

# SONY

Digital Gauge  
Measuring Unit **DK SERIES**

*Field-proven highly reliable magnetic digital gauges*



## DIGITAL GAUGE

**The DK series is a slim, compact Digital Gauge**

**Provides high resolution (0.1 $\mu$ m), high accuracy ( $\pm$ 0.5 $\mu$ m) linear measurement for a variety of applications.**

Measuring range: 2mm or 12mm

Built-in reference point

Vacuum retract, spring push or pneumatic push

Robust design for harsh environments (IP66)

Flange mount available

Linear over entire stroke

TTL Output. Easily connects to a PC,

PLC or to Sony's "MG" series of Multi-interface units.



**Sony Manufacturing Systems Corporation**



Isehara Center is registered to ISO 9001( Quality )

## Specifications

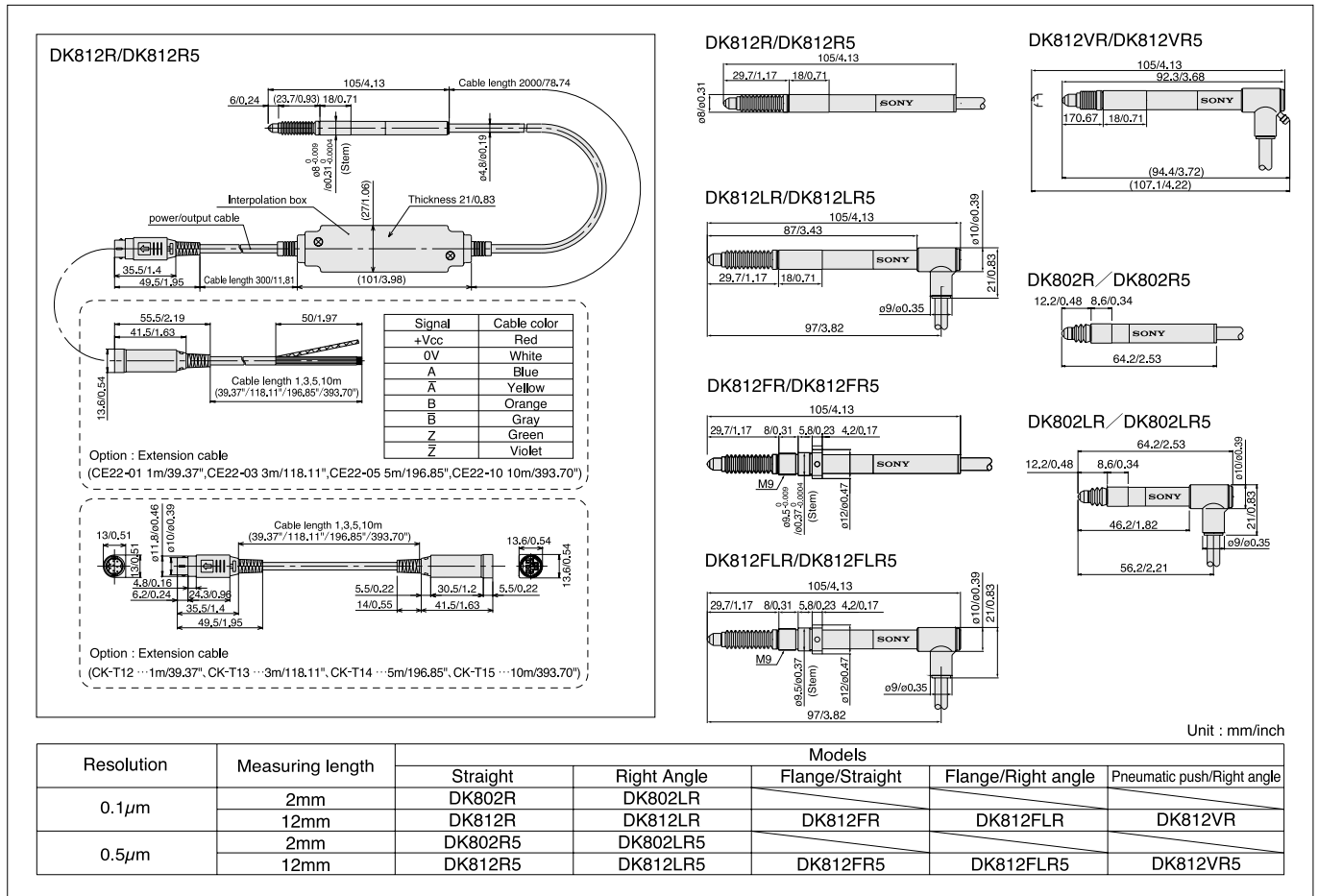
Model name	DK812R,DK812LR,DK812FR,DK812FLR,DK812VR,DK802R,DK802LR	DK812R5,DK812LR5,DK812FR5,DK812FLR5,DK812VR5,DK802R5,DK802LR5
Output	A / B / Z Quadrature (Line Driver EIA-422 or equivalent)	
Measuring range	2mm/12mm	
Minimum resolution	0.1 $\mu$ m	0.5 $\mu$ m
Minimum phase difference*1	100ns	
Accuracy (at 20°C)	$\pm 0.5\mu$ m	$\pm 0.8\mu$ m
Measuring Force	Measuring range : 2mm Downward : 0.45 $\pm$ 0.25N Lateral : 0.40 $\pm$ 0.25N Upward : 0.35 $\pm$ 0.25N	Measuring range : 12mm Downward : 0.6 $\pm$ 0.3N Lateral : 0.5 $\pm$ 0.3N Upward : 0.4 $\pm$ 0.3N
Reference point	1 (1mm from spindle start)	
Maximum response speed	42m/min	100m/min
Feeler	carbide ball $\phi 3$ (Mounting screw: M2.5x0.45)	steel ball $\phi 3$ (Mounting screw: M2.5x0.45)
Spindle action by air	Vacuum retraction (type LR) Pneumatic push (type VR)	
Vibration resistance	100m/s <sup>2</sup> (10~2000Hz)	
Shock resistance	1000m/s <sup>2</sup> (11ms)	
Protective design grade	IP66 (not including Interpolation box and connector)	
Operating temperature	0~50°C(Interpolation box: 0~40°C)	
Storage temperature	-20~60°C	
Power supply voltage	+5VDC $\pm$ 5% *2	
Power consumption	1.8W	
Mass*3	Approx. 20g (measuring range: 2mm)	Approx. 30g (measuring range: 12mm)
Length of output cable	12m max. (Cable length to subsequent electronics)	

