



คุณสมบัติ

Smallest TOF Sensor in Class

*Among devices equipped with displays. Optex FA examination performed December 2018.

- Analog output type and 3-control-output type
- TOF (Time-Of-Flight principle)
- Built-in digital display for simple setup

ข้อมูลทางเทคนิค

Type		Analog output type		3-control-output type	
Model*1	Cable type	TOF-DL250A		TOF-DL250T	
	Pig tail type	TOF-DL250AM12		TOF-DL250TM12	
Sensing distance*2		0.25 to 2.5 m			
Light source	Medium/Wavelength	Red semiconductor laser, wavelength: 650 nm			
	Average output	390 μW or less			
Laser class		Class 1 (IEC/JIS/FDA*3)			
Spot size*4		ø10 mm (At a distance of 2.5 m)			
Sampling period / Response time		200 μs / 500 μs or less (When performing moving average once)			
Hysteresis*2		3% or less (Moving average performed: 64 times/256 times, Distance: 1 to 2.5 m, Typical example)			
Distance adjustment		Teaching (Manual adjustment possible after teaching)			
Indicators		Output indicator (Orange), Stability indicator / laser off indicator: (Green) / (Red) / (Off)		Output 1 indicator (Orange), Output 2 indicator (Orange), Output 3 indicator / Stability indicator / Laser off indicator:(Orange) / (Green) / (Red) / (Off)	
Digital display		7-segment, 3-digit LED display (Display unit: cm)			
External input		Laser OFF input / Teaching input (Selectable by setting)			
Control output	No. of outputs	1		3 (Initial setting of output 3 is external input)	
	Stability output	Output 1 switchable to stability output (Selectable by setting)			
	Type	Open collector (NPN/PNP selectable by setting), Max. 100 mA / 30 VDC, residual voltage 1.8 V Max.			
	Output mode	Light ON / Dark ON selectable (Output 1 through 3 will be set to same output mode for 3-control-output type)			
Analog output	Current output	4 to 20 mA, Load impedance: 300 Ω or less		Not equipped	
	Voltage output	0 to 10 V, Output impedance: 100 Ω or less			
Connection type		Cable type: ø4.5 mm, 2 m cable, Pig tail type: Cable with M12 5-pin connector, 300 mm.Bending resistant cable (Min. bending radius: when fixed in place > 6 x cable diameter, when movable > 2 x cable diameter)			
Protection circuit		Reverse connection protection, Overcurrent protection			
Rating	Supply voltage	12 to 30 VDC, including 10% ripple (p-p)*5*6		10 to 30 VDC, including 10% ripple (p-p)*6	
	Current consumption	60 mA or less*7			
Applicable regulations	EMC	EMC directive (2014/30/EU)			
	RoHS	RoHS directive (2011/65/EU), China RoHS (Directive 32)			
	Safety	FDA regulations (21 CFR 1040.10 and 1040.11*8)			
Applicable standards		EN 60947-5-2 / IEC 60825-1			
NRTL certifications		UL Recognized Components Proximity Switch Certified for US and Canada			
Environmental resistance	Ambient temperature/humidity	-30 to +50°C (No freezing) / 35 to 85% RH (No condensation)			
	Ambient illuminance	Sunlight: 4,000 lx or less, Fluorescent lamp: 3,000 lx or less			
	Vibration resistance	10 to 55 Hz, double amplitude 1.5 mm, 2 hours in each of the XY and Z directions			
	Shock resistance	500 m/s ² (Approx. 50 G), 3 times in each of the XY and Z directions			
	Degree of protection	IEC standard, IP67			
Warm-up time		Ambient temperature-10 to +50°C: 5 min. or longer , Ambient temperature-30 to -10°C: 10 min. or longer			
Material		Housing: PC, Front cover: PMMA			
Weight		Cable type: 88 g, Pig tail type: 48 g			
Included accessories		Mounting bracket: BEF-WK-190, Mounting screws (M3 × 20 mm)			

*1 Connector type (M8, 4-pin) also available (Built to order).

