

# Magnescale

SPEED × PRECISION

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SPEED × PRECISION



# Tough Sensor

High Rigidity × High Operability = Tough Sensor

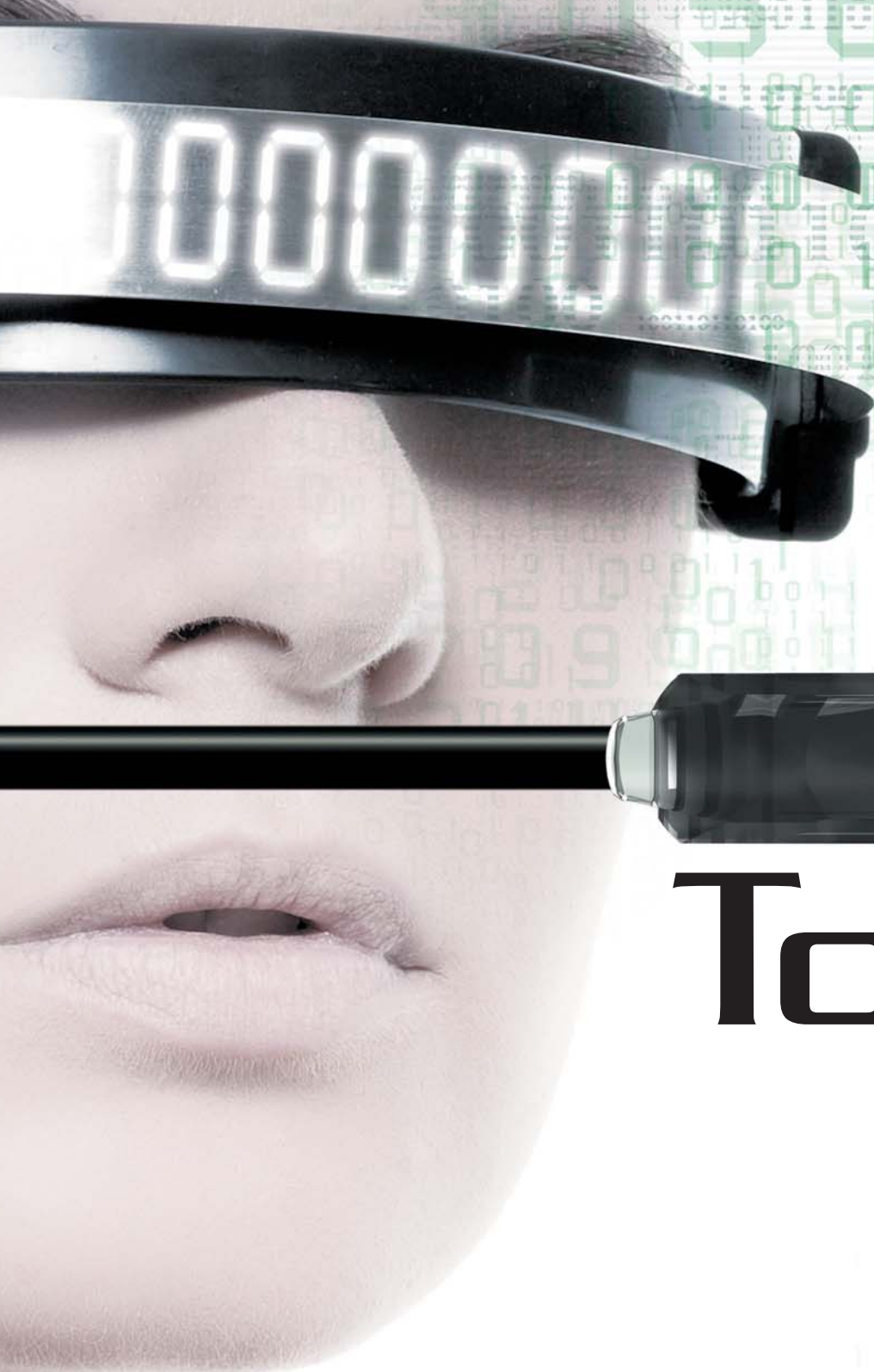
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The contents of this literature are as of Jun. 2018. Magnescale reserves the right to change product specifications without prior notice.  
This catalog is printed with soy ink.  
MGS-TS-1806-EN-C

Magnescale Co., Ltd.



# Precision Judgment Makes a Difference

Digital Tolerance Indicator  
MF10 Series



## Tough Sensor



Digital Gauge  
DF805S/DF812S Series

Digital Gauge  
DF805S/DF812S Series

[ Long life ]

High durability capable of  
withstanding up to 60 million strokes.

