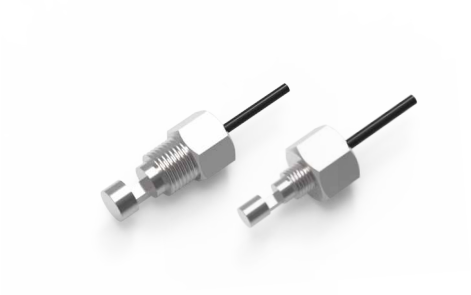
Ultrasonic Sensors

Cylindrical Type

- Sizes of M18 and M30 for choosing
- Sensing distance varies from 40 to 6000mm
- Different output types (NPN/PNP/ Analog Voltage/ Analog Current) are available

P.J-02



Solid Level Switch

- It can detect a variety of viscous liquids such as water, oil, solvent and reagents
- Position repeatability up to 2mm, strong stability
- Integrated NPN/PNP relay output ,connection is convenient

P.J-07

Fork Type Liquid Level Switch

- It can detect all kinds of liquid
- Using digital filtering technology, the performance is reliable
- It can work normally under the high pressure environment of 1000PSI

P.J-08

Double Sheet Detection Sensor

- Reliable detection of single and double sheets (multiple sheets) of material
- It can be flexibly set by the Teach–in function
- Stable detection of paper / metal / plastic / platinum / silicon / battery pole pieces and other materials

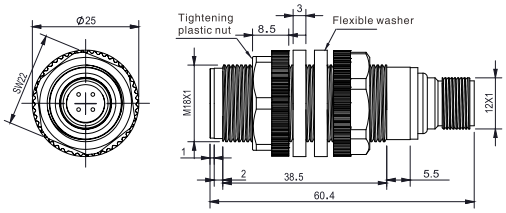
P.J-09

M18 Short-body Series

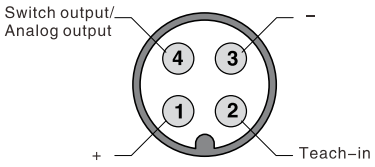
Appearance			
Sensing type		Diffuse reflection	
Sensing range		40~300mm	60~800mm
Repeat accuracy		2%	
Hysteresis		2%	
linearity error		≤3%	
Resolution		2mm	
Opening angle		7°± 2°	± 2°
Switch frequency		8Hz	5Hz
Response time (switch output)		12ms	80ms
Response time (analog output)		500ms	
Operating voltage		10~30V DC(±5%)	
Temperature drift		≤5%	
Temperature compensation		Yes	
Voltage drop		2.2Vmax (1L=100mA)	
Current consumption		≤35mA	
Max Load Current		100mA	
Leakage current		≤10μA@30VDC	
Sensitivity adjustment		External teach-in	
Time delay before availability		≤300ms (Switch); ≤900ms(Analog)	
Operating temperature		-20℃~+70℃	
Storage temperature		-35℃~+70℃(No freezing)	
Circuit protection		Reverse polarity protection, short circuit (auto reset),over voltage pulses protection	
Degree of protection		IP67	
Tightening torque		1Nm	
Housing material		PBT	
Sensing surface material		Epoxy-glass resin	
Weight		15g	
Analog output	Voltage	**MS18-30V**	**MS18-90V**
	Current	**MS18-30I**	**MS18-90I**
Switch output	NPN	**MS18-30N**	**MS18-90N**
	PNP	**MS18-30P**	**MS18-90P**

