OMRON

Miniature Inductive Prox

Subminiature, Flat-Pack DC Sensor Fits Tight Spaces

- Watertight construction conforms to IP67
- Space-saving mounting area, as small as 10 x 27 mm (0.39 x 1.06 in), is ideal for conveyor wall mounting
- Mounts directly onto metal base or rail
- Rugged diecast metal or low-profile plastic housing models available
- Choose NPN or PNP output models
- Ready to use: Prewired with 2 m (6.56 ft) length cable and mounting bracket included with TL-W3M sensors



Ordering Information _____

Body type Shielded		Unshielded				
Body material Diecast aluminum ABS plastic						
Nominal de	etecting distance	5 mm (0.20 in)	3 mm (0.12 in)	3 mm (0.12 in) 5 mm (0.20 in) 20 mm (0.79 in)		
Part	NPN-NO output	TL-W5E1	TL-W3MC1	TL-W5MC1	TL-W20ME1	
number	NPN-NC output	TL-W5E2	TL-W3MC2	TL-W5MC2	TL-W20ME2	
	PNP-NO output	TL-W5F1	TL-W3MB1	TL-W5MB1	—	
	PNP-NC output	TL-W5F2	—	—	_	

2

TL-W

Specifications_____

■ UNSHIELDED, PLASTIC BODY SENSORS

	nber				TL-W20ME	
Sensor type			Inductive			
Body Size Type		Size	Flat, rectangular			
		Туре	Unshielded			
Supply v	voltage		10 to 30 VDC, maximum rip	ple 10% peak-to-peak		
Current (consumpti	ion	15 mA max.	10 mA max.	15 mA max.	
Detectab	ole object	type	Metal objects			
Effective	maximun	n detecting	0 to 2.7 mm	0 to 4.5 mm	0 to 16 mm	
distance	(with star	ndard object)	(0 to 0.11 in)	(0 to 0.18 in)	(0 to 0.63 in)	
	d target siz		12 x 12 x 1 mm	18 x 18 x 1 mm	50 x 50 x 1 mm	
	el, LxWx⊦	l)	(0.47 x 0.47 x 0.04 in)	(0.71 x 0.71 x 0.04 in)	(1.97 x 1.97 x 0.04 in)	
Different			10% max. of effective maxir	num detecting distance		
Control output	DC solid- state	Туре	NPN-NO (TL-W❑MC1) PNP-NO (TL-W❑MB1)		NPN-NO (TL-W20ME1) with pull-up resistor NPN-NC (TL-W20ME2) with pull-up resistor	
		Max. load	100 mA max.	50 mA max. at 12 VDC, 100 mA max. at 24 VDC	100 mA max. at 12 VDC 200 mA max. at 24 VDC	
		Max. on-state voltage drop	1.0 V max.			
Respons	se frequen	юу	600 Hz	500 Hz	40 Hz	
Circuit		Output short-circuit	Not provided			
protection DC power supply reverse polarity		DC power supply reverse polarity	Provided			
Indicator	'S		Target present (red LED)			
Materials	S	Housing	Plastic (ABS)			
		Sensing face	Plastic (ABS)			
		Cable sheath	Oil-proof vinyl			
Mounting			Bottom surface with 1 through hole, or mounting bracket supplied	Bottom surface with 2 through holes		
Connecti	ions	Prewired	3-conductor cable, 2 m (6.56 ft) length			
Weight v	vith cable	•	30 g (1.06 oz.)	45 g (1.59 oz.)	180 g (6.35 oz.)	
Enclosur	re	UL	_			
ratings		NEMA	1, 2, 3, 4X, 6, 12, 13			
		IEC 144	IP67			
Approvals		UL	_			
		CSA	_			
	Ambient operating temperature		-25° to 70°C (-13° to 158°F)			
Ambient	operating	temperature	-25° to 70°C (-13° to 158°F)		
Ambient Vibration		temperature	,) Y, and Z directions, double an	nplitude for 2 hours	

