

Magnescale

SPEED X PRECISION

Digital gauge
DK Series
Intelligent network system
MG40 Series
Multi point measuring unit
MG10/20/30 Series

Magnescale

SPEED X PRECISION

DIGITAL GAUGE
DK
SERIES
&
Network interface
MG
SERIES



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Magnescale Co., Ltd.

DIGITAL GAUGE

DK SERIES

The DK Series digital gauge with its slim and compact design offers exceptional performance of 0.1µm resolution and 80m/minute response speed. Magnescale magnetic technology, along with the use of stainless steel components, allows the gauge to perform with accuracy and durability even under the harshest environments.

- Measurement range : 2 - 205 mm
- Accuracy : 1µm to 1.5µm (DK800 Series)
- Maximum resolution : 0.1µm, 0.5µm
- Maximum response speed:
 - 80m/min. (at Max. resolution of 0.1µm)
 - 250m/min.(at Max. resolution of 0.5µm)
- Built-in reference point
- Highly resistant against water and oil, and excellent durability
- Available in spring push



**Achieved over 20 million strokes
in current testing**
(DK830SR, DK830SLR)

**Ball spindle bearing design reduces the affect of side load
on accuracy and durability**
(DK830S series)

Slim and compact design with high performance

High response speed **80 m/min**

High resolution **0.1 µm**

Long stroke **30 mm**

Wide measurement range 2 to 205 mm
All measurements can be realized by wide range lineup



DK802



DK805ALR/DK805BLR
DK805ALR5/DK805BLR5



DK805AFLR/DK805BFLLR
DK805AFLR5/DK805BLFR5



DK812



DK10



DK25



DK50



DK100



DK155/DK205
DK155 shown



[NEW]DK830S

Network interface

MG SERIES

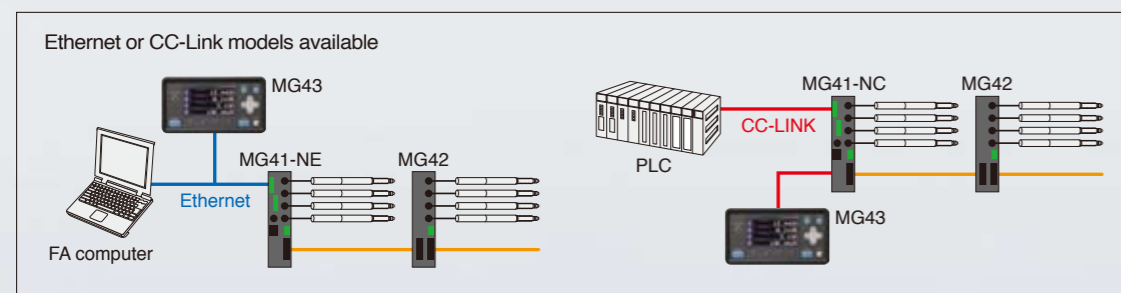
The MG40 series is an intelligent network interface system designed for highly efficient multi-channel measurement

Intelligent Network system
MG40 SERIES



The MG40 series intelligent network measurement system enables high-speed communication, multi-channel measurement and data management. The MG40 series communicates with the DK series of gauges via a true digital communication protocol and does not rely upon analog or AB phase outputs. Miscounts caused by external noise are eliminated and the system instantly recovers from communication errors.

- The MG40 series, with its standard Ethernet interface, enables you to process and store remote data via 100Mbit/sec high speed data communication.
- Utilizing a single MG41 hub, up to 100 channels can be easily connected via one network cable.
- Ethernet and CC-Link interfaces eliminate the need for BCD or RS-232C wiring connections.
- In the event of a communication error, the system automatically acquires the correct positional information.
- Bi-directional serial digital communication allows for a higher response speed.
- DIN rail compatible (35mm)



Wide measurement range from 2 mm to 205 mm allows for a broad range of applications

