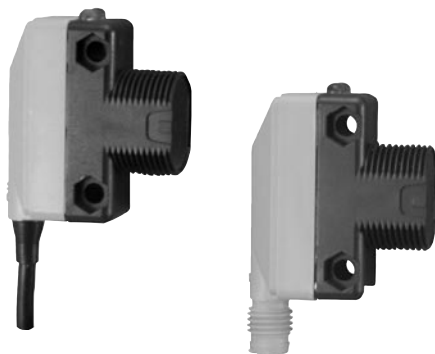




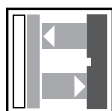
Tru-Vue™

ML17 Series Tru-Vue™ Sensors

- Cost-effective
- Compact, versatile housing
- 4-in-1 output
- 4 connection options



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



Diffuse Mode with Background Suppression

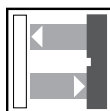
See page 404

Features:

- Very low color sensitivity
- Tamper-proof housing with no external adjustments

Sensing Range: 50 mm, 100 mm

Output: 4-in-1



Diffuse Mode

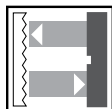
See page 406

Features:

- Sensitivity adjustment for sensing range
- 360° high-visibility LEDs

Sensing Range: 450 mm

Output: 4-in-1



Retro-Reflective Mode

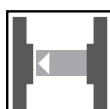
See pages 407-408

Features:

- Polarized and long-range nonpolarized models
- 360° high-visibility LEDs

Sensing Range: 3.5 m, 6.5 m

Output: 4-in-1



Thru-Beam Mode

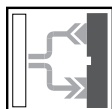
See pages 409-410

Features:

- Quick disconnect or cabled versions
- 360° high-visibility LEDs

Sensing Range: 20 m

Output: 4-in-1



Fiber Optic Diffuse and Thru-Beam Mode

See page 411

Features:

- Quick attachment of plastic fiber cables
- 360° high-visibility LEDs

Sensing Range: Determined by fiber optic cable

Output: 4-in-1

See pages 412-416 for ML17 Series specifications, wiring and dimensions.



Diffuse Mode with Background Suppression

Specifications

SENSING RANGE	10-50 mm	10-50 mm	10-50 mm	10-50 mm
SENSITIVITY ADJUSTMENT	No	No	No	No
BACKGROUND SUPPRESSION	from 65 mm	from 65 mm	from 65 mm	from 65 mm
BLACK/WHITE DIFFERENTIAL*	≤ 10%	≤ 10%	≤ 10%	≤ 10%
REFERENCE TARGET	100 x 100 mm black test card	100 x 100 mm black test card	100 x 100 mm black test card	100 x 100 mm black test card
MODEL NUMBER(S)	ML17-8-H-50-RT/115/136 ⚡	ML17-8-H-50-RT/136/143 •	ML17-8-H-50-RT/73/136 •	ML17-8-H-50-RT/115b/136 ⚡
OUTPUT	4-in-1† /136	4-in-1†	4-in-1†	4-in-1†
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500 Hz
LIGHT SPOT DIAMETER	≤ 3mm at a range of 50 mm	≤ 3mm at a range of 50 mm	≤ 3mm at a range of 50 mm	≤ 3mm at a range of 50 mm
LIGHT BEAM ANGLE	≤ 4°	≤ 4°	≤ 4°	≤ 4°
LIGHT SOURCE	Visible red LED 640 nm	Visible red LED 640 nm	Visible red LED 640 nm	Visible red LED 640 nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8 oz
ELECTRICAL CONNECTION	2-meter cable, PVC covered, 4-conductor, #26AWG	Quick disconnect type V31, integral	Quick disconnect type V1, integral	150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

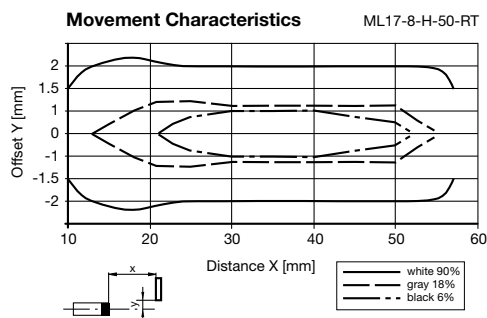
*Difference in sensing range between 90% white test card and 6% black test card.