*2 For black paper (6% reflectance), gray paper (18% reflectance), and white paper (90% reflectance).

*3 In accordance with the FDA provisions of Laser Notice No. 50, the laser is classified as Class 1 per the IEC 60825-1:2007 and 2014 standards.

*4 Defined with 1/e² (13.5%) of the center strength at the maximum detection distance. The sensor may be affected by light leakage at spot sizes other than the default and when there is a highly reflective object close to the detection area.

*5 For analog output types, use a power supply voltage of 12.0 VDC or higher to obtain normal output.

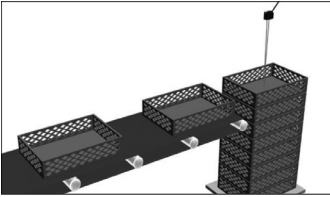
*6 If the ambient temperature is -10°C or lower, use the supply voltage of 24 to 30 VDC.

*7 Not including control output load current. *8 Excluding differences per Laser Notice No. 50.

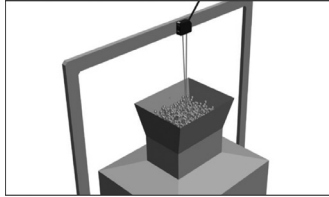
● Note that specifications are subject to change without prior notice for product improvement purposes.