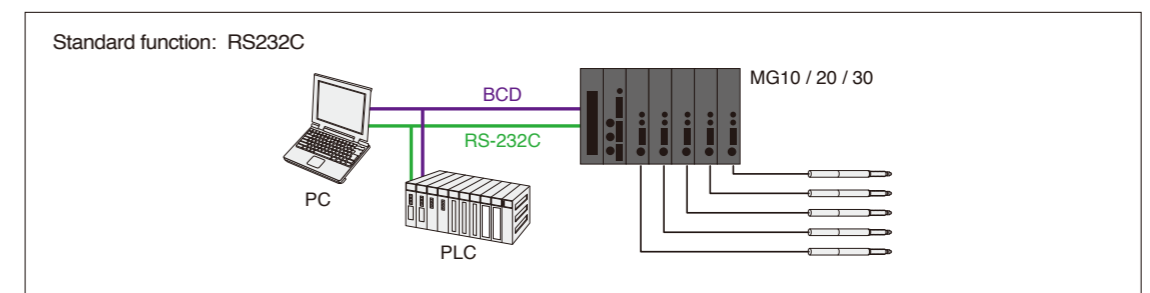
For multi-channel measurement

Modular Measurement Unit
MG10/20/30



This modular measurement system is applicable to multi-channel measurement via RS232C or BCD communication. The MG10 series allows multi-channel input to a PC or PLC through one main hub reducing wiring and increasing efficiency.

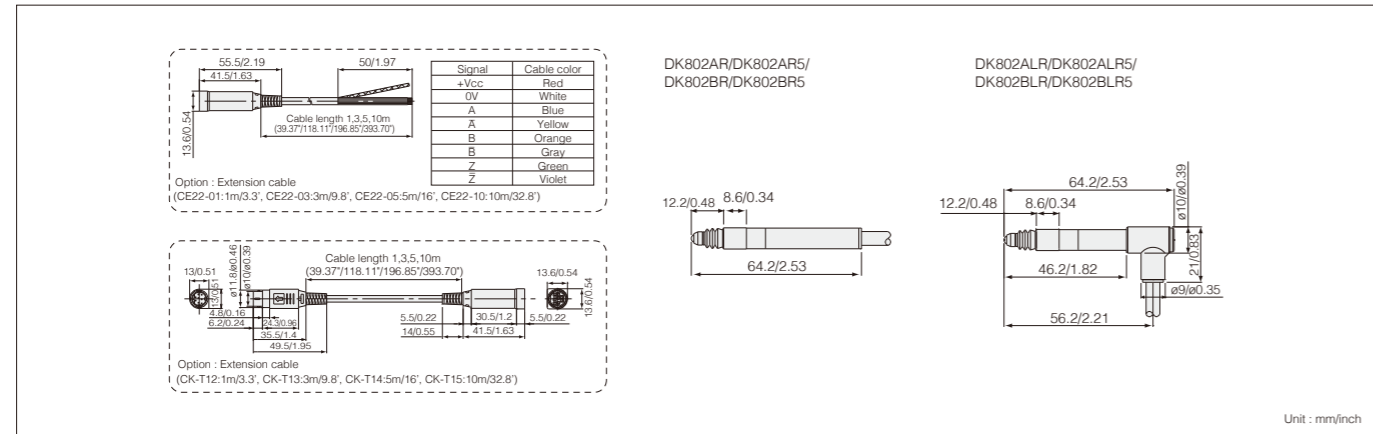
- Up to 16 expansion modules can be connected to each MG10 main module
- Maximum 64 channels possible by link connection
- Available input resolutions of 0.1 μ m, 0.5 μ m, 1 μ m, 5 μ m, or 10 μ m
- Standard RS-232C interface, BCD output also available
- DC12V - 24V operating voltage
- Din rail compatible (35 mm)