†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

Sensing Characteristics





Diffuse Mode with Background Suppression

Specifications				
SENSING RANGE	10-100 mm	10-100 mm	10-100 mm	10-100 mm
SENSITIVITY ADJUSTMENT	No	No	No	No
BACKGROUND SUPPRESSION	from 125 mm	from 125 mm	from 125 mm	from 125 mm
BLACK/WHITE DIFFERENTIAL*	≤ 15%	≤ 15%	≤ 15%	≤ 15%
REFERENCE TARGET	100 x 100 mm black test card	100 x 100 mm black test card	100 x 100 mm black test card	100 x 100 mm black test card
MODEL NUMBER(S)	ML17-8-H-100-RT/115/136 ⚡	ML17-8-H-100-RT/136/143	ML17-8-H-100-RT/73/136 •	ML17-8-H-100-RT/115b/136 ⚡
OUTPUT	4-in-1 [†] /136	4-in-1 [†]	4-in-1 [†]	4-in-1 [†]
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500 Hz
LIGHT SPOT DIAMETER	≤ 6 mm at a range of 100 mm	≤ 6 mm at a range of 100 mm	≤ 6 mm at a range of 100 mm	≤ 6 mm at a range of 100 mm
LIGHT BEAM ANGLE	≤ 4°	≤ 4°	≤ 4°	≤ 4°
LIGHT SOURCE	Visible red LED 640 nm	Visible red LED 640 nm	Visible red LED 640 nm	Visible red LED 640 nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8 oz
ELECTRICAL CONNECTION	2-meter cable, PVC covered, 4-conductor, #26AWG	Quick disconnect type V31, integral	Quick disconnect type V1, integral	150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

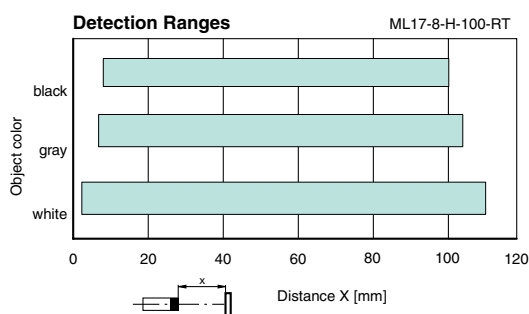
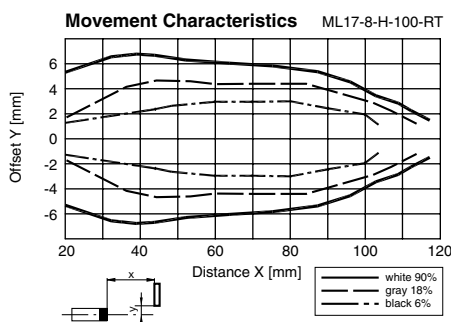
*Difference in sensing range between 90% white test card and 6% black test card.

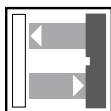
[†]NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

⚡ Stocked item

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

Sensing Characteristics





Diffuse Mode

Specifications

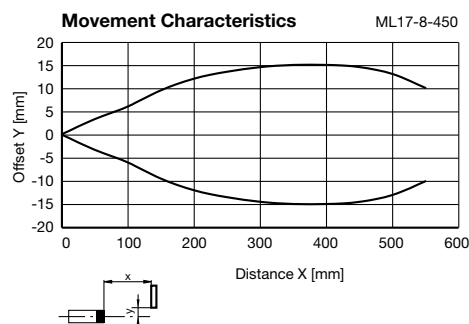
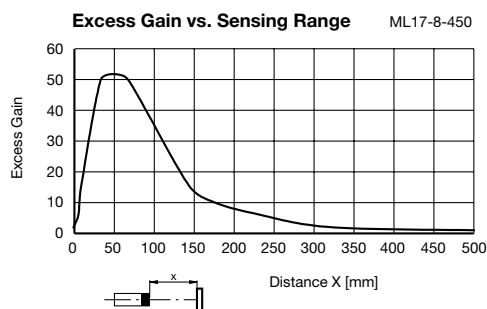
SENSING RANGE	10-450 mm	10-450 mm	10-450 mm	10-450 mm
SENSITIVITY ADJUSTMENT	Yes	Yes	Yes	Yes
REFERENCE TARGET	100 x 100 mm white test card	100 x 100 mm white test card	100 x 100 mm white test card	100 x 100 mm white test card
MODEL NUMBER(S)	ML17-8-450/115/136 ⚡	ML17-8-450/136/143 •	ML17-8-450/73/136 •	ML17-8-450/115b/136 ⚡
OUTPUT	4-in-1* /136	4-in-1*	4-in-1*	4-in-1*
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500 Hz
LIGHT SOURCE	Infrared LED 950 nm	Infrared LED 950 nm	Infrared LED 950 nm	Infrared LED 950 nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8 oz
ELECTRICAL CONNECTION	 2-meter cable, PVC covered, 4-conductor, #26AWG	 Quick disconnect type V31, integral	 Quick disconnect type V1, integral	 150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

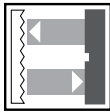
*NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