[ Impact resistance ]

Use of metal materials realizes  
impact resistance of 1,000 m/s<sup>2</sup>.

[ High precision ]

High precision measurement with  
0.1µm maximum resolution

Digital Tolerance Indicator  
MF10 Series

[ Operability ]

Simple settings make  
operability easy.

[ Ultra compact ]

DIN rail mounting saves spaces  
even when using multiple channels

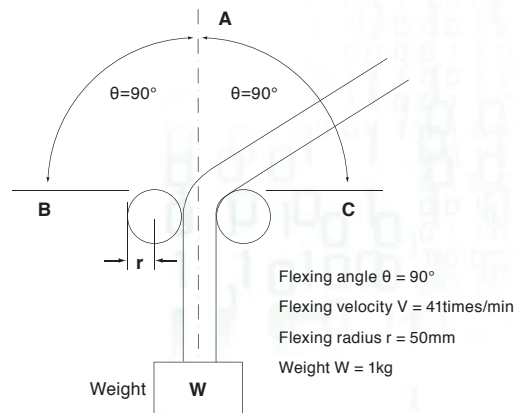
[ Versatile ]

Multi-limit switch  
In addition to Go/NoGo judgment, the digital  
tolerance indicator can also be used as a stepless  
limit switch within the measurement range.

# Provides High Rigidity, an Ultra-Compact Size, and High Precision

## Stability & High Rigidity

- **Magnescale reliable ball spline structure**  
Achieved numbers of strokes: 60 million
- **Magnescale magnetic scale technology**  
Resistant to the effects of condensation
- **Built-in reference point**  
Enables position reproduction
- **Includes a flex-resistant cable**  
Approximately 10 million flex cycles
- **Flange type**  
Easy mounting
- **Slim-type  $\varnothing 8$  mm body**
- **IP66**<sub>[straight body models]</sub>, **IP67**<sub>[right angle models with hose elbow]</sub>
- **High-resolution  $0.1 \mu\text{m}$**     ■ **High-precision  $1 \mu\text{m}$**



## Quick and Easy Operation

Threshold values can be set with two clicks of a button.

Buttons are easy to remember and operate

- Various mode displays (preset, tolerance setting, Go/NoGo indication, output inversion function)
- Two types of tolerance settings and four different setting methods can be selected.
- A preset function enables setting of arbitrary reference points.