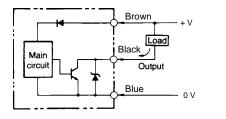
■ SHIELDED, METAL BODY SENSORS

Part number			TL-W5EQQ	TL-W5F	
Sensor t	уре		Inductive		
Body Size Type		Size	Flat, rectangular		
		Туре	Shielded		
Supply v	oltage		10 to 30 VDC, maximum ripple 10% peak-to-	peak	
	consumpt	tion	15 mA max, at 24 VDC		
	le object		Metal objects		
Effective maximum detecting		71	0 to 4 mm		
		ndard object)	(0 to 0.16 in)		
Standard	target si	ize	18 x 18 x 1 mm		
	el, LxWxI	H)	(0.71 x 0.71 x 0.04 in)		
Different	ial travel		10% max. at effective maximum detecting dis	stance	
Control	DC	Туре	NPN-NO (TL-W5E1) with pull-up resistor	PNP-NO (TL-W5F1) with pull-down resistor	
output	solid-		NPN-NC (TL-W5E2) with pull-up resistor	PNP-NC (TL-W5F2) with pull-down resistor	
	state	Max. load	200 mA max.		
		Max. on-state	2.0 V max.		
		voltage drop			
	se frequer		300 Hz		
Circuit		Output short-circuit	•		
protectio	n	DC power supply	Provided		
		reverse polarity			
Indicator	-	· · · ·	Target present (red LED)		
Materials	6	Housing	Diecast aluminum		
		Sensing face	Plastic (ABS)		
		Cable sheath	Oil-proof vinyl		
Mounting	,		Bottom surface with 2 through holes		
Connect		Prewired	3-conductor cable, 2 m (6.56 ft) length		
0	vith cable		70 g (2.5 oz.)		
Enclosur	е	UL	-		
ratings		NEMA	1, 2, 3, 4X, 6, 12, 13		
		IEC 144	IP67		
Approvals		UL			
		CSA	_		
Ambient operating temperature		g temperature	-25° to 70°C (-13° to 158°F)		
Vibration			10 to 55 Hz, at 1.5 mm in X, Y, and Z directions, double amplitude for 2 hours		
Shock			Approx. 50 G, three hours		

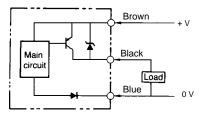
Operation_

OUTPUT CIRCUIT DIAGRAMS

NPN Output TL-WDMCD

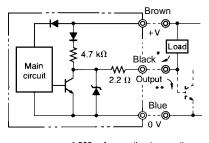


PNP Output TL-W MB



OUTPUT CIRCUIT DIAGRAMS (continued)

NPN Output TL-W5ED, TL-W20MED



* 200 mA max. (load current) ** When a transistor is connected

TIMING CHARTS

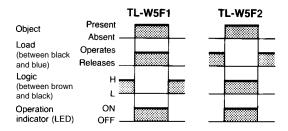
TL-W3M, TL-W5M			
Object	Present Absent		
Output transistor Load	ON OFF		
Operation indicator (LED)	ON OFF		

NPN Output TL-W5ED, TL-W20MED

		TL-W5E1 TL-W20ME1	TL-W5E2 TL-W20ME2
Object	Present Absent		
Load (between brown and black)	Operates Releases		
Logic (between black and blue)	H L		
Operation indicator (LED)	ON OFF		

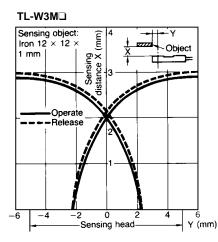
PNP Output TL-W5F Brown Ò---O + V 2.2 n Black Main - -0 ൟ circuit. Output $4.7 \ \text{k}\Omega$ Load Blue -@ οv * 200 mA max. (load current) ** When a transistor is connected