⚡ Stocked item

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

Sensing Characteristics





Retro-Reflective Mode

Specifications

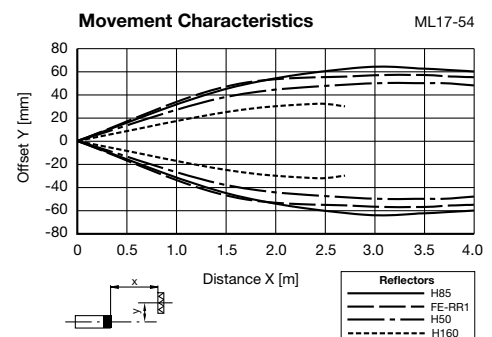
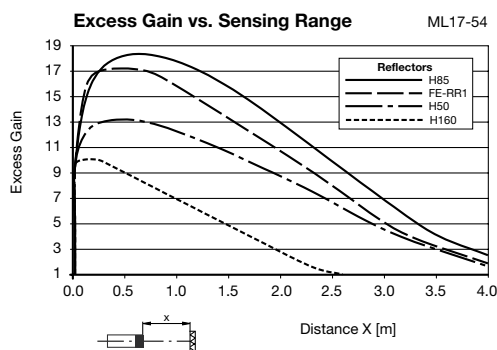
SENSING RANGE	0-3.5 m	0-3.5 m	0-3.5 m	0-3.5 m
SENSITIVITY ADJUSTMENT	Yes	Yes	Yes	Yes
REFERENCE TARGET	FE-RR1 reflector	FE-RR1 reflector	FE-RR1 reflector	FE-RR1 reflector
REFLECTOR DISTANCE	50 mm-3.5 m	50 mm-3.5 m	50 mm-3.5 m	50 mm-3.5 m
POLARIZATION FILTER	Yes	Yes	Yes	Yes
MODEL NUMBER(S)	ML17-54/115/136 ⚡	ML17-54/136/143 •	ML17-54/73/136 ⚡	ML17-54/115b/136 ⚡
OUTPUT	/136 4-in-1* —	4-in-1* —	4-in-1* —	4-in-1* —
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500 Hz
LIGHT SOURCE	Visible red LED 626 nm	Visible red LED 626 nm	Visible red LED 626 nm	Visible red LED 626 nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8 oz
ELECTRICAL CONNECTION	2-meter cable, PVC covered, 4-conductor, #26AWG	Quick disconnect type V31, integral	Quick disconnect type V1, integral	150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

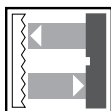
*NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

⚡ Stocked item

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

Sensing Characteristics





Retro-Reflective Mode

Specifications

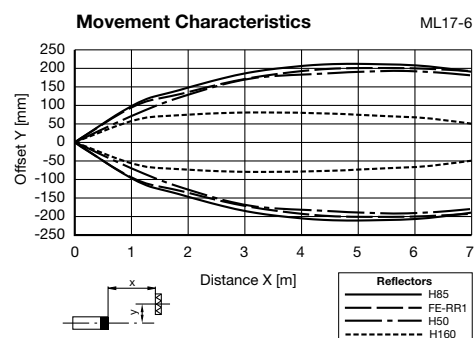
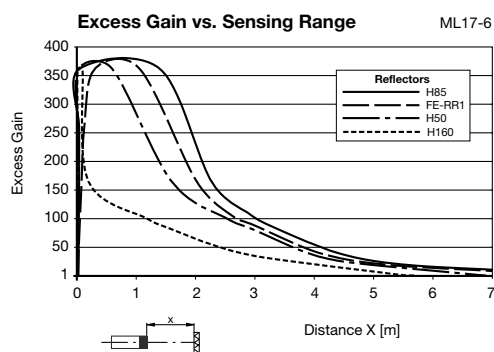
SENSING RANGE	0-6.5 m	0-6.5 m	0-6.5 m	0-6.5 m
SENSITIVITY ADJUSTMENT	Yes	Yes	Yes	Yes
REFERENCE TARGET	FE-RR1 reflector	FE-RR1 reflector	FE-RR1 reflector	FE-RR1 reflector
REFLECTOR DISTANCE	50 mm-6.5 m	50 mm-6.5 m	50 mm-6.5 m	50 mm-6.5 m
POLARIZATION FILTER	No	No	No	No
MODEL NUMBER(S)	ML17-6/115/136 •	ML17-6/136/143	ML17-6/73/136	ML17-6/115b/136 •
OUTPUT	4-in-1* /136	4-in-1*	4-in-1*	4-in-1*
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500 Hz
LIGHT SOURCE	Visible red LED 626 nm	Visible red LED 626 nm	Visible red LED 626 nm	Visible red LED 626 nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8 oz
ELECTRICAL CONNECTION	2-meter cable, PVC covered, 4-conductor, #26AWG	Quick disconnect type V31, integral	Quick disconnect type V1, integral	150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

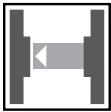
*NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