- **Ultra-compact size just 10 mm thick**



- **Highly visible white LED**



The digital display improves for Easy-to-read

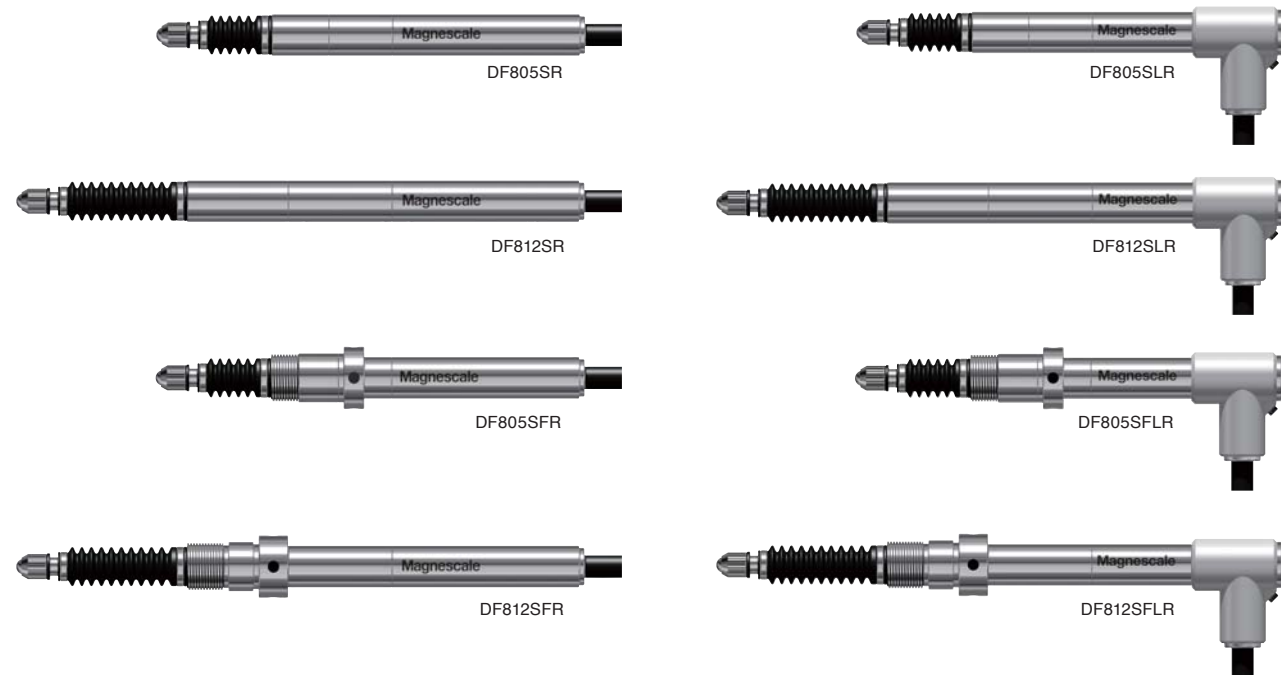
## Digital Gauge DF805S/DF812S Series



## Digital Tolerance Indicator MF10 Series



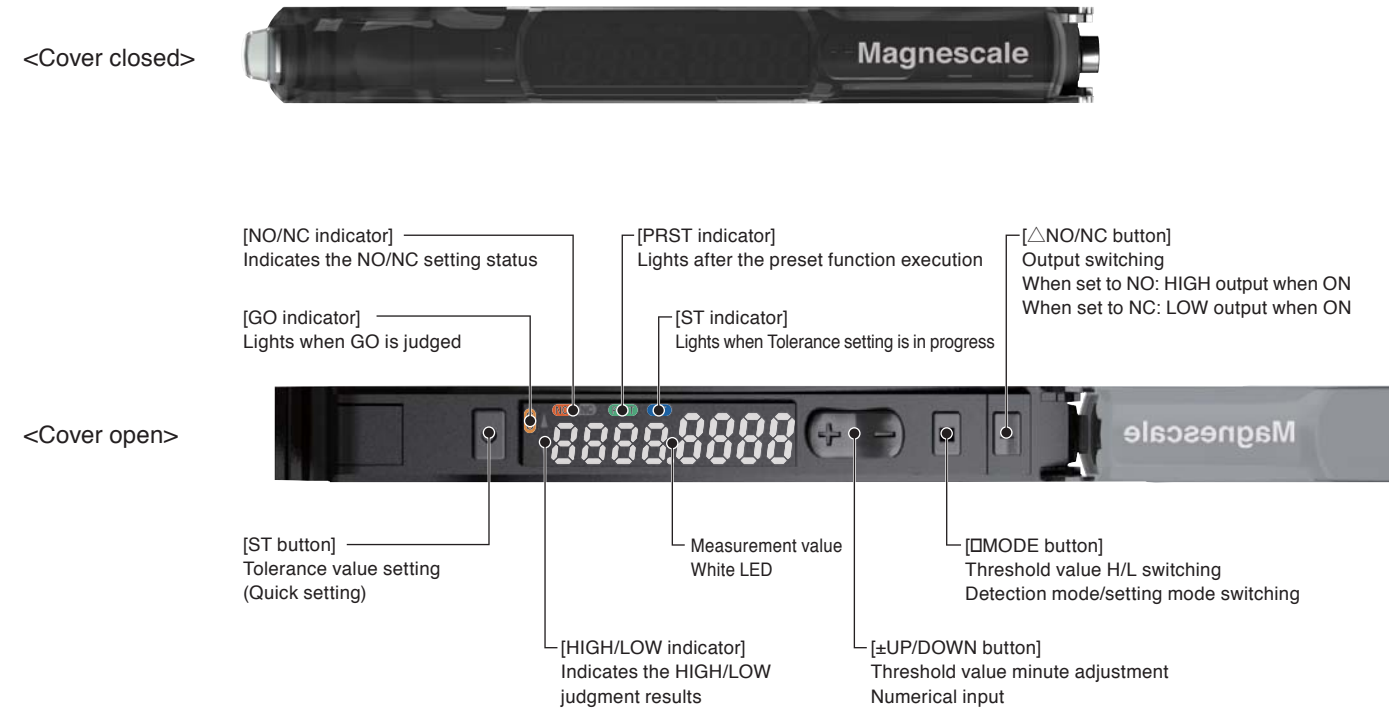
**Digital Gauge  
DF805S/DF812S Series**



DF805S□□R  
DF812S□□R

No letters: Straight  
L: Right angle  
F: Flange  
FL: Flange & Right angle  
S: Ball spline  
05: measurement range 5 mm  
12: measurement range 12 mm

