

# Double-sheet Detection Sensor

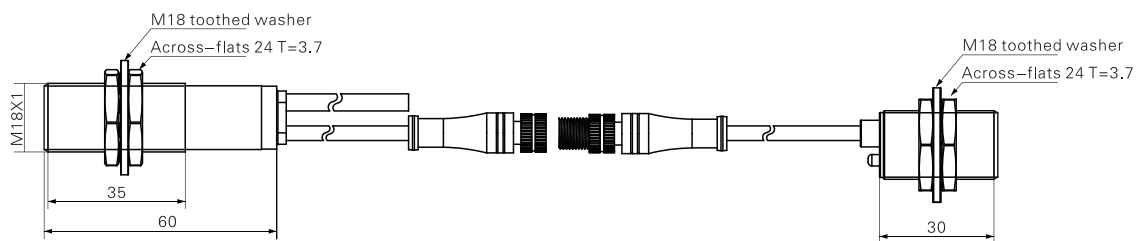
## MUD Series



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°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 <sup>2</sup> in unit area, alloy laminates and film thickness up to 0.4mm, self-adhesive film	Paper and paper of 50~1200g/m <sup>2</sup> in unit area, alloy laminate, self-adhesive film	
Model No.	NPN	<b>MUD-60N-400</b>	<b>MUD-60N-200</b>
	PNP	<b>MUD-60P-400</b>	<b>MUD-60P-200</b>

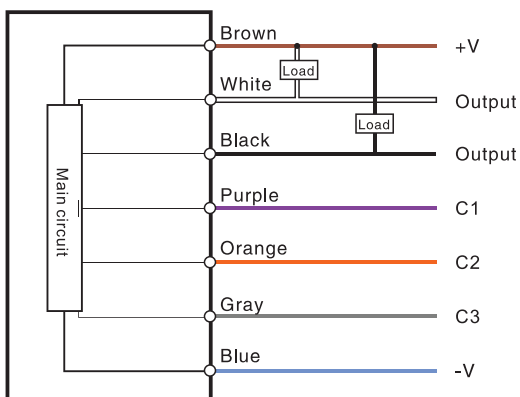
### Dimensions

Unit: mm

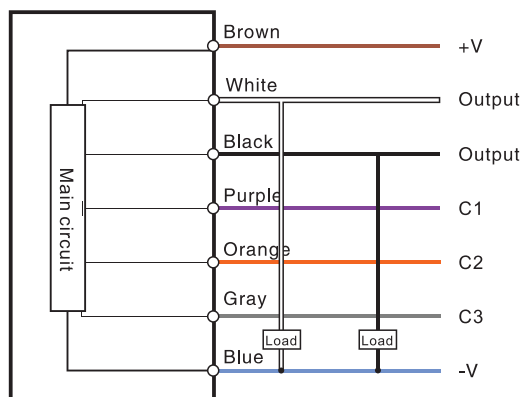


### Circuit Diagram

#### NPN



#### PNP

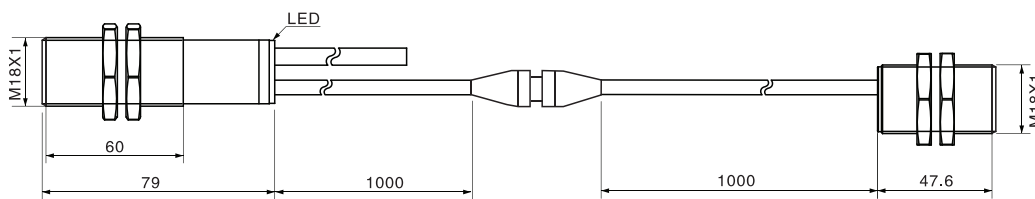




Appearance	
Scope of detection	30~60mm
Transducer frequency	Approx. 200kHz
Working voltage	18~30V DC, 10%V
Refreshment rate	1ms
Detection methods	Non-Contact
Testing materials	Ideal for reliable detection of no, single or multiple overlapping sheets of material
Output mode	three NPN/PNP
Calibration mode	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 <b>MUD-60N-18</b> PNP <b>MUD-60P-18</b>

### Dimensions

单位: mm



G  
U  
C  
S  
I  
F  
I

### Circuit Diagram