⚡ Stocked item

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

Sensing Characteristics





Thru-Beam Mode

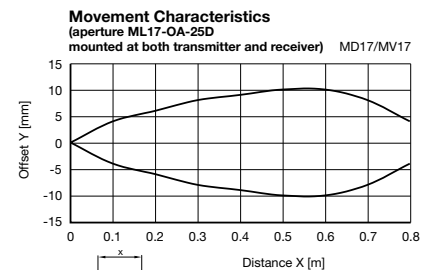
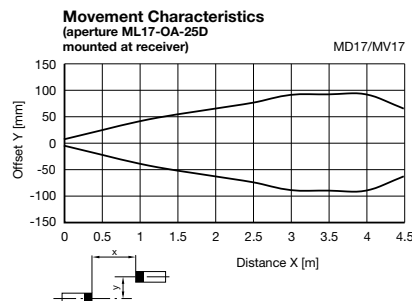
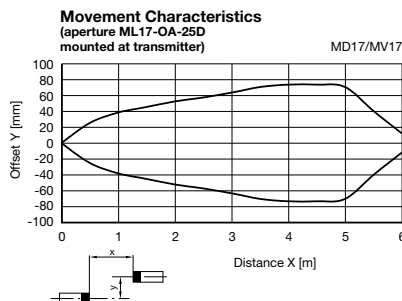
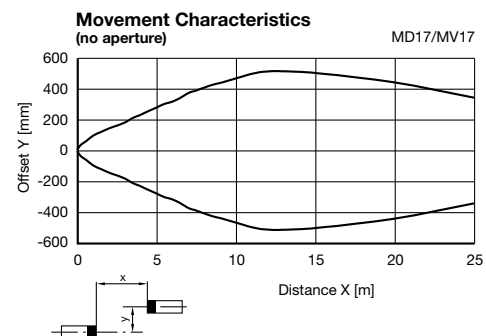
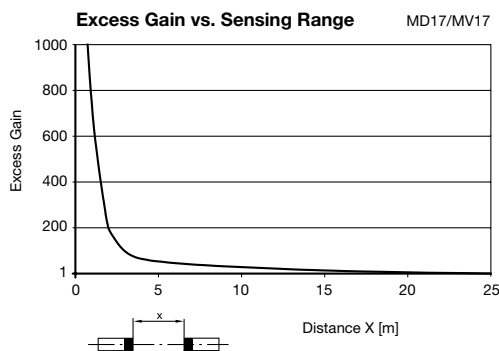
Specifications

SENSING RANGE		0-20 m	0-20 m	0-20 m	0-20 m
SENSITIVITY ADJUSTMENT		No	No	No	No
REFERENCE TARGET		Receiver	Receiver	Receiver	Receiver
MODEL NUMBER(S)	Transmitter	MD17/115 ⚡	MD17/143 •	MD17/73 •	MD17/115b ⚡
	Receiver	MV17/115/136 ⚡	MV17/136/143 •	MV17/73/136 •	MV17/115b/136 ⚡
OUTPUT		4-in-1* —	4-in-1* —	4-in-1* —	4-in-1* —
SUPPLY VOLTAGE		10-30 VDC	10-30 VDC	10-30 VDC	10-30 VDC
RESPONSE TIME		≤ 3.0 ms	≤ 3.0 ms	≤ 3.0 ms	≤ 3.0 ms
SWITCHING FREQUENCY		150 Hz	150 Hz	150 Hz	150 Hz
LIGHT SOURCE		Infrared LED 950 nm	Infrared LED 950 nm	Infrared LED 950 nm	Infrared LED 950 nm
WEIGHT		1.4 oz (per housing)	0.3 oz (per housing)	0.3 oz (per housing)	0.8 oz (per housing)
ELECTRICAL CONNECTION		2-meter cable, PVC covered, 4-conductor, #26AWG	Quick disconnect type V31, integral	Quick disconnect type V1, integral	150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA		See pages 412-416			

*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

Sensing Characteristics



Subject to modifications without notice

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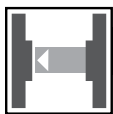
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PEPPERL+FUCHS
SENSING YOUR NEEDS

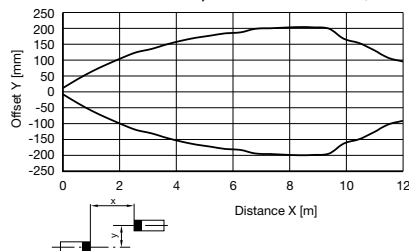


Thru-Beam Mode

Sensing Characteristics

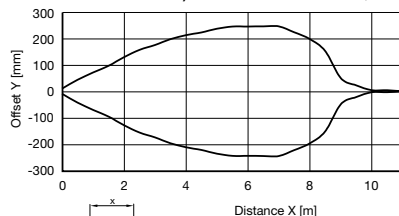
Movement Characteristics
(aperture ML17-OA-25H
mounted at transmitter)