Dimensions

Unit: mm



Wiring Diagram



Cylindrical Type

M18 Plastic Housing Series

Appearance					
Sensing type		Diffuse reflection			
Sensing range		50~400mm	100~900mm	150~1600mm	200~2200mm
Resolution		3mm	2mm	3mm	3mm
Repeat accuracy		0.5%			
Hysteresis		1%			
linearity error		1%			
Opening angle		±8°	±7°	±8°	±7°
Switch frequency		10Hz	4Hz	2Hz	1Hz
Response time		500ms	≤125ms	250ms	500ms
Operating voltage		15~30V DC(±5%)			
Temperature compensation		Yes			
Temperature drift		5%			
Voltage drop		2.2V max.(1L=100mA)			
Current consumption		≤50mA			
Output current(Switch output)		100mA			
Min load resistance (Analog voltage)		3kΩ			
Leakage current		≤10μA@30V DC			
Sensitivity adjustment		Teach-in			
Time delay before availability (Switch output)		≤500ms; ≤900ms(Dual output)			
Time delay before availability (Analog output)		≤900ms			
Operating temperature		-20℃~+60℃			
Storage temperature		-35℃~+70℃ (No freezing)			
Circuit protection		Reverse polarity protection, short circuit (auto reset), over voltage pulses protection			
Degree of protection		IP67			
Tightening torque		50Nm			
Housing material		PBT			
Sensing surface material		Epoxy-glass resin			
Weight		26g			
Analog output	Voltage	MC18-40V	MC18-90V	MC18-160V	MC18-220V
	Current	MC18-40I	MC18-90I	MC18-160I	MC18-220I
Switch output	NPN	MC18-40N	MC18-90N	MC18-160N	MC18-220N
	PNP	MC18-40P	MC18-90P	MC18-160P	MC18-220P

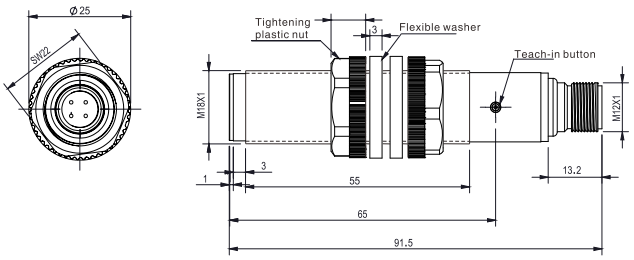
Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

Guidance

Ultrasonic
Cylinderical type
Solid liquid level switches type
Fork type liquid level switch type
Double-sheet detection sensor

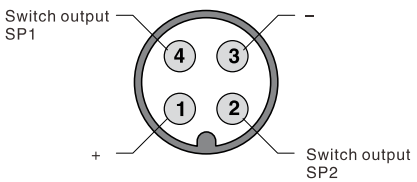
Dimensions

Unit: mm

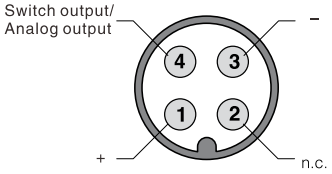


Wiring Diagram

Dual switch outputs:



Switch / Analog:

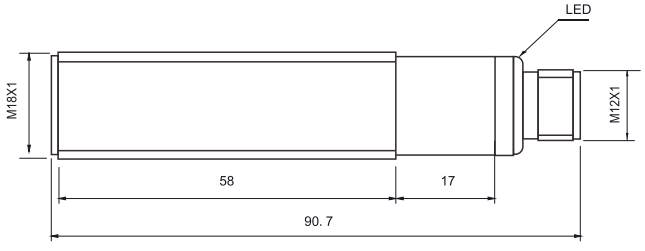


M18 Metal Housing Series

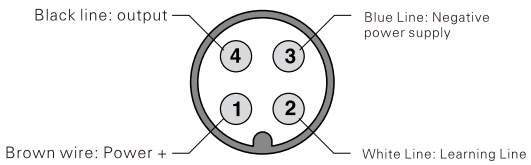
Appearance		
Sensing type		Diffuse reflection
Sensing range		60~1000mm
Blind areas		0~60mm
Standard Test Panel		100 × 100mm
Opening angle		± 7°
Sensor frequency		Approx. 200KHz
No-load Current in Response Delay		100ms
Working Voltage		9~30VDC,10%V
Circuit Protection		Protection against back-connection and instantaneous overvoltage
No-load current		≤25mA
Rated operating current		200mA，Short circuit protection/overload protection
LED		Red light: no target detected in learning state, normal light; blue light: detected target, flicker in learning state; yellow light: switch state in normal working mode; green light: power indicator light, normal light
Resolution		0.5mm
Repetition accuracy		0.3% full range
Temperature drift		0.05%/° C (built-in temperature compensation)
Linearity		<1%
Operating temperature		-20℃~+70℃（253~343K）
Storage temperature		-40℃~+85℃(233~358K）
Electromagnetic compatibility		GB/T17626.2-2006;GB/T17626.4-2008
Protection level		IP65
Connection method		V3 connector, 4-pin
Housing material		Copper nickel plating
Weight		62g
Cable length		2m
Analog	Voltage output 0-5V	**MT18-100V**
	Voltage output 0-10V	**MT18-100V2**
	Current output 4-20mA	**MT18-100A**
Switch	NPN	**MT18-100N**
	NPN Hysteresis mode	**MT18-100N2**
	PNP	**MT18-100P**
	PNP Hysteresis mode	**MT18-100P2**
Numerical capacity	TTL output	**MT18-100T**

Dimensions

Unit: mm



Circuit Diagram



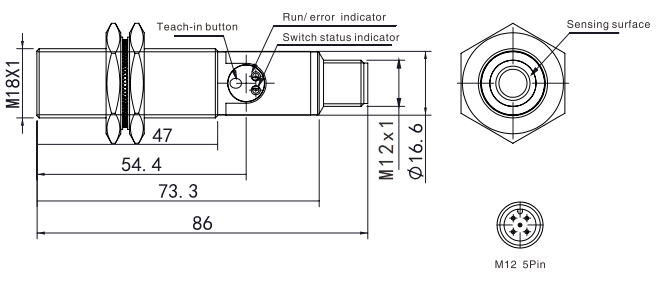
Cylindrical Type

M18 Metal Housing Series

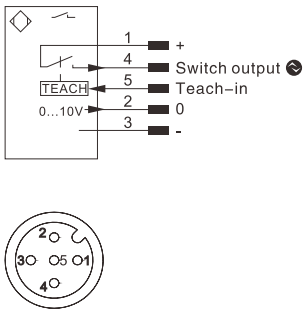
Appearance	
Sensing type	Diffuse reflection
Working range	50~400 mm
Sensing range	350 mm
Reproducibility max.	1 mm
Linearity error	5 mm
Resolution	0.1mm
Ultrasonic frequency	300 kHz
Opening angle	<12°
Service life(Tu=+25℃)	100000 h
Switch hysteresis	2 mm
Supply voltage	18~30 V DC
Current consumption(Ub=24V)	<30 mA
Switch frequency	20 Hz
Response time	25 ms
Temperature range	-25~+60℃
Switch outputs	1
Switch output voltage drop	<2.5 V
PNP switch output/ switch current	100 mA
Analog output	0~10V
Synchronous mode	Up to 40 sensors
Short circuit protection	Yes
Reverse polarity protection	Yes
Overload protection	Yes
Lockable	Yes
Interface	IO-Link
IO-Link version	1.0
Protection class	Class 3
Setting method	Teach-in display
Material	Stainless steel
Full encapsulation	Yes
Degree of protection	IP67
Connection	M12*1; 4/5 Pin
PNP NO/ NC switchable	Yes
Model No.	MD18-35V HOT

