

Ultrasonic Sensors



Cylindrical Type

- Selectable M18 and M30
- Sensing distance varies from 40 to 6000mm
- Various output type (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 liquid of almost any nature
- 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



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	≤10 μ A@30VDC		
Sensitivity adjustment	External teach-in		
Time delay before availability	≤300ms (Switch); ≤900ms(Analog)		
Operating temperature	-20℃~+70℃		
Storage temperature	-35℃~+70℃(No freezing)		
Protective circuit	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

- Fiber Optic
- Slot Sensors
- Photoelectric
- Laser
- Proximity
- Displacement
- Magnetic
- Contact
- Area
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- Vision
- Vibration
- Temperature
- Annexes

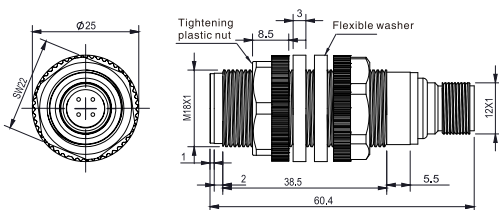
Guidance

Ultrasonic

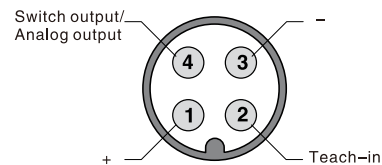
- Cylindrical type
- Solid liquid level switches type
- Fork type liquid level switch type
- Double-sheet detection sensor

Dimensions

Unit: mm



Wiring Diagram



Cylindrical Type

M18 Plastic Housing Series

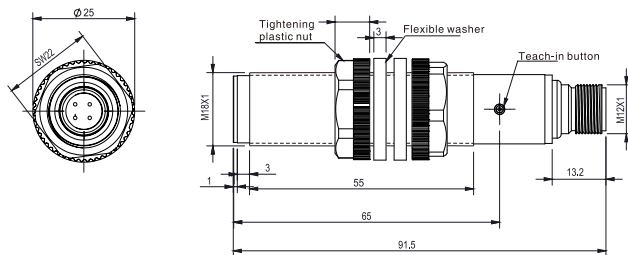


Appearance

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)	3k Ω				
Leakage current	≤ 10 μ A@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°C~+60°C				
Storage temperature	-35°C~+70°C (No freezing)				
Protective circuit	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

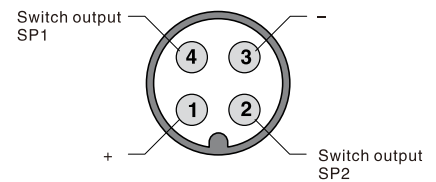
Dimensions

Unit: mm

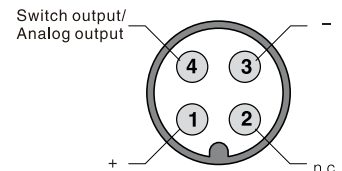


Wiring Diagram

Dual switch outputs:



Switch / Analog:





NEW!

Appearance

Detection methods	Diffuse reflection	
Detection/reg	60~1000mm	
ulation of blind areas	0~60mm	
Standard Test Panel	100 × 100mm	
Angle	± 7°	
Sensor frequency	Approx. 200KHz	
No-load Current in Response Delay	100ms	
Working Voltage	9~30VDC, 10%V	
Protection Circuit	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°C~+70°C (253~343K)	
Storage temperature	-40°C~+85°C(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	
Line length	2m	
Analog	Voltage output0~5V	MT18-100V
	Voltage output0~10V	MT18-100V2
	Current output4~20mA	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

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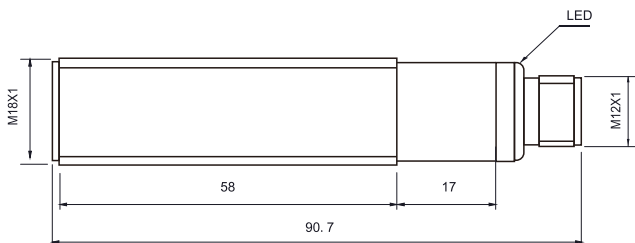
Guidance

Ultrasonic

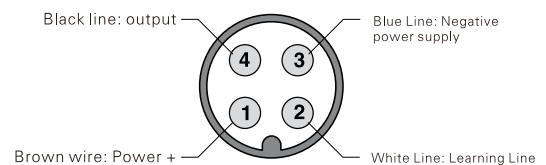
- Cylindrical type
- Solid liquid level switches type
- Fork type liquid level switch type
- Double-sheet detection sensor

