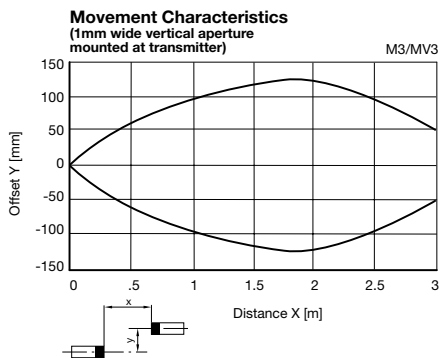
Sensing Characteristics





Thru-Beam Mode

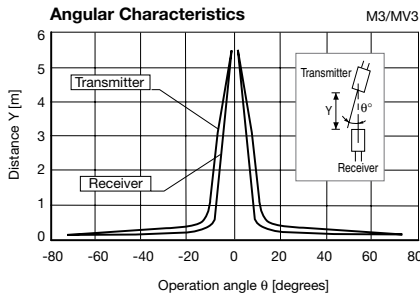
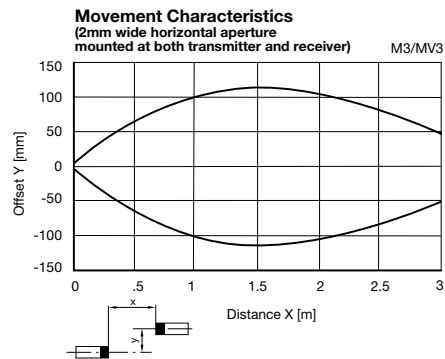
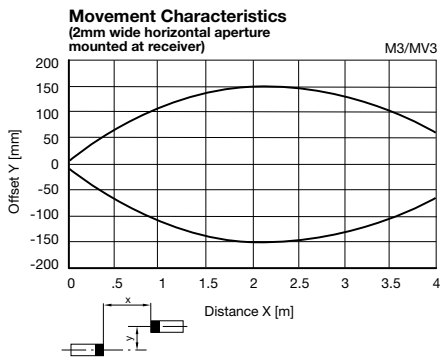
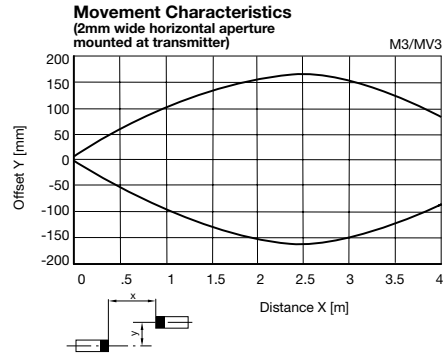
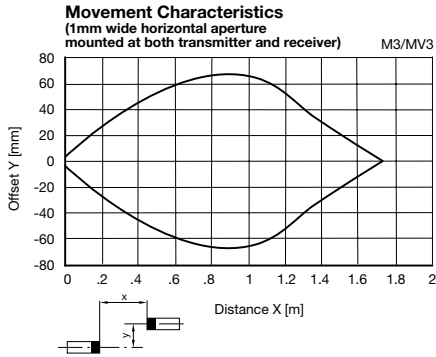
Sensing Characteristics





Thru-Beam Mode

Characteristic diagrams thru-beam



Scanning Distance Characteristics (Typical Value) when Aperture ML3-U01 Is Attached (Comparison with aperture not attached)

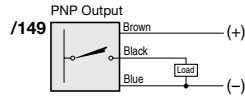
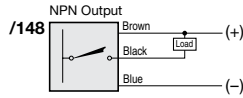
Type of Aperture	Used on Transmitter	Use on Transmitter or Receiver
No aperture	100%	100%
1.5 mm	5%	30%
3 mm	40%	60%
1 mm wide horizontal	20%	40%
2 mm wide horizontal	40%	60%
1 mm wide vertical	20%	40%
2 mm wide vertical	40%	60%

Wiring Diagrams

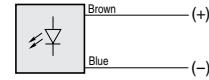
DC



Cable Connection



Transmitter (thru-beam models)

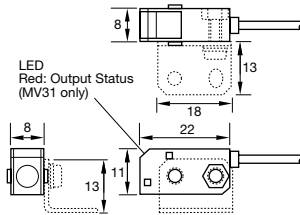


Dimensions (mm)

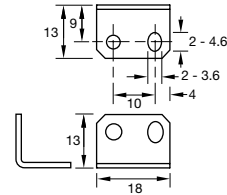
Mounting Dimension (For reference only)

**M31/115
MV31/59/115/148**

Horizontal type — supplied with bracket OMH-ML3-1

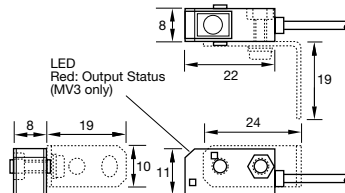


**Bracket
OMH-ML3-1**

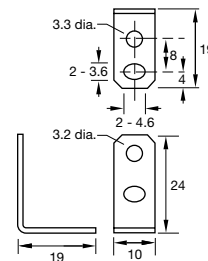


**M3/115
MV3/59/115/148
MV3/59/115/149
MV3/25/115/148**

Vertical type — supplied with bracket OMH-ML3

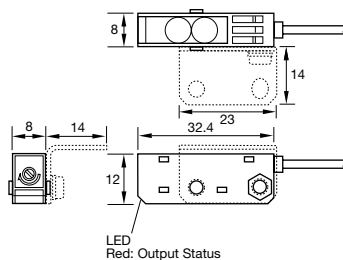


**Bracket
OMH-ML3**

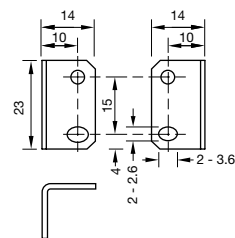


**ML3-8-C-30-RT/25/115/148
ML3-8-C-30-RT/25/115/149
ML3-8-C-30-IR/25/115/148**

Supplied with bracket OMH-ML3-2



**Bracket
OMH-ML3-2**

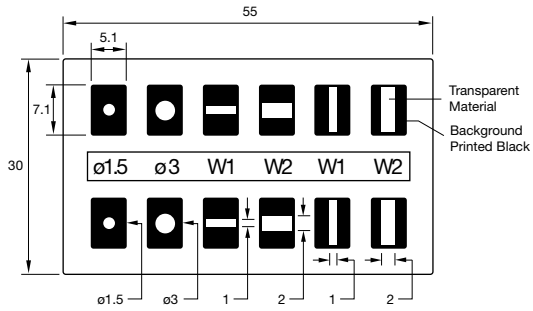


Accessories

(Dimensions in mm)

**Aperture
ML3-U01**

Attachable on thru-beam (self-adhesive)



See pages 865-872
for additional
accessories