Dimensions

Unit: mm



Wiring Diagram



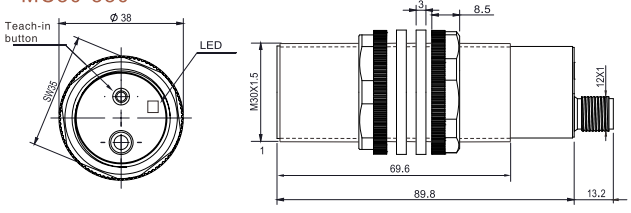
M30 Series

Appearance			
Sensing type		Diffuse reflection	
Sensing range		250~3500mm	350~6000mm
Resolution		4mm	6mm
Repeat accuracy		1%	0.5%
Hysteresis		1%	
linearity error		1%	
Opening angle		±7°	±9°
Switch frequency		2Hz	1Hz
Response time		Switch:250ms, analog:600ms	Switch:500ms, analog:600ms
Operating voltage		12~30VDC，Analog voltage output：15~30VDC(±5%)	
Temperature compensation		Yes	
Temperature drift		±8%（switch output），±5%（analog output）	
Voltage drop		2.2V max.(1L=100mA)	
Current consumption		≤50mA	
Max .load current		100mA	
Min.load resistance		3kΩ	
Leakage current		≤10μA@30V DC	
Sensitivity ajustment		Teach-in	
Operating temperature		-20℃~+70℃	
Storage temperature		-35℃~+70℃(No freezing)	
Circuit protection		Reverse polarity protection,Short circuit (auto reset),Over voltage pulses protection	
Degree of protection		IP67	
Housing material		PBT	
Sensing surface material		Epoxy-glass resin	
Weight		140g	170g
Analog output	Voltage	**MC30-350V**	
	Current	**MC30-350I**	
Switch output	NPN	**MC30-350N**	
	PNP	**MC30-350P**	
Dual switch output	NPN	**MC30-350N2**	**MC30-600N2**
	PNP	**MC30-350P2**	**MC30-600P2**
Analog+Switch	NPN+Current	**MC30-350NI**	**MC30-600NI**
	PNP+Current	**MC30-350PI**	**MC30-600PI**
	NPN+Voltage	**MC30-350NV**	**MC30-600NV**
	PNP+Voltage	**MC30-350PV**	**MC30-600PV**