Dimensions

Unit: mm



Circuit Diagram



Cylindrical Type

M18 Metal Housing Series

Ultrasonic



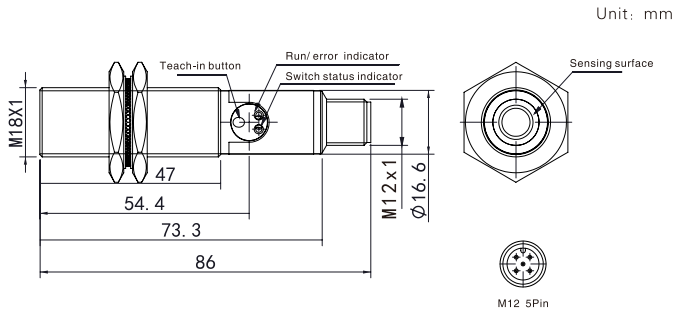
Appearance	
Sensing type	Diffuse reflection
Working range	50~400 mm
Sensing range	350 mm
Reproducibility max.	1 mm
linearity error	5 mm
Resolution	0.1mm
Ultrasonic frequency	300 kHz
Opening angle	< 12°
Service life(Tu=+25°C)	100000 h
Switch hysteresis	2 mm
Supply voltage	18~30 V DC
Current consumption(Ub=24V)	< 30 mA
Switch frequency	20 Hz
Response time	25 ms
Temperature range	-25~+60°C
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

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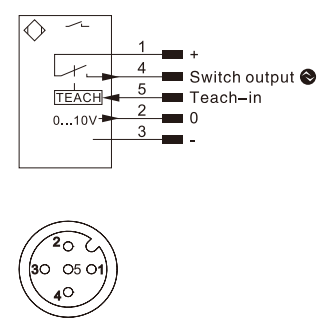
Guidance

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

Dimensions



Wiring Diagram





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	3k Ω	
Leakage current	≤10 μ A@30V DC	
Sensitivity adjustment	Teach-in	
Operating temperature	-20°C~+70°C	
Storage teperature	-35°C~+70°C(No freezing)	
Protective circuit	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
	PNP	MC30-350P2
Analog+ Switch	NPN+Current	MC30-350NI
	PNP+Current	MC30-350PI
Analog+ Switch	NPN+Voltage	MC30-350NV
	PNP+Voltage	MC30-350PV
Dual switch output	NPN	MC30-600N2
	PNP	MC30-600P2
Analog+ Switch	NPN+Current	MC30-600NI
	PNP+Current	MC30-600PI
Analog+ Switch	NPN+Voltage	MC30-600NV
	PNP+Voltage	MC30-600PV

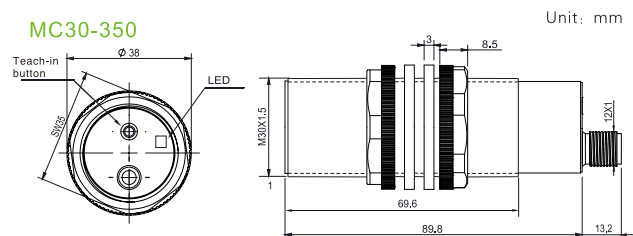
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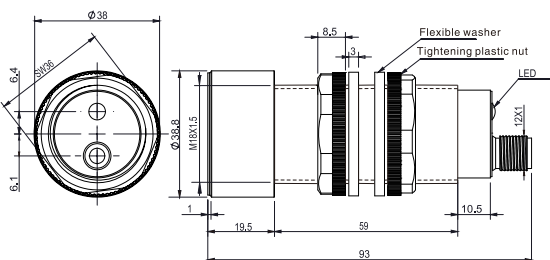
Ultrasonic

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

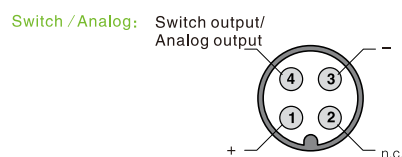
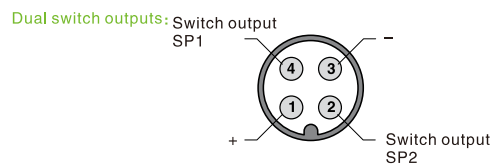
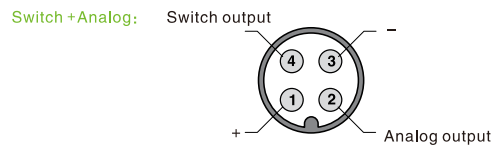
Dimensions