Application

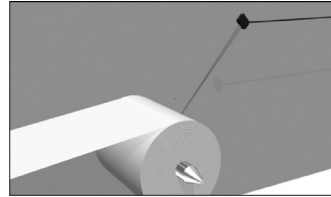
Level control for lifts



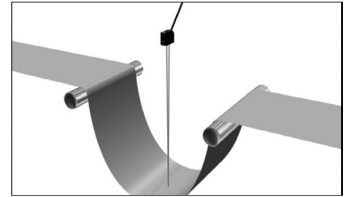
Measuring of material level in tank



Monitoring of remaining non-woven fabrics



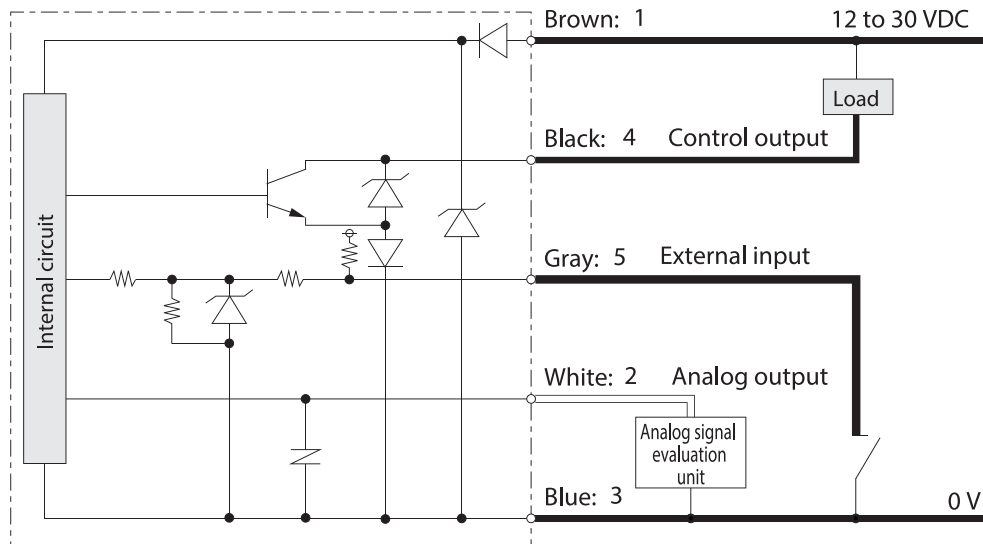
Loop control for sheet materials



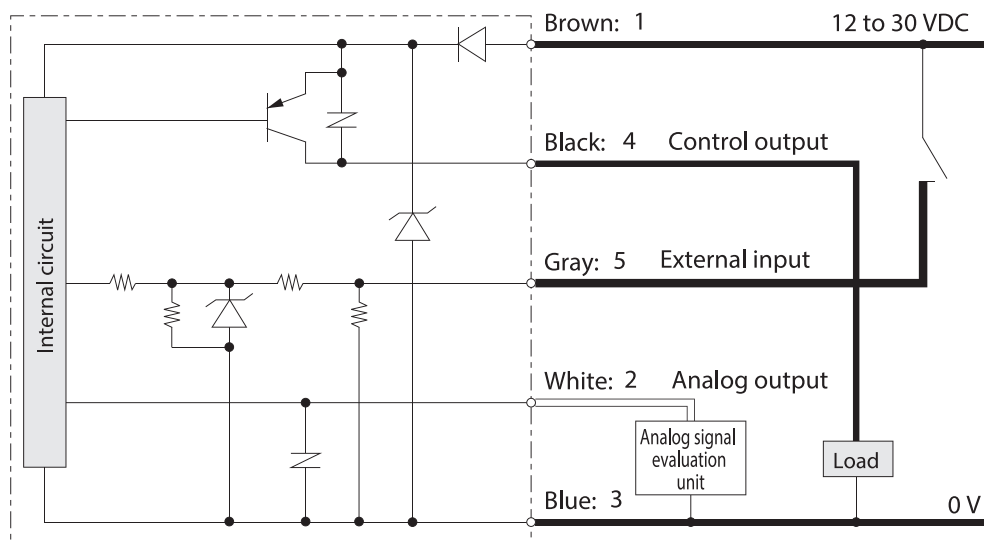
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I/O circuit diagram

■ Analog output type: With the NPN setting



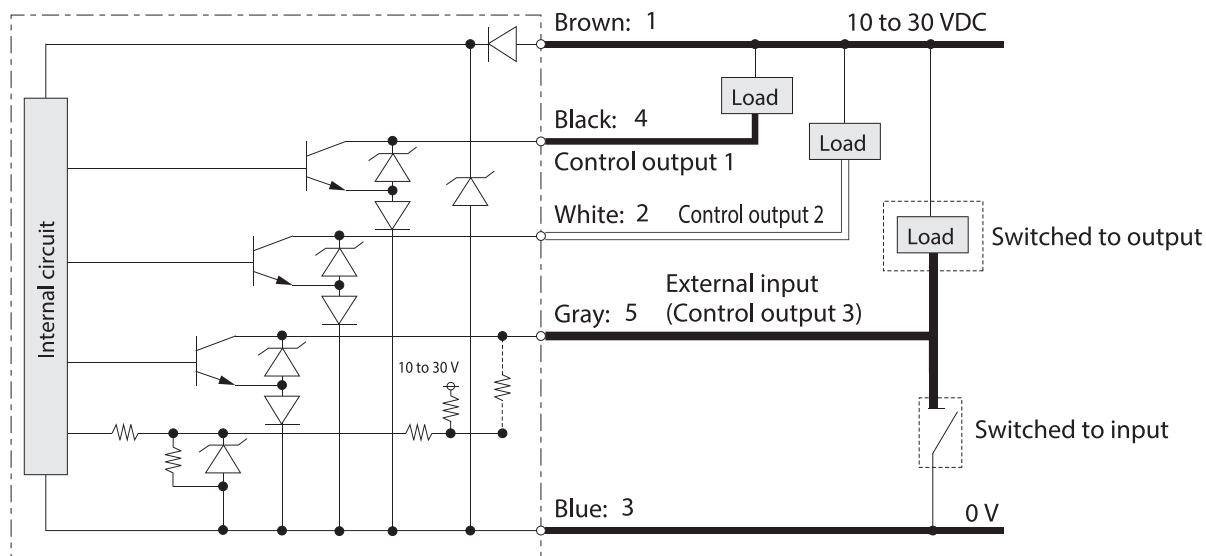
■ Analog output type: With the PNP setting