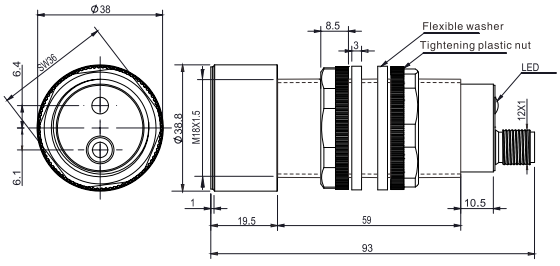
Dimensions

Unit：mm

MC30-350

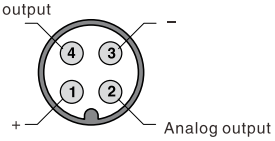


MC30-600

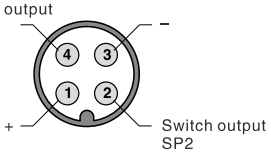


Wiring Diagram

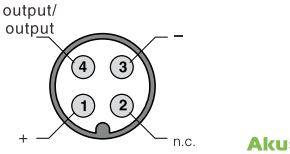
Switch +Analog：



Dual switch outputs：

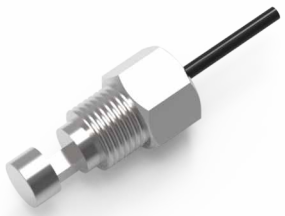


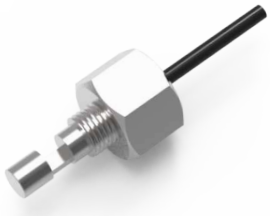
Switch /Analog：



Solid Level Switch Type

MDJ Series





Appearance		
Sensing type	Retro-beam	
Feature	The preferred alternative to mechanical float switches Can detect water, oil, solvents, reagents and other viscous liquids Positional repeatability up to 2mm, strong stability Set NPN/PNP/Relay output in one, convenient connection Stainless steel housing, withstands up to 1000 PSI pressure Not affected by air bubbles, steam, impurities and turbulence Epoxy resin sealed in one, highly reliable	
Housing size	1/2" NPT	1/4" NPT
Repeat accuracy	≤2mm	
Delay	0.5s	
Input voltage	5~30 V DC	
Leakage current	≤50uA	
Output	Relay output: 0.5A single pole single throw (NO)	
Circuit protection	Transient voltage and polarity reversed	
Material	stainless steel (316L)	
Ambient temperature	-29℃~+80℃	
Environmental pressure	250PSI, customizable 500/1000PSI	
Lead length	12inch, (305mm)	
Model No.	**MDJ-C02-1/2**	**MDJ-C02-1/4**

Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

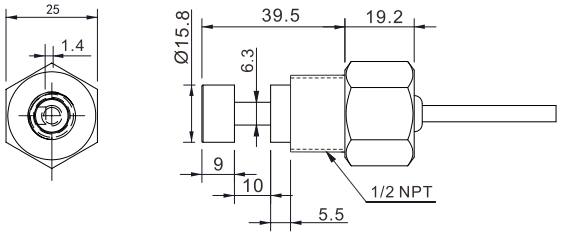
Guidance

Ultrasonic
Cylinderical type
Solid liquid level switches type
Fork type liquid level switch type
Double-sheet detection sensor

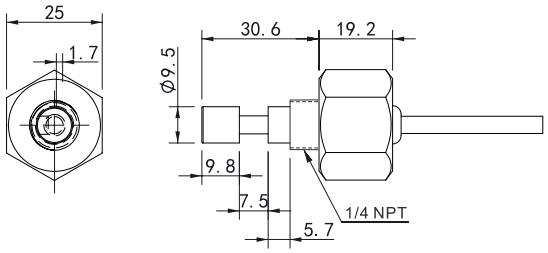
Dimensions

Unit: mm

MDJ-C02-1/2



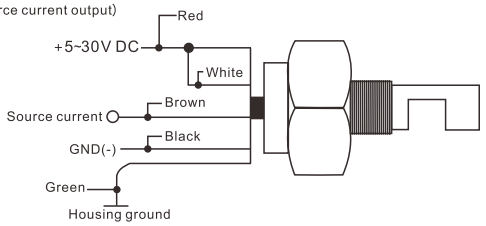
MDJ-C02-1/4



Wiring Diagram

PNP

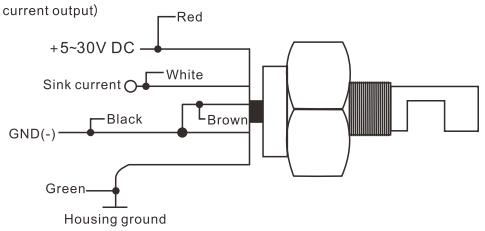
(Source current output)



White line jumper connected to red line(+)

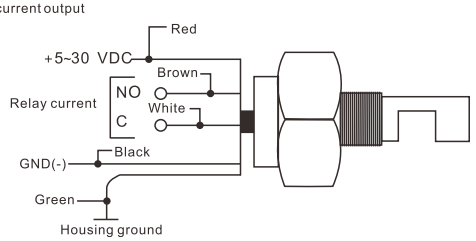
NPN

(Sink current output)



Brown line jumper connected to black line(-)