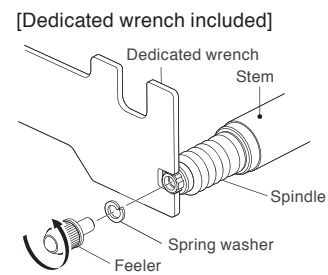
**Digital Tolerance Indicator  
MF10 Series**



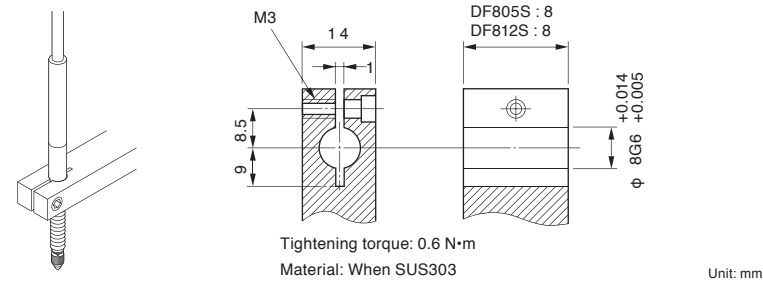
MF10-P1 Current sink (NPN)  
MF10-P2 Current source (PNP)

**DF800S mounting method and features <standard ø8 mounting>**

**Attaching/removing feeler**

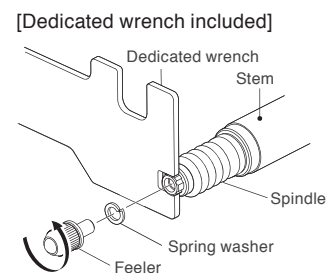


**Recommended mounting holder dimensions**

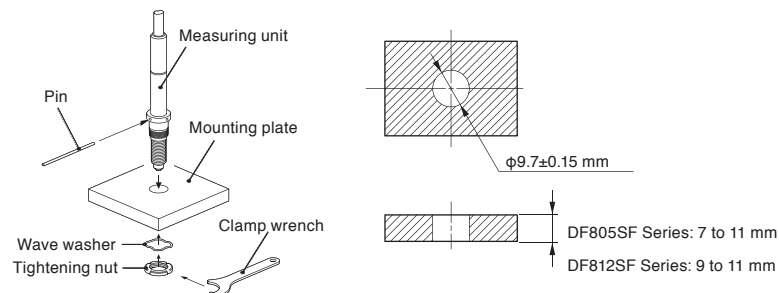


**DF800SF mounting method and features <Easy mounting possible without applying excessive force to the bearing>**

**Attaching/removing feeler**

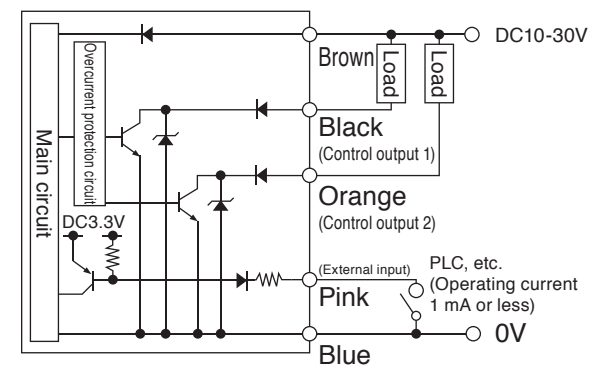