\*1 : Contact us for models with a larger phase difference.

\*2 : The power supply should be between +5V and +5.25V with cable fully extended.

\*3 : Cable and Interpolation box are not included.

## Dimensions



**⚠ Safety notice:** Prior to use, be absolutely certain to read and understand the Operating Instruction to ensure proper use of this product.

● Specifications and dimensions listed in this brochure are subject to change without notice due to product improvement.

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*Flexible digital gauge system for multi-point measuring*



## MULTI-INTERFACE UNIT

The “MG” series is a modular gauging system that allows for flexible, multi-point measuring, with built-in software for today’s most popular output protocols.

Because of its modular construction, the “MG” system can be easily mounted to a standard DIN rail (35mm), requires minimal wiring, and can be easily expanded for future upgrades.

- Up to 64 connectable gauges
- Input resolutions: 0.1 $\mu$ m, 0.5 $\mu$ m, 1 $\mu$ m, 5 $\mu$ m, and 10 $\mu$ m.
- Compatible with RS-232C, BCD
- Operating voltage: 12-24VDC
- DIN rail mounting (35mm)



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## Main module

Model name		MG10-P1	MG10-P2
Power source	Supply voltage	DC12-24V(11-26.4V)Min. startup time: 100ms or less	
	Power consumption	2.0W + total power consumption for connected modules*1	
	Inrush current (10ms)	10A or less (when maximum number of modules are connected)	
	Power supply protection	Fuse (5A fuse is built in.)	
Communication	Communication I/F	RS-232C (EIA-232C or equivalent)	
	Baud rate setting	2400 / 9600 / 19200 / 38400 bps (set with DIP switch)	
	Data length	7 / 8 bit (set with DIP switch)	
	Stop bit	1 / 2 bit (set with DIP switch)	
	Parity	none / ODD / EVEN (set with DIP switch)	
Linkage function	Delimiter	CR / CR+LF (set with DIP switch)	
	Maximum number of linkages	16 (total of counter modules: 64)	
I/O	Maximum length of linking cable	10m	
	Input format	source input (+COM)	sink input (-COM)
	Output format	sink type (-COM)	source type (+COM)
	Input signal	Photo coupler insulation, external power: DC5 - 24V	
	Output signal	Photo coupler insulation, external power: DC5 - 24V	
Connectable modules	Counter modules	MG20-DK, MG20-DG and MG-20DT (available for mixed use, up to 16 modules) *1	
	Interface modules	MG30-B1, MG30-B2	

\*1: Total power of modules connected to MG10 should not be over 54W (12VDC Input) or 108 W (24VDC Input).