MC30-600



Wiring Diagram



Solid Level Switch Type

MDJ Series



Appearance

Sensing type

Retro-beam

Feature

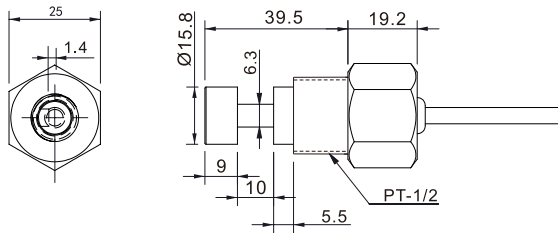
The preferred alternative to mechanical float switches
 Can detect water, oil, solvents, reagents and other viscous liquids
 Positional repeatability up to 2mm, strong stability
 Set NPN/PNP/Relay output in one, convenient connection
 Stainless steel housing, withstands up to 1000 PSI pressure
 Not affected 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)	
Protective circuit	Transient voltage and polarity reversed	
Material	stainless steel (316L)	
Ambient temperature	-29°C~+80°C	
Environmental pressure	250PSI, customizable 500/1000PSI	
Lead length	12inch, (305mm)	
Model No.	MDJ-C02-1/2	MDJ-C02-1/4

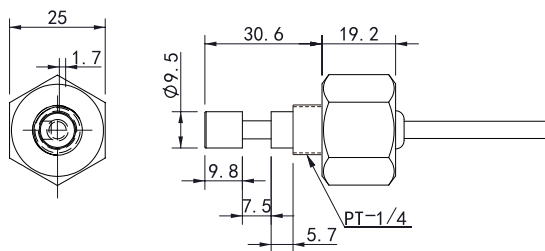
Dimensions

Unit: mm

MDJ-C02-1/2



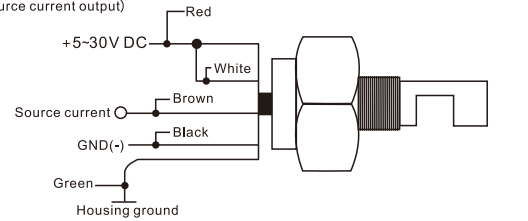
MDJ-C02-1/4



Wiring Diagram

PNP

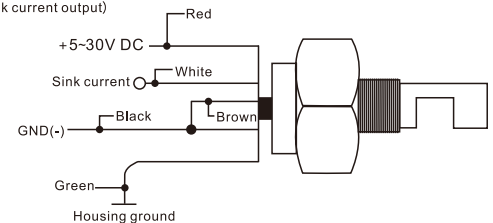
(Source current output)



White line jumper connected to red line(+)

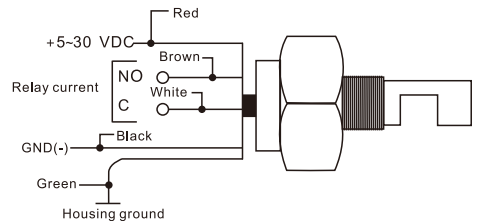
NPN

(Sink current output)



Brown line jumper connected to black line(-)

Relay current output



Guidance

Ultrasonic

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



Developing

Appearance	
Sensing type	Thru-beam
Feature	<p>Adopt mature ultrasonic technology and electronic integration technology</p> <p>Almost any kind of liquid can be detected</p> <p>Digital filter technology for reliable performance</p> <p>Filled with epoxy resin, safe and secure</p> <p>No moving parts, easy installation, long service life</p> <p>Can work in high pressure environment of 1000PSI</p> <p>Customizable development of various sizes</p>
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°C~80°C
Protect the circuit	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

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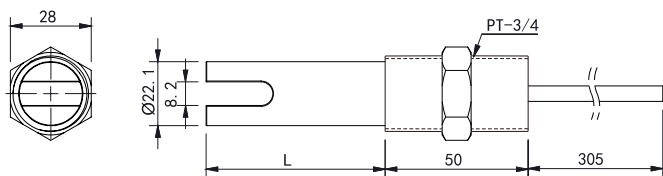
Guidance

Ultrasonic

- Cylindrical type
- Solid liquid level switches type
- Fork type liquid level switch type**
- Double-sheet detection sensor