MD17/MV17



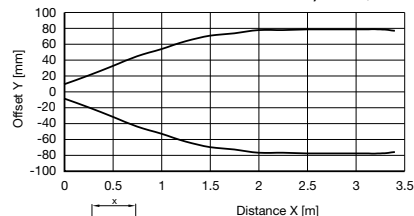
Movement Characteristics
(aperture ML17-OA-25H
mounted at receiver)

MD17/MV17



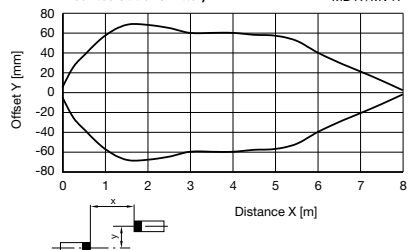
Movement Characteristics
(aperture ML17-OA-25H
mounted at both transmitter and receiver)

MD17/MV17



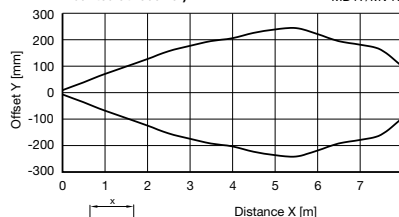
Movement Characteristics
(aperture ML17-OA-05V
mounted at transmitter)

MD17/MV17



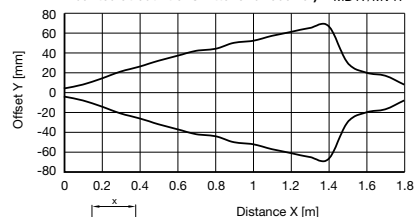
Movement Characteristics
(aperture ML17-OA-05V
mounted at receiver)

MD17/MV17



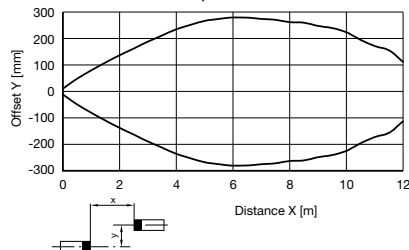
Movement Characteristics
(aperture ML17-OA-05V
mounted at both transmitter and receiver)

MD17/MV17



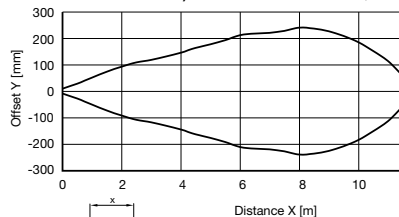
Movement Characteristics
(aperture ML17-OA-10V
mounted at transmitter)

MD17/MV17



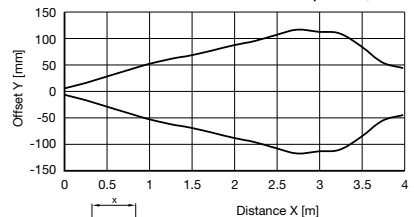
Movement Characteristics
(aperture ML17-OA-10V
mounted at receiver)

MD17/MV17



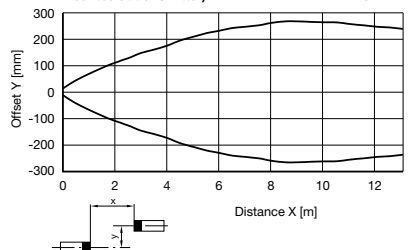
Movement Characteristics
(aperture ML17-OA-10V
mounted at both transmitter and receiver)

MD17/MV17



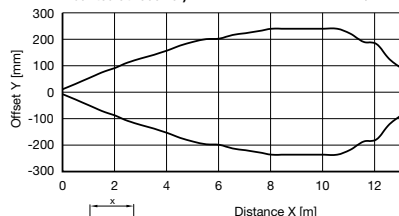
Movement Characteristics
(aperture ML17-OA-25V
mounted at transmitter)

MD17/MV17



Movement Characteristics
(aperture ML17-OA-25V
mounted at receiver)

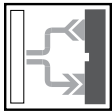
MD17/MV17



Movement Characteristics
(aperture ML17-OA-25V
mounted at both transmitter and receiver)