**Recommended mounting holder dimensions**

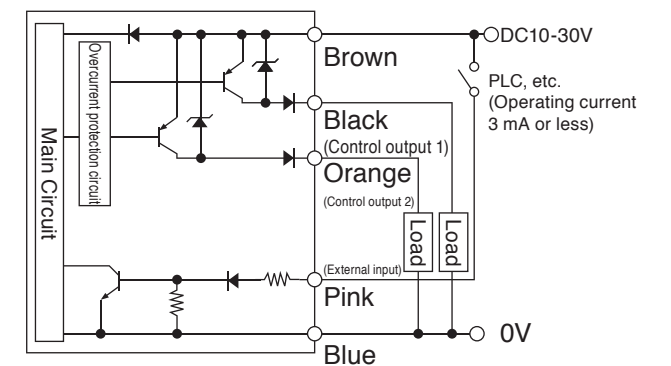


**MF10 series Input/Output Circuit Diagram**

**MF10-P1 (NPN type)**



**MF10-P2 (PNP type)**



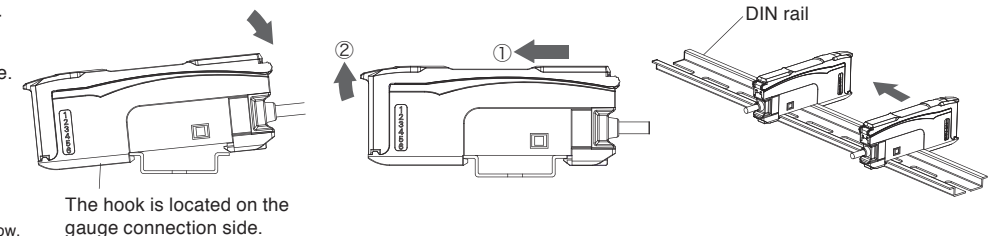
■ Mounting on DIN rail

- Let the hook on the underside of the indicator catch the DIN rail track.
- Push in the unit until the hook clicks into place.

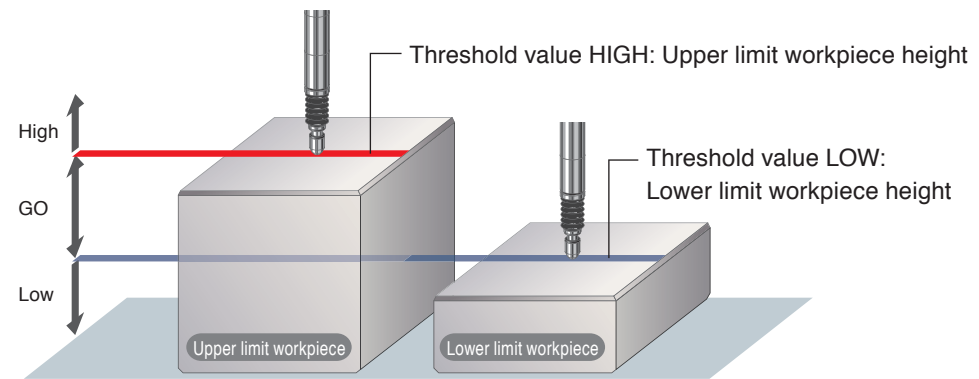
■ Removing from DIN rail

- Push the unit in the direction of arrow 1.
- Lift the unit in the direction of arrow 2 while performing step ①.

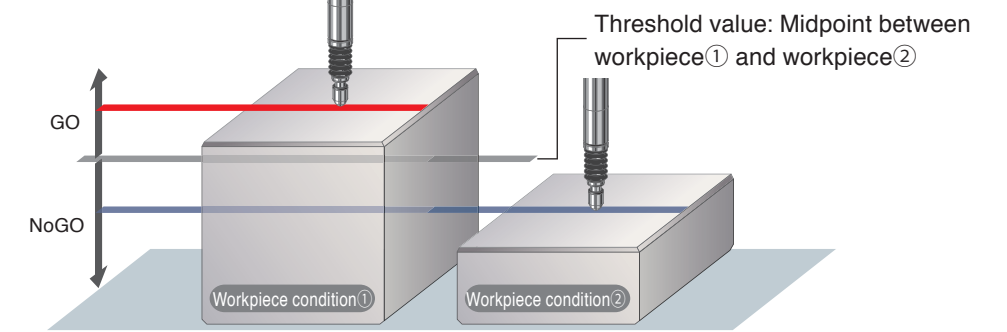
\*Up to 30 digital tolerance indicators can be installed in a row.