DK802

Specifications	High resolution type		General purpose type	
	DK802AR, DK802ALR	DK802BR, DK802BLR	DK802AR5, DK802ALR5	DK802BR5, DK802BLR5
Output	A/B/REF differential TTL output (compliant with EIA-422)			
Resolution	0.1 μm		0.5 μm	
Measuring range	2 mm (0.08")		1.5 mm	
Accuracy (at 20°C / 68°F)	1 μm		1.5 μm	
Measuring force (at 20°C / 68°F)	Downward: 0.45 ± 0.25 N Horizontal: 0.40 ± 0.25 N Upward: 0.35 ± 0.25 N			
Reference point	One location (at 1 mm/0.04" position of spindle movement)			
Maximum response speed	80 m/min	42 m/min	250 m/min	100 m/min
Air driving	Vacuum suction (DK802ALR / DK802ALR5 / DK802BLR / DK802BLR5)			
Vibration resistance (10 to 2000 Hz)	100 m/s ²			
Impact resistance (11 ms)	1000 m/s ²			
Protective structure	IP66 (not including interpolation box and connectors)			
Operating temperature	0°C to 50°C/32°F to 122°F			
Storage temperature	-20°C to 60°C/-4°F to 140°F			
Power supply voltage	DC +5 V ±5%			
Power consumption	1 W			
Cable length	2.5 m/8.2'			
Diameter of stem	ø8 / 0.31" dia.			
Mass ^{*1}	Approx. 20 g/0.7 oz			
Feeler	Provided with a carbide ball tip (DZ-123) Mount screw M2.5		Provided with a steel ball tip Mount screw M2.5	
Accessories	+P M4x5 screw (2pcs.), Installation spacer, Instruction Manual, Supplement			
Output cable length (up to the electronic section)	22 m/72.2' max.			

*1: The mass indicated is the total mass excluding the cable and interpolation box.