MD17/MV17





Fiber Optic Diffuse and Thru-Beam Mode

Specifications

SENSING RANGE	Determined by cable†	Determined by cable†	Determined by cable†	Determined by cable†
SENSITIVITY ADJUSTMENT	Yes	Yes	Yes	Yes
MODEL NUMBER(S)	ML17-LL-K/115/136 ⚡	ML17-LL-K/136/143	ML17-LL-K/73/136 •	ML17-LL-K/115b/136 •
OUTPUT  /136	4-in-1*	4-in-1*	4-in-1*	4-in-1*
SUPPLY VOLTAGE	10-30 VDC	10-30 VDC	10-30 VDC	10-30VDC
RESPONSE TIME	≤ 1.0 ms	≤ 1.0 ms	≤ 1.0 ms	≤1.0ms
SWITCHING FREQUENCY	500 Hz	500 Hz	500 Hz	500Hz
LIGHT SOURCE	Visible red LED 670 nm	Visible red LED 670 nm	Visible red LED 670 nm	Visible red LED 670nm
WEIGHT	1.4 oz	0.3 oz	0.3 oz	0.8oz
ELECTRICAL CONNECTION	 2-meter cable, PVC covered, 4-conductor, #26AWG	 Quick disconnect type V31, integral	 Quick disconnect type V1, integral	 150 mm pigtail, PVC covered, quick disconnect type V1
ADDITIONAL DATA	See pages 412-416			

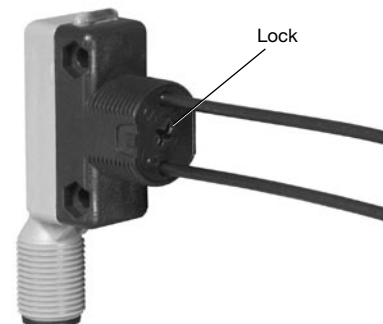
*NPN normally open, NPN normally closed, PNP normally open, or PNP normally closed

⚡ Stocked item

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

Attaching Fiber Optic Cables to ML17-LL Series

1. With a small flat screwdriver, turn the lock located on the sensor face counter-clockwise to the unlocked position.
2. Insert a standard 2.2mm diameter fiber optic cable into the housing until the cable goes no farther. For 1mm diameter cables, insert fiber ends into the adapter and then slide the adapter into the sensor until it stops.
3. Turn lock clockwise to lock the fibers.



†See pages 761-796 for fiber optic lengths and specifications.



Series Specifications

ML17 Series Specifications

LOAD CURRENT	100 mA max. per output
LEAKAGE CURRENT	≤ 100 µA per output
VOLTAGE DROP	≤ 2.5 VDC
SHORT CIRCUIT AND OVERLOAD PROTECTION	Yes
REVERSE POLARITY PROTECTION	Yes
VOLTAGE RIPPLE	± 10%
LED(s)	Yes (2) (1 for MD17)*
CURRENT CONSUMPTION	≤ 25 mA; ≤ 30 mA for ML17-8-H
OPERATING MODE	Light on/dark on
READINESS DELAY	≤ 100 ms
PROTECTION (IEC)	IP67
AMBIENT LIGHT RESISTANCE	≤ 10,000 lux
TEMPERATURE RANGE <i>WORKING</i>	-4 °F to +131 °F
<i>STORAGE</i>	-4 °F to +167 °F
HOUSING MATERIAL	ABS
<i>LENS</i>	Acrylic
STANDARDS	EN 60947-5-2
APPROVALS	 

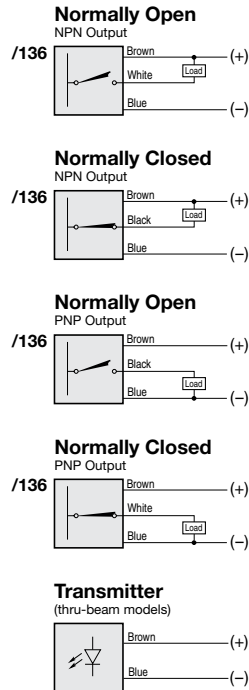
*See dimensional drawings for LED functions.