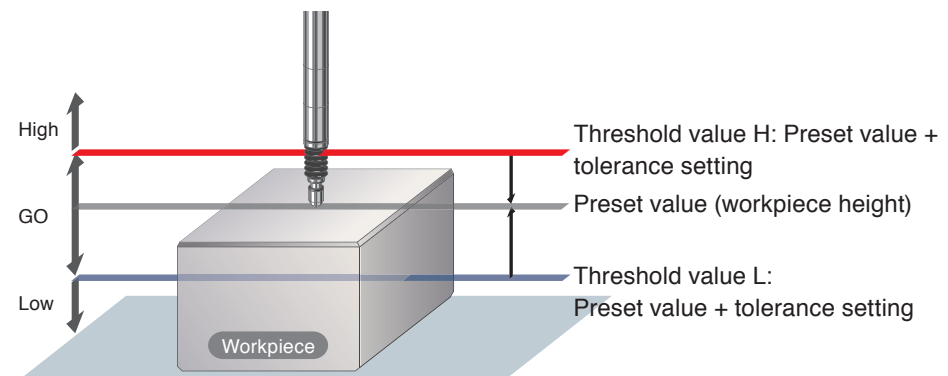
Setting the upper and lower limit range



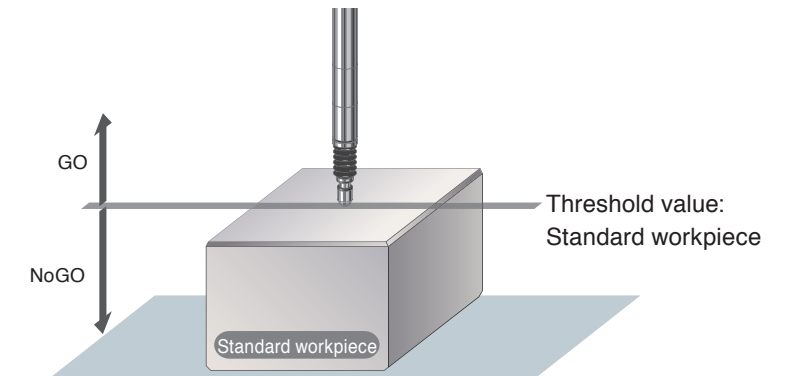
Setting relative to a single reference



Setting the ± tolerance relative to the work

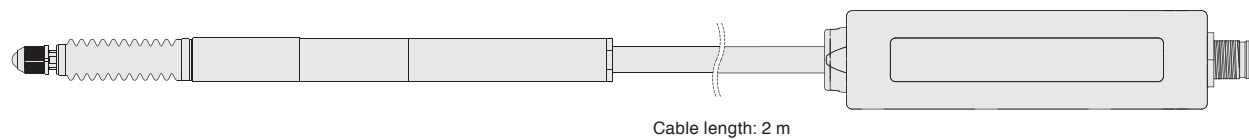


Setting the standard workpiece as the reference



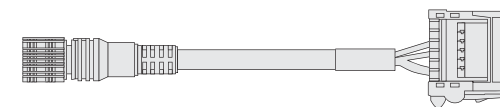
System diagram

SYSTEM



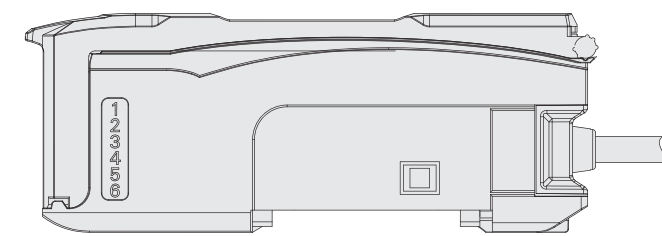
**1** Digital gauge

Total 8 models



**2** Cable

CE34-005 CE34-02  
CE34-05 CE34-10  
CE34-15 CE34-20

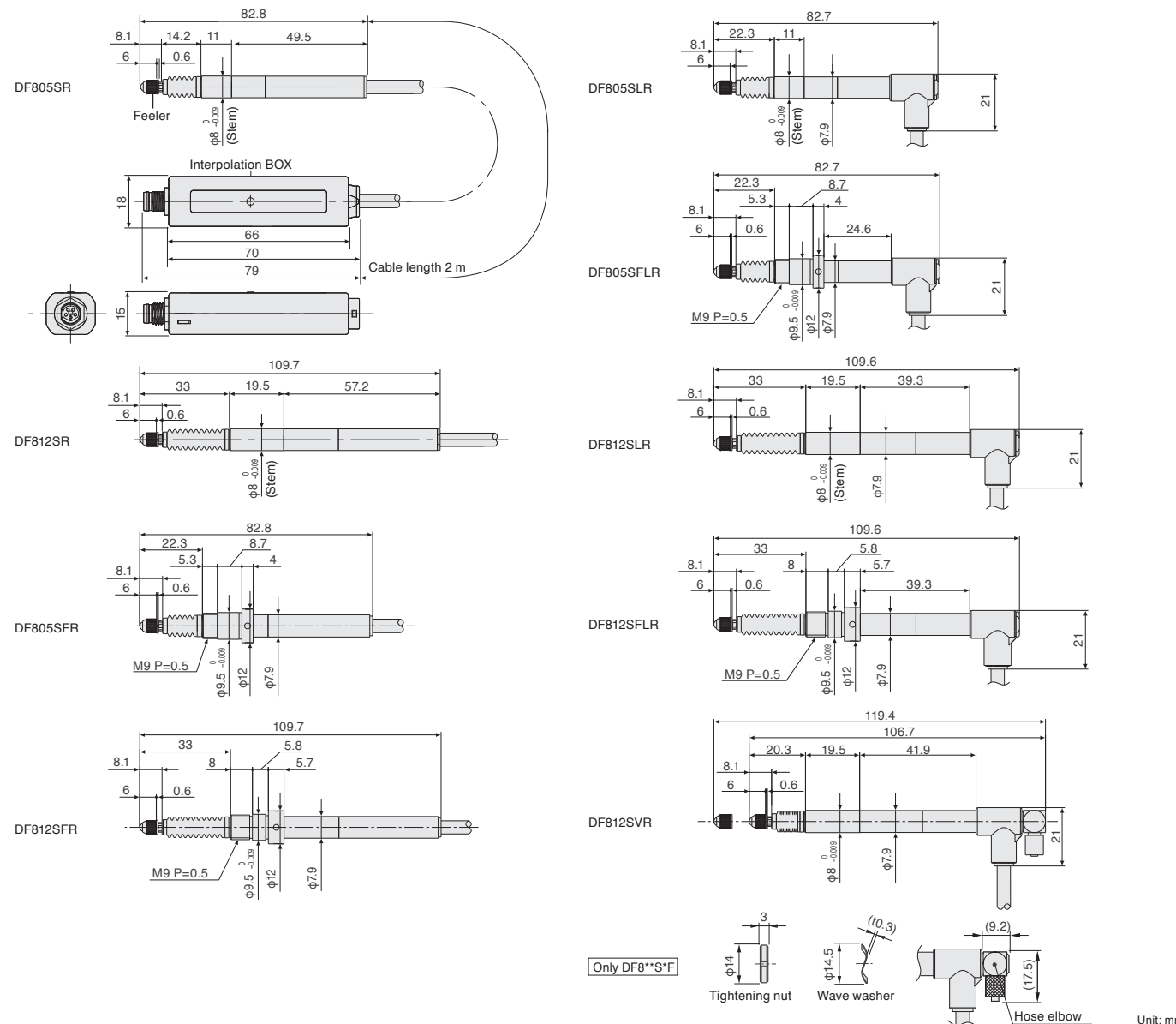


**3** Digital Tolerance indicator

Current sink (NPN)  
Current source (PNP)

Digital Gauge  
DF805/DF812 Series

Main Specifications	
Model name	DF805SR DF805SFR DF805SLR DF805SFLR DF812SR DF812SFR DF812SLR DF812SFLR DF812SVR
Measuring range	5mm 12mm
Resolution	0.1μm
Accuracy (at 20°C/68°F)	1μm
Measuring force (at 20°C/68°F)	Upward : 0.35±0.25N Horizontal : 0.40±0.25N Downward : 0.45±0.25N Upward : 0.4±0.3N Horizontal : 0.5±0.3N Downward : 0.6±0.3N Upward : 0.6±0.5N Horizontal : 0.7±0.5N Downward : 0.8±0.5N Air pressure : 0.05MPa