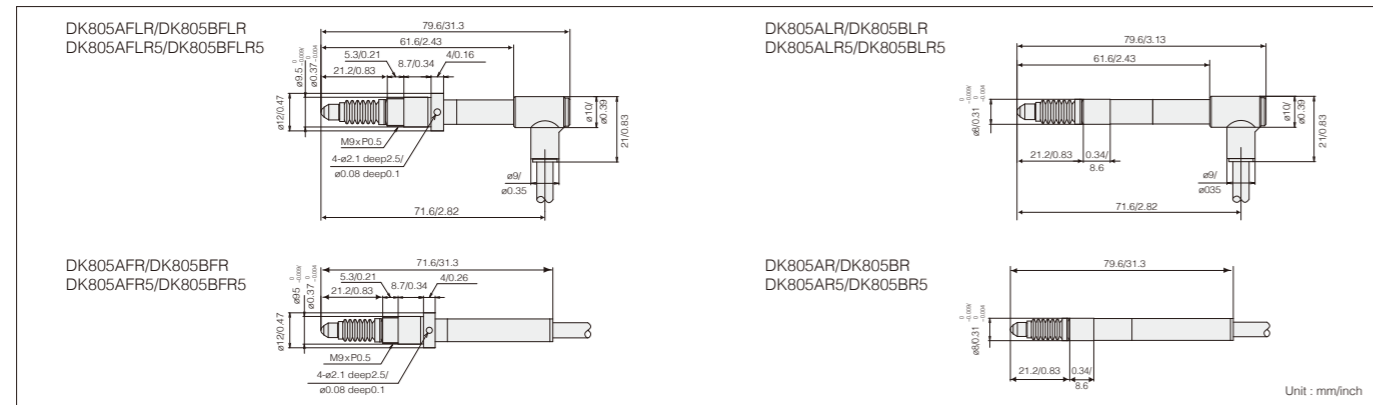


DK805

Specifications	High-resolution models		General-purpose resolution model	
	DK805AFR, DK805AFLR, DK805AR, DK805ALR	DK805BFR, DK805BFLR, DK805BR, DK805BLR	DK805AFR5, DK805AFLR5, DK805AR5, DK805ALR5	DK805BFR5, DK805BFLR5, DK805BR5, DK805BLR5
Output	A/B/ phase voltage-differential line driver output (compliant with EIA-422) *Please see P17 Output Signal Phase Difference.			
Resolution	0.1 μm		0.5 μm	
Measuring range	5 mm (0.19")		1.5 mm	
Accuracy (at 20°C/68°F)	1 μm		1.5 μm	
Measuring force (at 20°C/68°F)	Downward: 0.45 ± 0.25 N Horizontal: 0.40 ± 0.25 N Upward: 0.35 ± 0.25 N			
Reference point	One location (at 1 mm/0.04" position of spindle movement)			
Maximum response speed	80 m/min	42 m/min	250 m/min	100 m/min
Air driving	Vacuum suction (DK805AFLR / DK805AFLR5 / DK805BFLR / DK805BFLR5 / DK805ALR / DK805ALR5 / DK805BLR5)			
Vibration resistance (10 to 2000 Hz)	100 m/s ²			
Shock resistance (11 ms)	1000 m/s ²			
Protective structure	IP66 (not including interpolation box and connectors)			
Operating temperature	0°C to 50°C/32°F to 122°F			
Storage temperature	-20°C to 60°C/-4°F to 140°F			
Power supply voltage	DC +5 V ±5%			
Power consumption	1 W			
Cable length ^{*1}	2.5 m/8.2'			
Diameter of stem	ø9.50 ^{±0.009} / 0.37 ^{±0.004} dia.			
Mass ^{*2}	Approx. 30 g/1.06 oz			
Feeler	Provided with a carbide ball tip (DZ-123) Mount screw M2.5		Provided with a steel ball tip Mount screw M2.5	
Accessories	Installation spacer, Instruction Manual, Supplement			
Output cable length (up to the electronic section)	22 m/72.2' max.			

*1: Please refer to P10 DK 802 A/B about the extension cable (Option).

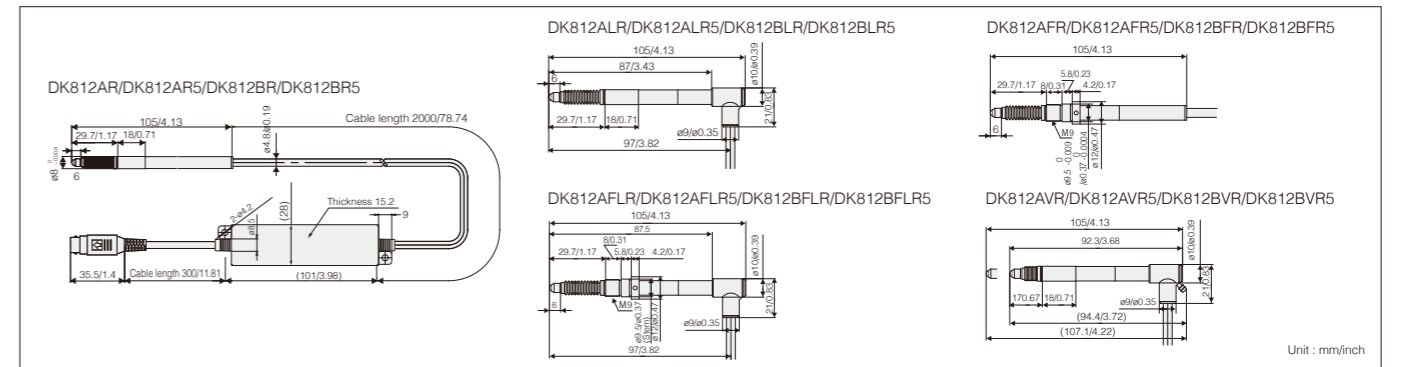
*2: The mass indicated is the total mass excluding the cable and interpolation box.