Wiring Diagrams

DC



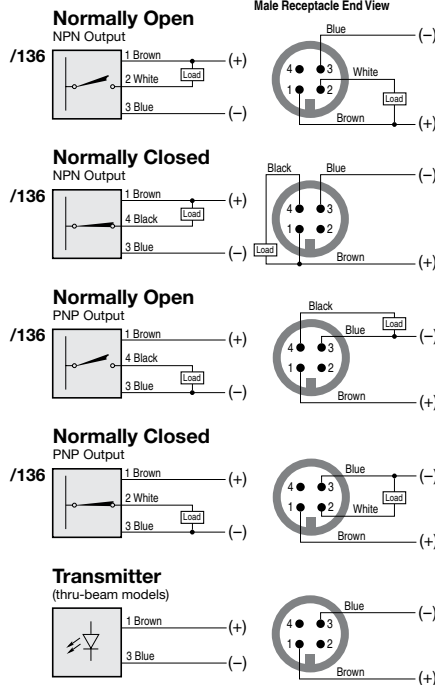
Cable Connection



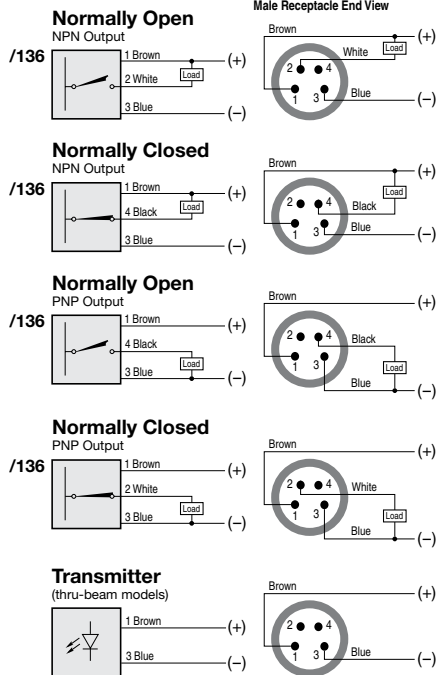
Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type



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.



See pages 803-854 for cordsets



See pages 797-802 for reflectors



See pages 865-872 for additional accessories



See pages 761-796 for fiber optic lengths and specifications.

LED(s)
Green: Power
Yellow: Light Received
Green (flashing): Short Circuit/Overload
Yellow (flashing): Weak Signal (not on ML17-8-H)

Not on MD17

Fiber lock/unlock
(ML17-LL models only)

M18x1

15

29.3

10.2

24.1

34.5

13.9

Ø 3.3

M12x1

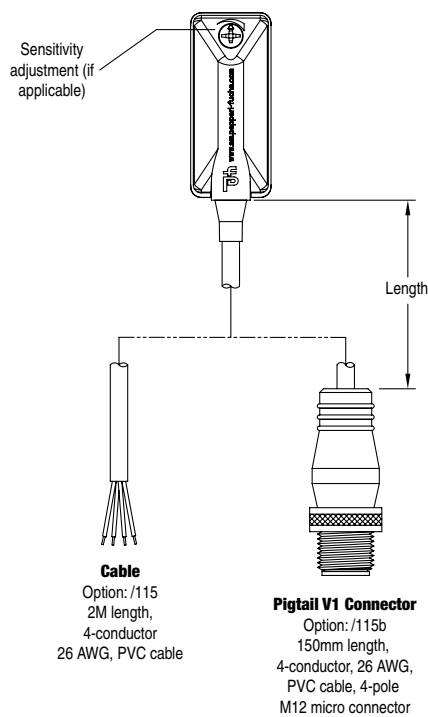
18

Integral V1 Connector
Option: /73
4-pole M12
micro connector

M8x1

9.75

Integral V31 Connector
Option: /143
4-pole M8
nano connector



(Dimensions in mm)

Technical drawing of a stainless steel bracket, showing three views: front view, side view, and top view. The material is specified as Stainless steel.

Front View Dimensions:

- Overall width: 66.55
- Overall height: 32.00
- Distance from left edge to hole center: 51.35
- Hole diameter: $\phi 18.40$
- Distance from hole center to right edge: 16.00
- Bottom fillet radius: R3.00
- Left edge thickness: 2.5

Side View Dimensions:

- Overall width: 66.55
- Overall height: 45.50
- Distance from left edge to bend: 2.50
- Bend radius: R4.00
- Bend angle: 90°

Top View Dimensions:

- Overall width: 66.55
- Overall height: 45.50
- Distance from left edge to hole center: 51.35
- Hole diameter: $\phi 13.20$
- Distance from hole center to right edge: 16.42
- Distance from hole center to bottom edge: 11.02
- Bottom edge thickness: 8.75
- Bottom fillet radius: R4.00
- Bottom fillet diameter: $\phi 53.00$
- Bottom fillet angle: 17°
- Bottom fillet radius: R4.75

Technical drawing of a stainless steel bracket, showing three views: front, side, and top.

Front View Dimensions:

- Overall width: 20.3
- Inner width: 13.5
- Outer width: 7.0
- Base thickness: 2.5
- Radius: R4.0

Top View Dimensions:

- Overall length: 70.0
- Inner length: 19.4
- Outer length: 9.7
- Base thickness: 2.5
- Radius: R3.0

Side View Dimensions:

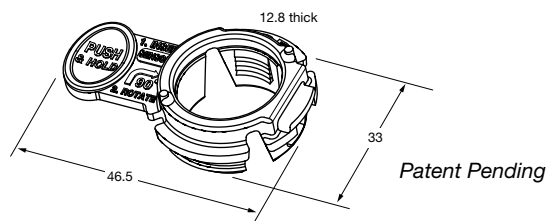
- Top flange width: 17.5
- Top flange thickness: 8.7
- Top flange hole diameter: $\phi 13.2$
- Top flange hole offset: $\phi 4.7$
- Angle: 18°
- Radius: R2.3
- Radius: R26.5
- Radius: R21.7
- Vertical section height: 40.9
- Total height: 63.4

Material: Stainless steel

Accessories (cont.)