Maximum response speed	80m/min
Reference point	at 1±0.5 mm position of spindle movement
Reference point response speed	80m/min
Output	Dedicated serial communication protocol
Spindle driving	Spring push Pneumatic push
Achieved number of strokes	60 million strokes (under specific test conditions defined by Magnescale Co., Ltd.)
Protective structure	IP66/IP67 When a ø4 mm tube is connected : IP67 IP54 When a ø4 mm tube is connected : IP67 IP66/IP67 IP54 When a ø4 mm tube is connected : IP67 IP66/IP67
Impact resistance	1000m/s <sup>2</sup> (11ms)
Vibration resistance	100m/s <sup>2</sup> (20-2000HZ)
Operating temperature	0-55°C
Storage temperature	-20-60°C
Power supply voltage	+10 to +30V DC including ripple (p-p) 10%
Power consumption	1.2 W or less
Mass	Approx. 30 g (not including cable parts and interpolation box)
Probe part cable length	2m
Output cable length	Max. 20 m (Use the optional CE34.)
Feeler	Provided with a carbide ball tip Mount screw M2.5
Accessories	Instruction Manual, 1 wrench, 1 hose elbow (only DF8**S*L**) Tightening nut, clamp wrench, wave washer, stop pin (1 each) (only DF8**S**F**)