DK812

Specifications	High-resolution models		General-purpose resolution models	
	DK812AR, DK812ALR, DK812AFR, DK812AFLR, DK812AVR	DK812BR, DK812BLR, DK812BFR, DK812BFLR, DK812BVR	DK812AR5, DK812ALR5, DK812AFR5, DK812AFLR5, DK812AVR5	DK812BR5, DK812BLR5, DK812BFR5, DK812BFLR5, DK812BVR5
Output	A/B/ phase voltage-differential line driver output (compliant with EIA-422)			
Resolution	0.1 μm		0.5 μm	
Measuring range	12 mm (0.47")		1.5 mm	
Accuracy (at 20°C / 68°F)	1 μm		1.5 μm	
Measuring force (at 20°C / 68°F)	Downward: 0.6 ± 0.3 N Horizontal: 0.5 ± 0.3 N Upward: 0.4 ± 0.3 N Air pressure of 0.03Mpa : 1N or less in all directions Air pressure of 0.04Mpa : 1.7N or less in all directions			
Reference point	One location (at 1 mm/0.04" position of spindle movement)			
Maximum response speed	80 m/min	42 m/min	250 m/min	100 m/min
Air driving	Vacuum suction (DK812AFLR / DK812AFLR5 / DK812BFLR / DK812BFLR5) Pneumatic push type (DK812AVR / DK812AVR5 / DK812BVR / DK812BVR5)			
Vibration resistance (10 to 2000 Hz)	100 m/s ²			
Impact resistance (11 ms)	1000 m/s ²			
Protective structure	IP66 (not including interpolation box and connectors)			
Operating temperature	0°C to 50°C/32°F to 122°F			
Storage temperature	-20°C to 60°C/-4°F to 140°F			
Power supply voltage	DC +5 V ±5%			
Power consumption	1 W			
Cable length ^{*2}	2.5 m/8.2'			
Diameter of stem	ø9.5/0.37" dia. (Flange type), ø8/0.31" dia. (others)			
Mass ^{*1}	Approx. 30 g/1.06 oz			
Feeler	Provided with a carbide ball tip (DZ-123) Mount screw M2.5		Provided with a steel ball tip Mount screw M2.5	
Accessories	+P M4x5 screw (2pcs.), Installation spacer, Instruction Manual, Supplement			
Output cable length (up to the electronic section)	22 m/72.2' max.			

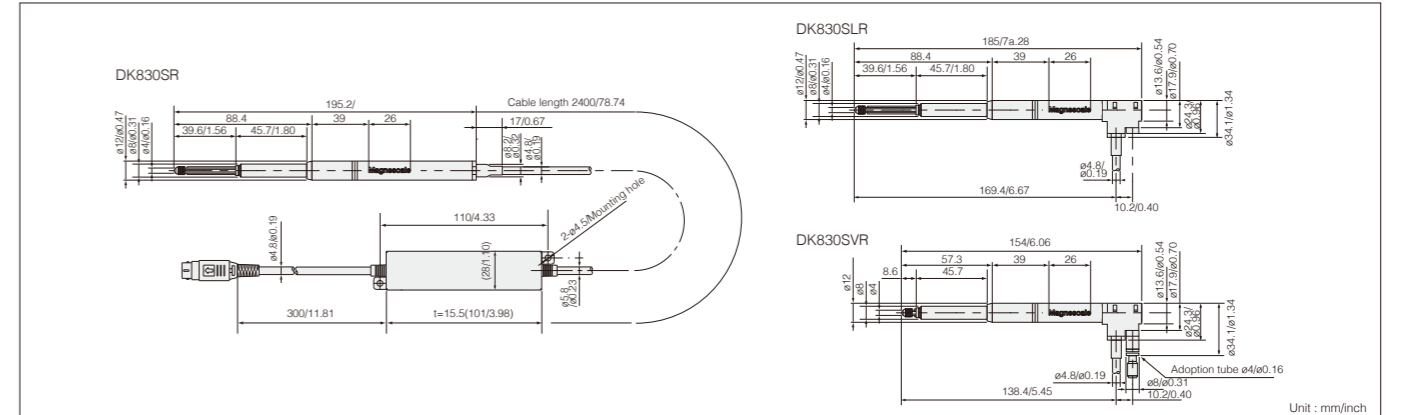
*1: Please refer to P10 DK 802 A/B about the extension cable (Option). *2: The mass indicated is the total mass excluding the cable and interpolation box.



