

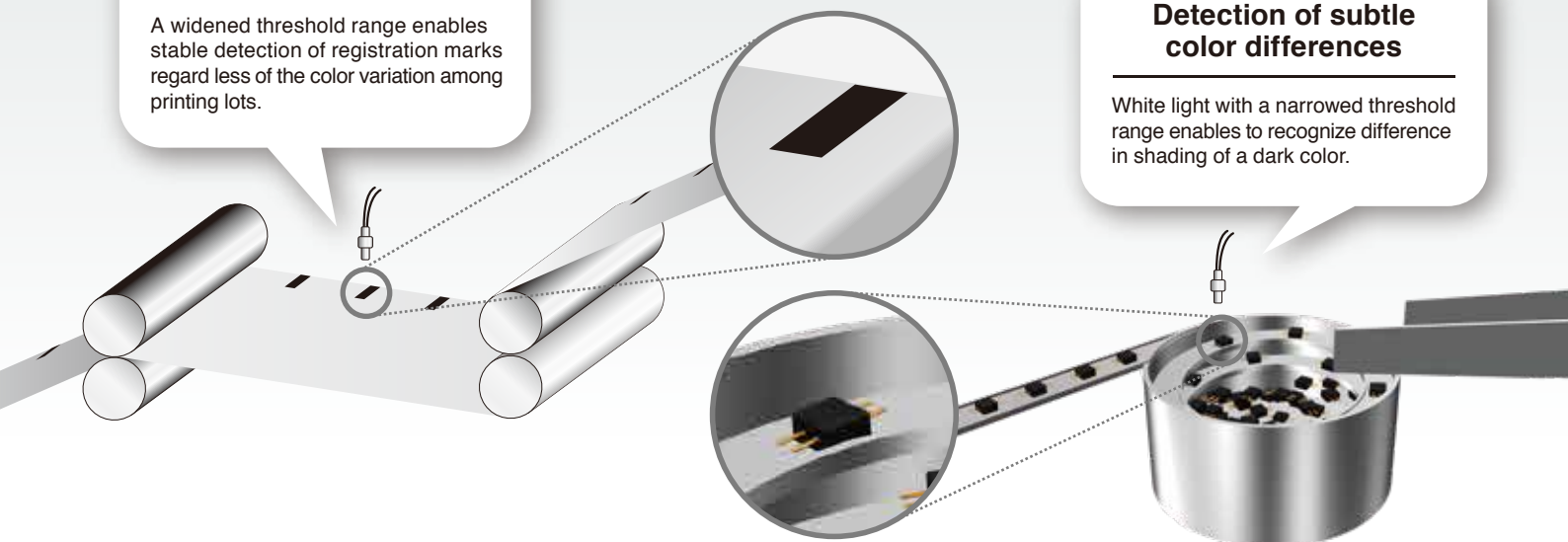
## White light source for easy detection of subtle color differences

### Stable detection of registration marks

A widened threshold range enables stable detection of registration marks regard less of the color variation among printing lots.

### Detection of subtle color differences

White light with a narrowed threshold range enables to recognize difference in shading of a dark color.



D3WF-TMCN4

- **3 teaching modes** to support various detection requirements
- **Fastest\*** response time in the world: **16 μs**  
\* Stand-alone use or master/slave connection with cross-talk prevention off
- **Easy-to-read 3 display modes** of value, percentage and bar graph
- **Dual Sensitivity Correction** for stable operation

### Model Line-up

Unit connection	Light source	Control output	Cable connection	Model	
				NPN	PNP
Stand-alone	White LED	1 ch	2m cable	<b>D3WF-TN</b>	<b>D3WF-TP</b>
Inter-connection master			M8 4-pin connector	<b>D3WF-TMCN4</b>	<b>D3WF-TMCP4</b>
Inter-connection slave			M8 4-pin connector	<b>D3WF-TSCN4</b>	<b>D3WF-TSCP4</b>

### Recommended Fiber Units

Optical System	Shape	Description	Sensing Distance (mm) <sup>*1</sup>	Ambient Temperature <sup>*2</sup>	Bending Radius (mm)	Model No.
Diffuse Reflective		M4 Thread, SUS, 2m free cut	16μs: 33	-40~70°C	R25	NF-DM01
		M6 Thread, SUS, 2m free cut	200μs: 62			NF-DK06

\*1 On 500 × 500 mm white paper.

\*2 Ambient humidity between 35 and 85%. At 85% RH, the ambient temperature is between 0 and 40°C.