Relay current output



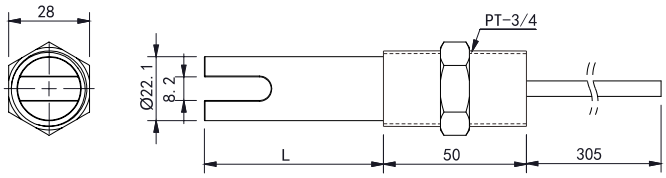
Fork Level Switch Type

MX Series

Appearance	
Sensing type	Thru-beam
Feature	Adopting mature ultrasonic technology and electronic integration technology Almost any kind of liquid can be detected Digital filter technology for reliable performance Filled with epoxy resin, safe and secure No moving parts, easy installation, long service life Can work in high pressure environment of 1000PSI Customizable development of various sizes
Repeat Accuracy	≤2mm
Delay	0.5s
Operate voltage	5~30 V DC
Input current	≤100 mA
Leakage current	≤50uA
Output	Relay output: 0.5A single pole single throw (NO/NC); ≤30V DC
Screw thread	3/4" NPT STD
Under pressure	Max 1000PSI
Material	stainless steel (316L)
Ambient temperature	-29℃~80℃
Circuit protection	Reverse protection, instantaneous protection
Cable length	305mm, can be customized according to customers needs.
Application	Mercury protection, tank compressors, medical and laboratory equipment, hydraulic supply lines, oil film inspection, coolant storage, sewage treatment systems, hydraulic and lubricant reservoirs, chillers
Model No.	**MX-S1**

Dimensions

Unit: mm



*L default value is 62, L can be designed according to requirements

Double-sheet Detection Sensor

MUD Series

Appearance			
Sensing distance		20~40mm，20mm ± 2mm(Optimum)	20~60mm，40mm ± 5mm (Optimum)
Blind area		In front of the transmitter and receiver 5mm	
Angle deviation		± 45° with vertical planes	
Transducer frequency		400kHz	200kHz
Operating voltage		20~30V DC,Reverse polarity protection	
Response time		The automatic operation mode is 2.5ms	The automatic operation mode is 6.5ms
Power-on delay		＜750ms	＜1.9s
Voltage pulsation		± 10%	
No-load current		≤50mA	
Probe material		Polyurethane foam, glass filled epoxy resin	
Housing material		Copper nickel plating	
Tightening torque		15Nm	
Protection degree		IP65	
Operating temperature		+5℃~+60℃	
Storage temperature		+40℃~+85℃	
Control device		Control input: C1 to C3	
Control description		<–V+6V: Logic 1 (control input terminal –V or floating);>–V+10V: Logic 0 (control input terminal +V)	
Indicator		Green light: single sheet | Green light flashing: teaching Red light: double/multiple sheet | Red light flashing: no paper	
Output		NPN/PNP Output, Imax=200mA(–V+2V), short circuit protection	
Output logic		No paper status: White line OFF, Black line OFF	
		Single sheet status: white line ON, black line OFF	
		Dual/multiple sheet status: white line OFF, black line ON	
Scope of application		Paper and paper of 20–1200g/m² in unit area, alloy laminates and film thickness up to 0.4mm,self–adhesive film	Paper and paper of 50–1200g/m² in unit area, alloy laminate, self–adhesive film
Model No.	NPN	**MUD-60N-400**	**MUD-60N-200**
	PNP	**MUD-60P-400**	**MUD-60P-200**

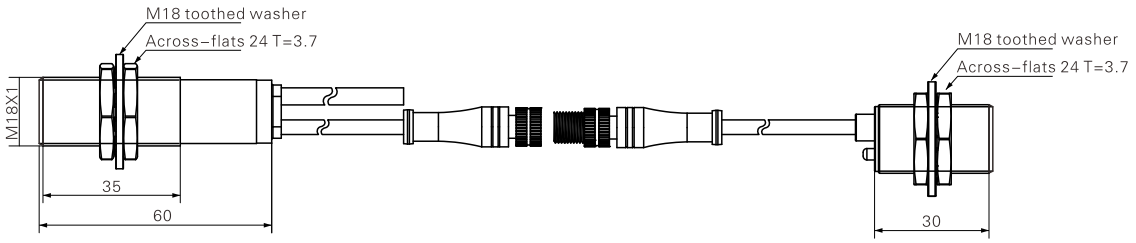
Fiber Optic
Slot Sensors
Photoelectric
Laser
Proximity
Displacement
Magnetic
Contact
Area
Ultrasonic
Vision
Code Readers
Vibration
Temperature
Accessories