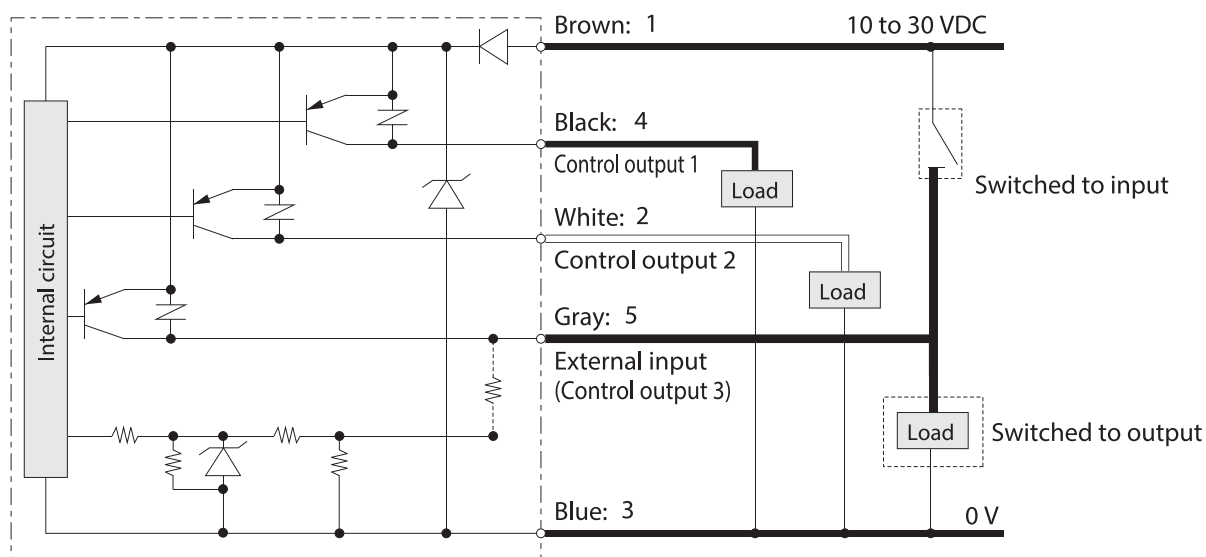
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I/O circuit diagram

■ 3-control-output type: With the NPN setting



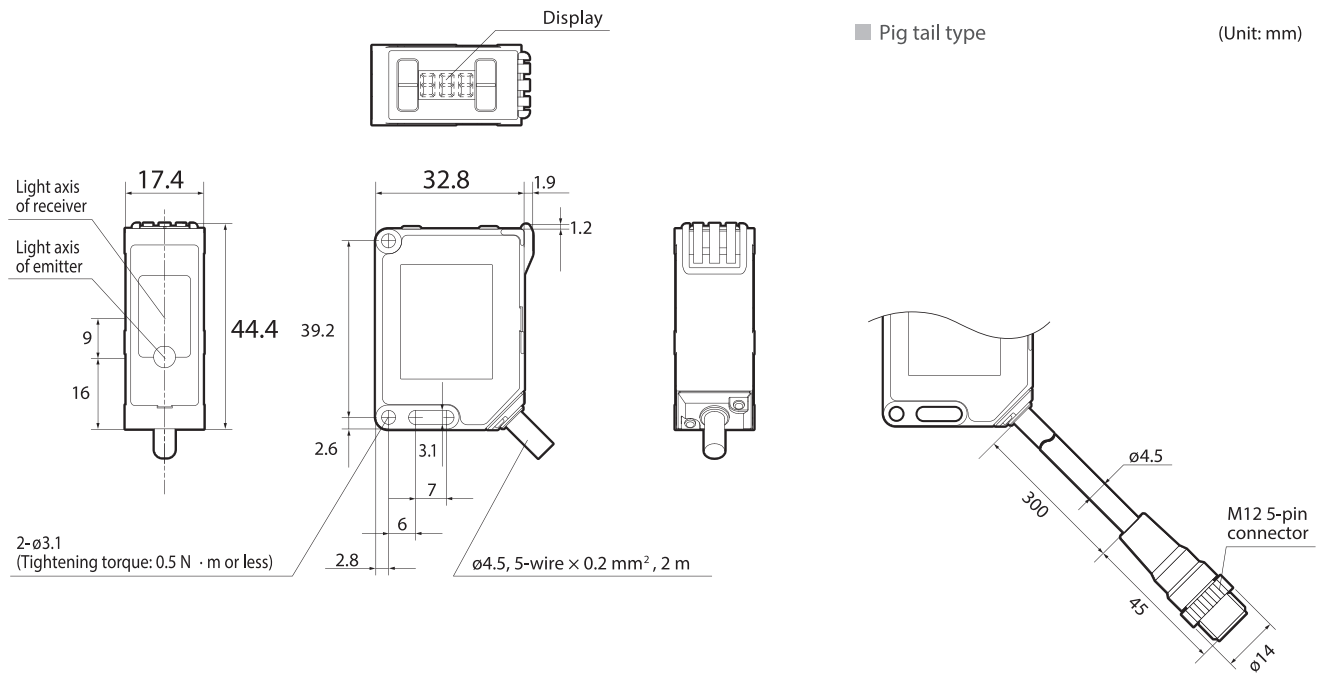
■ 3-control-output type: With the PNP setting