## Specifications

Unit connection		Stand-alone	Master connection	Slave connection
Model	NPN	D3WF-TN	D3WF-TMCN4	D3WF-TSCN4
	PNP	D3WF-TP	D3WF-TMCP4	D3WF-TSCP4
Light source	White LED			
Response time	High: 16 $\mu$ s*, Standard: 200 $\mu$ s			
Sensitivity adjustment	Teaching and manual adjustments			
Indicators	Output indicator (orange)			
Digital display	7-segment, 8-digit display (red: 4-digit, green: 4-digit)			
Control output	1 ch, NPN/PNP open collector max. 100 mA*/ 30 VDC, residual voltage: 1.8 V or less			
External input	Teaching input,*3 all teaching input, output mode selection, control output OFF, input OFF			
Cross talk prevention	—		ON/OFF switchable, up to 3 units	
Timer function	ON delay, OFF delay, one-shot, ON+OFF delay, ON+one-shot settable to 0.1 to 9999 ms			
Output mode	Light ON/Dark ON, set automatically during teaching, switched with external input and the settings			
No. of connectable units	—		Max. 16 (including master unit)	
Connection cable	2m cable		M8 4-pin connector	
Insulation resistance	20 M $\Omega$ or more (with 500 VDC)			
Rating	Supply voltage	12 to 24 VDC $\pm$ 10%, including 10% ripple (p-p)		
	Power consumption (normally)	864mW (36 mA or less at 24 V)		
	Power consumption (Eco mode)	720 mW (30 mA or less at 24 V)		
Warm-up time	300ms			
Applicable regulations	EMC	EMC directive (2014/30/EU)		
	Environment	RoHS directive (2011/65/EU), China RoHS (MIIT Order No. 32)		
Applicable standards	EN 60947-5-2			
Company standards	Noise resistance: Feilen Level 3 cleared			
Photobiological safety	Risk group 2 (IEC 62471/JIS C 7550)			
Environmental resistance	Ambient temperature / humidity	-25 to +55°C*/35 to 85%RH (no freezing or condensation)		
	Ambient illuminance	Sunlight: 10000 lx or less, Incandescent light: 3000 lx or less		
	Vibration resistance	10 to 55 Hz; double amplitude 1.5 mm; 2 hours in each of the X, Y, and Z directions		
	Shock resistance	Approx. 50 G (500 m/s <sup>2</sup> ) 3 times in each of the X, Y, and Z directions		
	Protection circuit	Reverse connection protection, overcurrent protection		
Degree of protection	IP50			
Material	Housing, cover: PC			
Weight	Approx. 71 g (Including cable)		Approx. 25 g	
Included accessories	Mounting bracket			

\*1: The response time is 32  $\mu$ s when master/slave connection units are linked with the cross talk prevention function on.

\*2: When used as a stand-alone unit or when the number of inter-connected units including the master unit is 2 or 3. Use a load current of 50 mA or less for 4 to 8 units and 20 mA or less for 9 to 16 units.

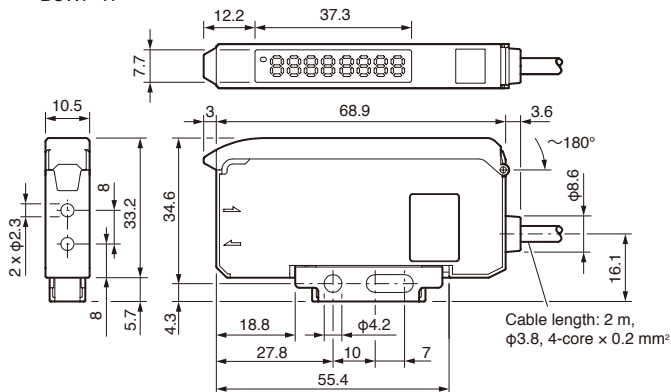
\*3: Teaching mode from external input is a mode executed in advance by the main unit (default: dynamic teaching).

\*4: When used as a stand-alone unit or when the number of inter-connected units including the master unit is 2 or 3. Keep at -25 to +50°C for 4 to 8 units and -25 to +45°C for 9 to 16 units.

## Dimensions Unit (mm)

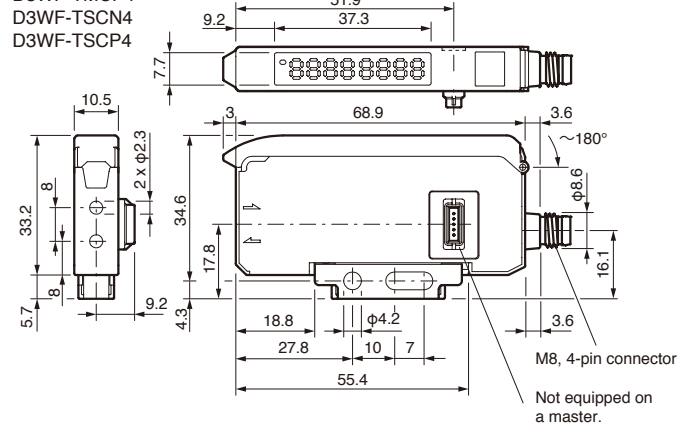
### Stand-alone

D3WF-TN  
D3WF-TP



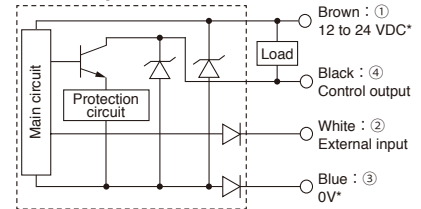
### Master / Slave

D3WF-TMCN4  
D3WF-TMCP4  
D3WF-TSCN4  
D3WF-TSCP4

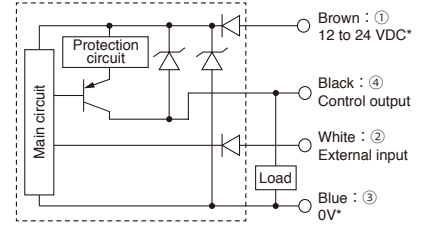


## I/O Circuit Diagram

### NPN output



### PNP output



\* Power is supplied to slave units from the master unit, so the power supply terminals (brown: 12 to 24 VDC and blue: 0V) are not connected.

### M8 connector pin layout

② External input ④ Control output



\* As the power is supplied to slave units from the master unit, no connection with 12 to 24VDC and 0V pins are required.

## Accessories

### Connector cable

Type	Model	Cable length
Straight	M84CN-2S	2m
	M84CN-5S	5m
	M84CN-10S	10m
L-shaped	M84CN-2L	2m
	M84CN-5L	5m
	M84CN-10L	10m



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