Dimensions

Unit: mm



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

Double-sheet Detection Sensor

MUD Series

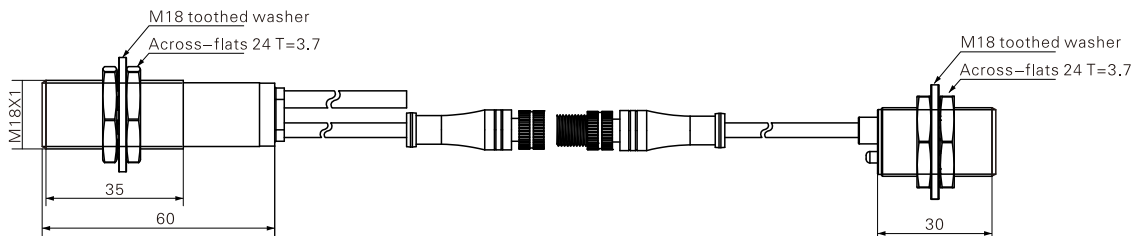
Ultrasonic



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°C~+60°C	
Storage temperature	+40°C~+85°C	
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, Lmax=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/m ² in unit area, alloy laminates and film thickness up to 0.4mm, self-adhesive film	Paper and paper of 50~1200g/m ² in unit area, alloy laminate, self-adhesive film
Model No.	NPN PNP	MUD-60N-400 MUD-60P-400
		MUD-60N-200 MUD-60P-200

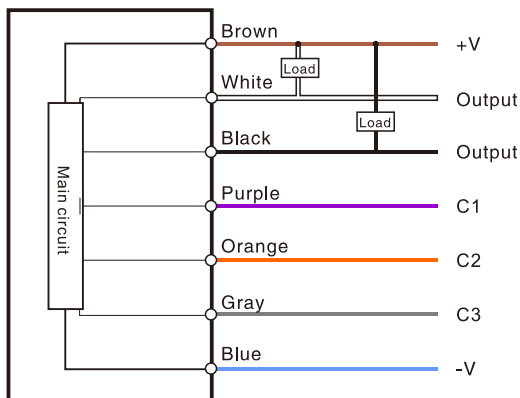
Dimensions

Unit: mm

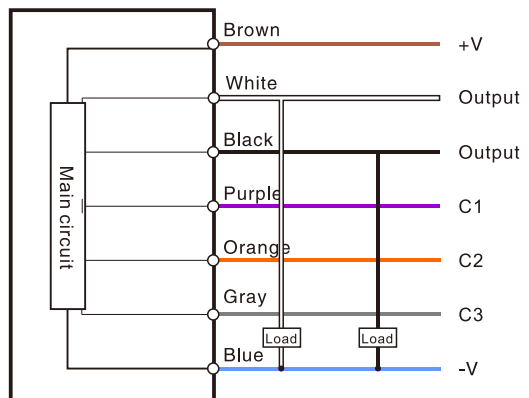


Circuit Diagram

NPN



PNP



Double-sheet Detection Sensor

MUD Series

Ultrasonic



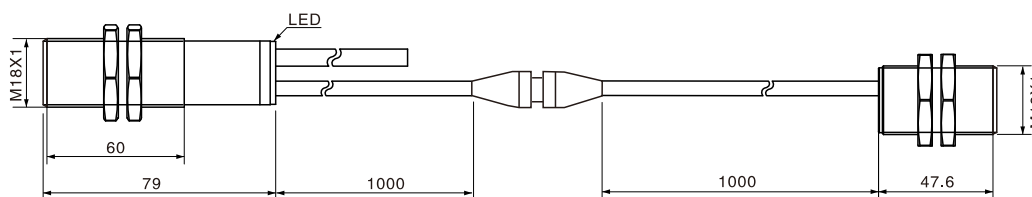
Appearance	
Scope of detection	30~60mm
Transducer frequency	Approx. 200kHz
Working voltage	18~30V DC, 10%V
Refreshment rate	1ms
Detection methods	Non-Contact
Testing materials	Ideal for reliable detection of no, single or multiple overlapping sheets of material
Output mode	three NPN/PNP
Calibration mode	With calibration mode
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°C~+70°C (253~343K)
Storage temperature	-40°C~+70°C(233~343K)
EMC	GB/T17626.2-2006 / GB/T17626.4-2008
Protection level	IP65
Connection mode	WITH SIX-CORE CABLE VC, 2 M
Shell material	Copper nickel plating
Weight	170g
Model	NPN MUD-60N-18 PNP MUD-60P-18

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单位: mm



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Circuit Diagram