## Counter module

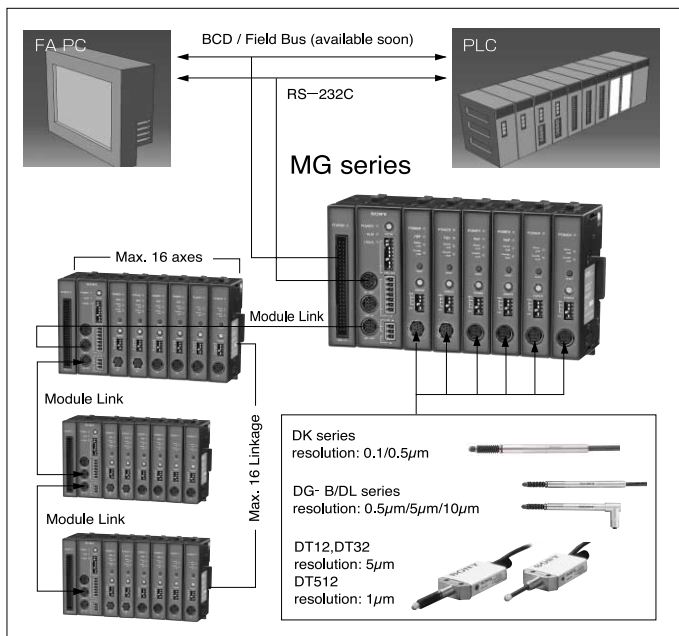
Model name		MG20-DK	MG20-DG	MG20-DT
Power consumption		1W + power consumption for connected gauge	1.4W (connected to DG-B) / 0.5W (connected to DL-B)	0.8W
Measuring unit input	Corresponding gauge	DK series (A/B quadrature input)	DG**B series, DL**B/DL**BR series	DT series
	Allowable resolution setting *2	10 / 5 / 1 / 0.5 / 0.1μm	10 / 5 / 0.5μm	5μm(DT12/32) 1μm(DT512)
	Maximum response speed	Subject to the specification of the connected gauge		
	Reference point *3	REF-LED (reference point loaded) shows on the display after the reference point is detected. Set "0" or preset value on the counter when the reference point is detected.		
Others	Alarm	S-ALM LED activates by excess speed/acceleration of measuring unit. C-ALM LED activates by excess speed of the internal circuit of counter.		
		Alarm display is cancelled by reset command from MG10 or with the reset button of main unit.		

\*2: Set the resolution value of the connected gauge. \*3: MG20-DG work only connect to DL\*\*BR series

## Interface module

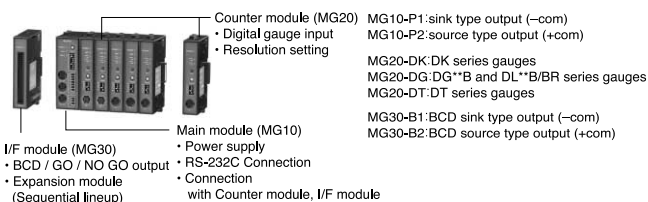
Model name		MG30-B1	MG30-B2
Power consumption		1w	
I/O	Input format	source input (+com)	sink input (-com)
	Output format	sink type (-com)	source type (+com)
	Input signal	Photo coupler insulation, external power: DC5 - 24V	
	Output signal	Photo coupler insulation, external power: DC5 - 24V	
Output setting		DRQ / channel address / measuring mode shifting / comparator shifting / reset / start / posing / reference point loaded BCD data (6 digits) / READY / code / GO/NO GO output / alarm / reference point loaded timer (1~128ms) / OUT / OR / polarity (set with internal DIP switch)	
All models	Operating temperature	0~+50°C (No condensation)	
	Storage temperature	-10~+60°C (20~90%RH)	

## System structure

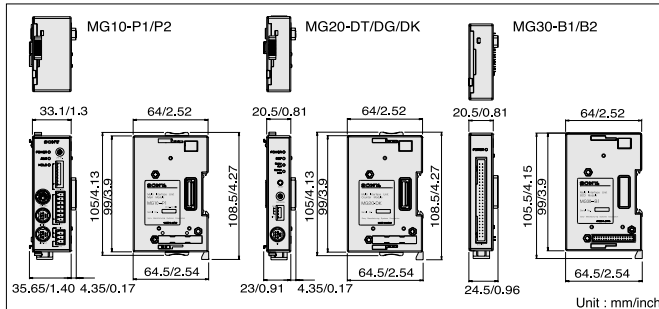


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## "MG" Multi Interface unit operates with a variety of modules.



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