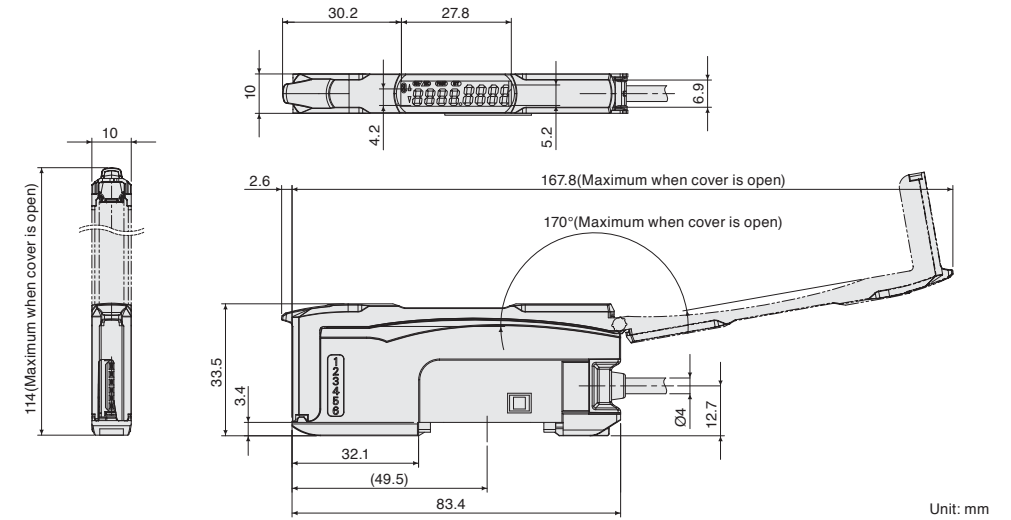


Digital Tolerance Indicator  
MF10 Series

Main Specifications	
Model name	MF10-P1 MF10-P2
Type	NPN output (current sink) PNP output (current source)
I/O	Number of Go/NoGo judgment outputs: 2 Number of external inputs <sup>4</sup> : 1
Minimum display unit	0.1μm
Power supply voltage	+10 to +30V DC including ripple (p-p) 10%
Power consumption <sup>1</sup>	Power supply voltage 24 V normal mode: 2040 mW or less (Power consumption 85 mA or less) Power-saving ECO mode: 1920 mW or less (Current consumption 80 mA or less)
Go/NoGo judgment output <sup>2</sup>	Load voltage: DC 30 V or less, open collector output type Load current: the total of the two outputs must be 100 mA or less (Residual voltage and load current less than 10 mA: 1 V or less) Load current 10 mA to 100 mA: 2 V or less Off-state current: 0.1 mA or less
Protection circuit	Power supply reverse connection protection, output short-circuit protection and output reverse connection protection
Number of banks	4 (Can be set 4 kinds of judgment value)
Ambient temperature range <sup>3</sup>	Operating: When lining up 1 or 2 digital tolerance indicators: 0°C to +55°C Storage: -10°C to +60°C (with no icing or condensation)
Ambient humidity range	Operating and storage: 35% to 85% RH (with no condensation)
Mass (main unit)	Approx. 75 g
Cable length	2m

<sup>1</sup> At a power supply voltage of 10 to 30 V, Normal mode: 2250 mW or less (power supply voltage 30 V: power consumption 75 mA or less / power supply voltage 10 V: power consumption 155 mA or less), power-saving ECO mode: 2100 mW or less (power supply voltage 30 V: power consumption 70 mA or less / power supply voltage 10 V: power consumption 135 mA or less) <sup>2</sup> When lining up 4 or more digital tolerance indicators, the 2 output total is 20 mA or less. <sup>3</sup> When used in a row, the operating ambient temperature range is 0°C to +50°C for 3 to 10 units, 0°C to +45°C for 11 to 16 units, and 0°C to +40°C for 17 to 30 units. <sup>4</sup> The input details are as follows.

	Contact input (relay or switch)	Non-contact input (transistor)	Input time
NPN Type	ON: Connection to 0 V (Outflow current: 1 mA or less) OFF: Open or short-circuited to Vcc	ON: 1.5 V or less (Outflow current: 1 mA or less) OFF: Vcc-1.5V to Vcc (Leakage current: 0.1 mA or less)	ON: 9ms or more OFF: 9ms or more
PNP Type	ON: Connection to Vcc (Sink current: 3 mA or less) OFF: Open or short-circuited to 0V	ON: Vcc-1.5V to Vcc (Sink current: 3 mA or less) OFF: 1.5V or less (Leakage current: 0.1 mA or less)	



Cable  
CE34-

Main Specifications	
Model Name	CE34-005 CE34-02 CE34-05 CE34-10 CE34-15 CE34-20
Cable length	0.5m 2.0m 5.0m 10m 15m 20m