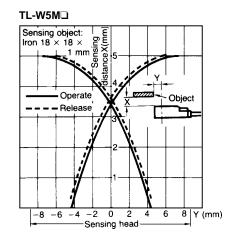
PNP Output TL-W5F

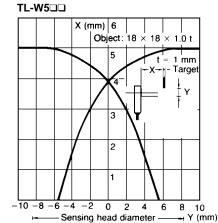


Engineering Data

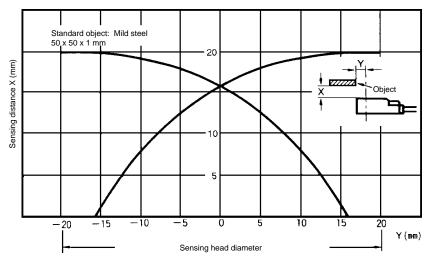
OPERATING RANGE



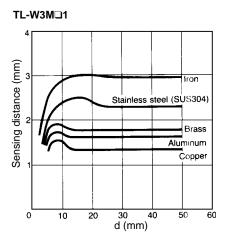


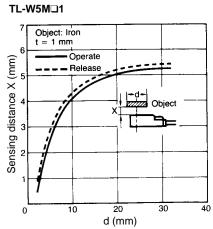


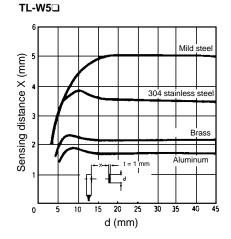
TL-W20MDD

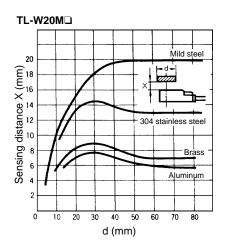


■ SENSITIVITY



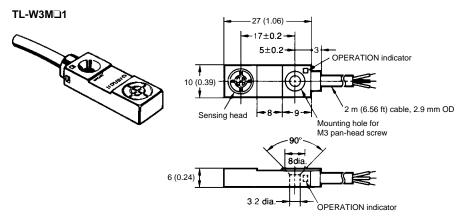


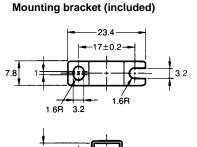


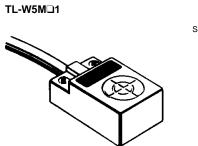


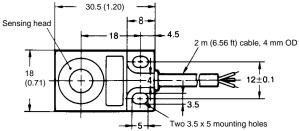
Dimensions_

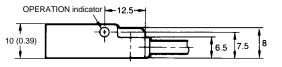
Unit: mm (inch)





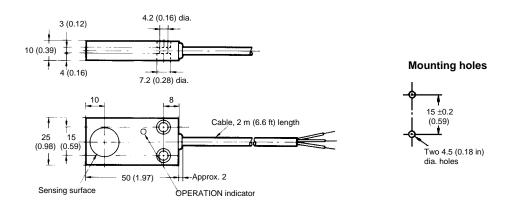




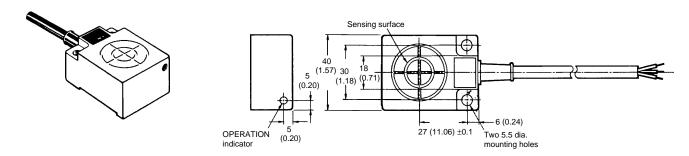


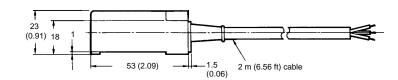
TL-W5E, TL-W5F





TL-W20ME





Precautions

■ INFLUENCE OF SURROUNDING METALS

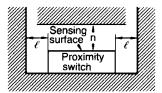
When mounting the proximity sensor flush with a metallic panel, be sure to allow a minimum distance as shown in the table below. If the other side is open, the value of "*I*" is zero.

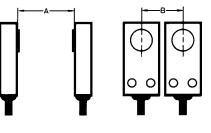
Distance	" I "	n
TL-W3M	3 mm (0.12 in)	12 mm (0.47 in)
TL-W5M	5 mm (0.20 in)	20 mm (0.79 in)
TL-W20M	25 mm (0.98 in)	100 mm (0.34 in)



When mounting two or more sensors of the same type face to face or side by side, be sure to provide a minimum distance as shown in the table below.

Distance	А	В
TL-W3M	90 mm (3.54 in)	30 mm (1.18 in)
TL-W5M	120 mm (4.72 in)	60 mm (2.36 in)
TL-W5D	50 mm (1.97 in)	35 mm (1.38 in)
TL-W20M	200 mm (7.87 in)	200 mm (7.87 in)





TL-W	OMRON	TL-W
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