Guidance

Ultrasonic
Cylinderical type
Solid liquid level switches type
Fork type liquid level switch type
Double-sheet detection sensor

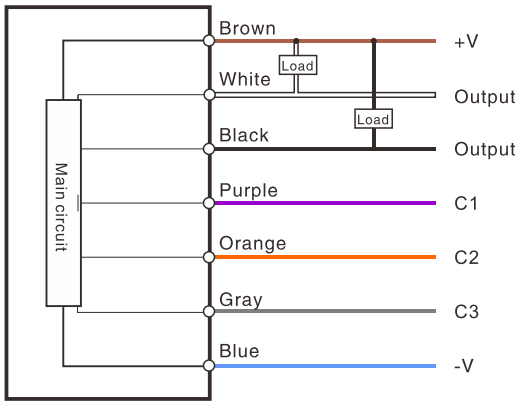
Dimensions

Unit: mm

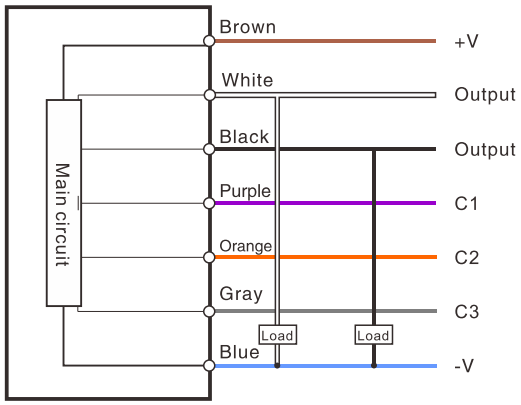


Circuit Diagram

NPN



PNP

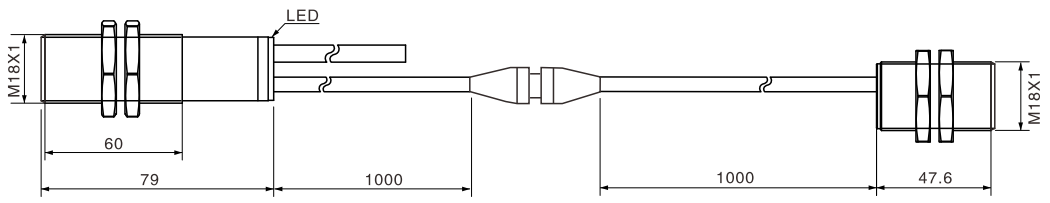


MUD Series

Appearance		
Sensing range		30~60mm
Transducer frequency		Approx. 200kHz
Working voltage		18–30V DC，10%V
Refreshment rate		1ms
Detection methods		Non–Contact
Testing materials		Suitable for reliable detection of presence or absence,single or multiple overlapping materials.
Output mode		three NPN/PNP
Calibration mode		Yes
Display		LED green, single sheet detected; LED yellow, no target (air); LED red, double sheet detected
No-load current		<50mA
Pulse width		>100ms
Impedance		>4kΩ
Output		Three NPN/PNP normally open for air, single and multiple; 100mA short–circuit protection, overload protection; voltage drop <2V
Learning line		Used to calibrate the energy of a single sheet when different materials are used
Response delay		Approx. 15ms
Judgement		Approx. 15ms
Working temperature		–20℃~+70℃（253~343K）
Storage temperature		–40℃~+70℃(233~343K）
EMC		GB/T17626.2–2006 / GB/T17626.4–2008
Protection level		IP65
Connection mode		2M, 6 CORE CABLE
Housing material		Copper nickel plating
Weight		170g
Model No.	NPN	**MUD-60N-18**
	PNP	**MUD-60P-18**

Dimensions

Unit: mm



Circuit Diagram