(Dimensions in mm)

Easy-Mount Mounting Bracket Model OMH-ML17-EZ
for ML17 Series sensors. Allows rapid mount in 1 inch ($\pm 5/1000$ in.) diameter punch-out holes with no nuts, screws, or other tools required. For 10 or 12 gauge walls.)



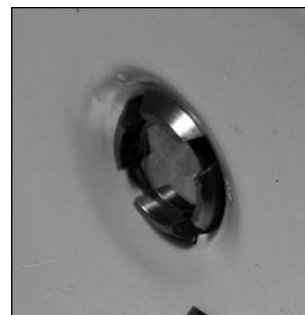
1. Insert the bracket into the 1-inch diameter punch-out hole.



2. Insert the sensor into the bracket as shown.

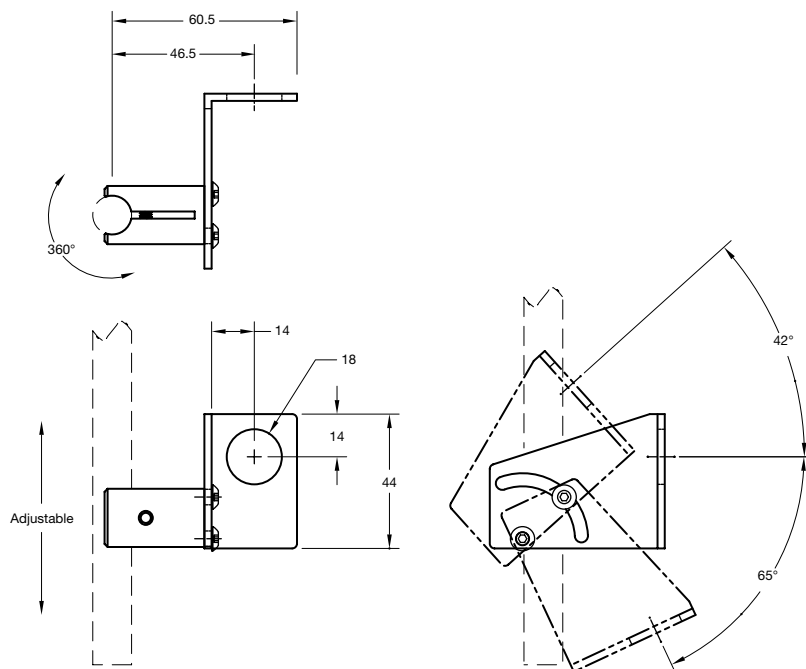


3. Holding the bracket by the tab, rotate the sensor 90° clockwise.



Installed sensor shown from reverse angle.

Rod-Mount Mounting Bracket Model OMH-ML17-R
for ML17 Series Sensors. Allows positioning of the sensor in three axes with an easy-to-mount half-clamp for use on 0.5 inch diameter rod (rod not included).



Material: Anodized aluminum half-clamp and stainless steel sensor bracket

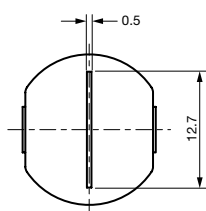


Accessories (cont.)

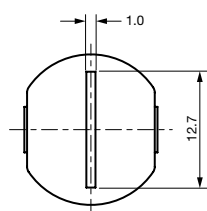
(Dimensions in mm)

Snap-on Stainless Steel Optical Apertures*to reduce excess gain of ML17 Series sensors.*

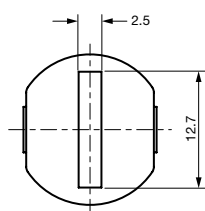
Model No.	Description
ML17-OA-05V	Vertical slotted aperture (0.5mm x 12.7mm), set of 2
ML17-OA-10V	Vertical slotted aperture (1.0mm x 12.7mm), set of 2
ML17-OA-25V	Vertical slotted aperture (2.5mm x 12.7mm), set of 2
ML17-OA-25H	Horizontal slotted aperture (6.4mm x 2.5mm), set of 2
ML17-OA-25D	Round hole aperture (2.5 diameter), set of 2
ML17-OA-KIT	Sample aperture pack, contains 1 each ML17-OA-05V, ML17-OA-10V, ML17-OA-25V, ML17-OA-25H, ML17-OA-25D



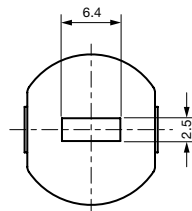
ML17-OA-05V



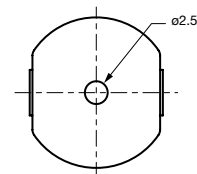
ML17-OA-10V



ML17-OA-25V



ML17-OA-25H



ML17-OA-25D