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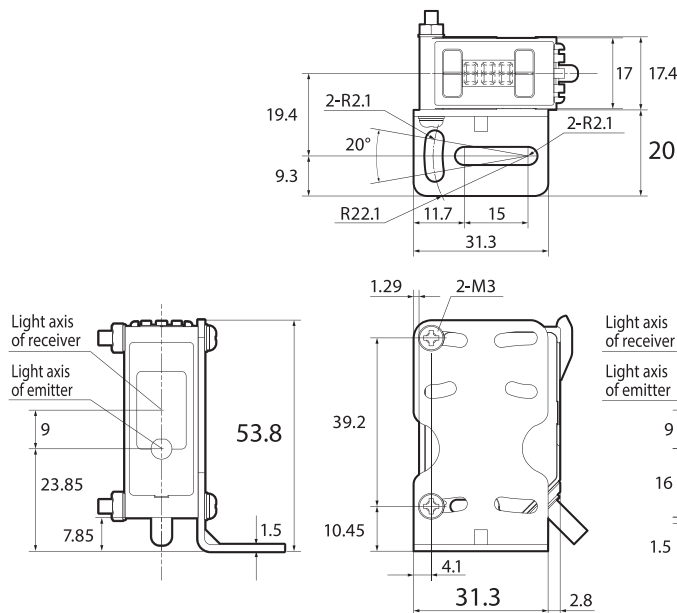
Sensor

■ Cable type

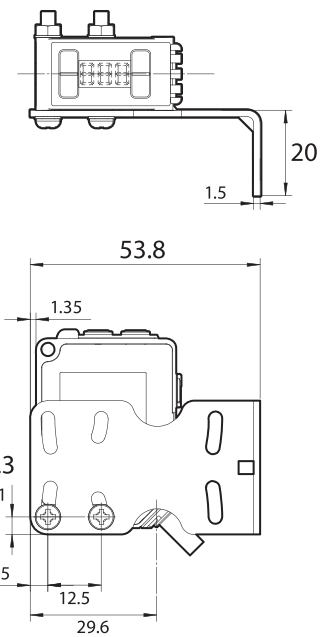


Mounting bracket

■ BEF-WK-190: Floor-mounted

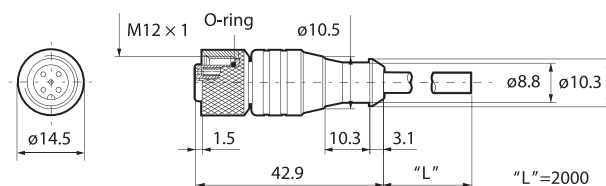


■ **Wall-mounted**



Connector cable

■ DOL-1205-G02M



Cable section material: PVC
Conductor cross-section: 5-wire $\times 0.5 \text{ mm}^2$