[NEW] DK830

Specifications	DK830SR		DK830SLR		DK830SVR	
	Model	DK830SR		DK830SLR		DK830SVR
Measuring range	30 mm		30 mm		30 mm	
Resolution	1.3 μm		0.1 μm		1.7 μm	
Accuracy (at 20°C / 68°F)	Upward: 0.5 ± 0.35 N Horizontal: 0.6 ± 0.35 N Downward: 0.7 ± 0.35 N				Air presser 0.07 Mpa 1.9 N or less for all direction Air presser 0.09 Mpa 2.6 N or less for all direction	
Measuring force						
Operating temperature			0 to 50°C			
Storage temperature			-20 to 60°C			
Maximum response speed			80 m/min			
Reference response speed			80 m/min			
Air driving	non				Pneumatic push type	
Reference point position			One point at 1mm spindle move			
Protective design grade (Note1)	IP53		IP53/IP67 (Note2)			
Vibration resistance			10 to 2kHz 100 m/s ²			
Impact resistance			1000 m/s ² 11 ms			
Cable length			Approx. 2.4 m			
Diameter of stem			ø8			
Feeler			Provided with a carbide tip, Mounting screw M2.5			
Power supply voltage			DC 5 V ± 5 %			
Power consumption			1 W			
Mass (Note3)	Approx. 70 g				Approx. 80 g	
Output			A/B/REF voltage-differential line driver output (compliant with EIA-422)			
Guaranteed number of strokes	20 million or more				10 million or more	
Output cable length (up to the electronic section)			22 m MAX			
Accessories			Spanner, Instruction manual, Supplimanet, +P M4x5 screw(2 pcs.)			

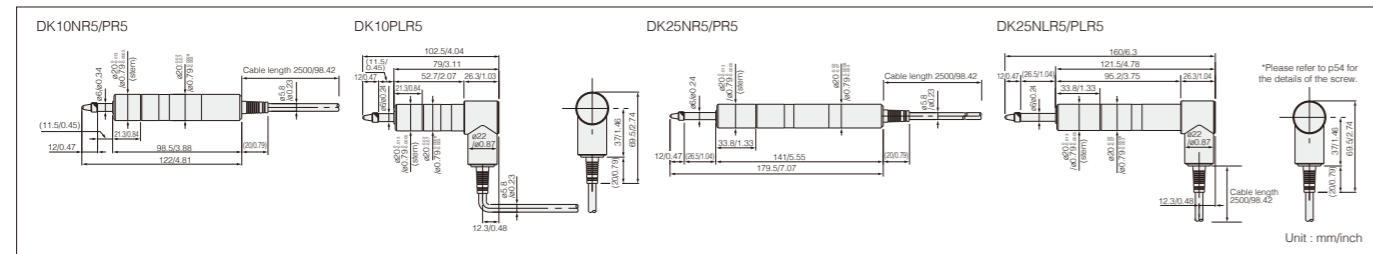
Note1: Except interpolation box and connector Note2: Bellows set(Option accessory) Note3: Except cable and interpolation box Note4: According to the evaluation method of Magnescale.



DK10/25

Specifications							
Model	DK10NR5	DK10PR5	DK10PLR5	DK25NR5	DK25PR5	DK25NLR5	DK25PLR5
Output	A/B/ phase voltage-differential line driver output (compliant with EIA-422) *Please see P17 Output Signal Phase Difference.						
Resolution*1	0.5 μm			25 mm			
Measuring range	10 mm			25 mm			
Accuracy (at 20°C)	2 μm						
Measuring force (at 20°C)	Upward	0.3 ± 0.25 N	4.9 N or less	0.4 ± 0.3 N	4.9 N or less	0.4 ± 0.3 N	4.9 N or less
	Horizontal	0.6 ± 0.3 N		0.7 ± 0.35 N		0.7 ± 0.35 N	
	Downward	0.8 ± 0.35 N		1 ± 0.4 N		1 ± 0.4 N	
Reference point	One location (at 1 mm position of spindle movement)						
Maximum response speed	250 m/min						
Vibration resistance (10 to 2000 Hz)	150 m/s ²						
Impact resistance (11 ms)	1500 m/s ²						
Protective structure	IP50	IP64	IP50	IP64	IP50	IP64	IP64
Operating temperature	0°C to 50°C						
Storage temperature	-20°C to 60°C						
Power supply voltage	DC +5 V ±5%						
Power consumption	1 W						
Cable length*2	Approx. 2.5 m						
Diameter of stem	ø 20 ⁰ / _{-0.013} mm						
Mass*3	Approx. 230 g			Approx. 300 g			
Feeler	Provided with a carbide ball tip DZ-122 (Mount screw M2.5)						
Output cable length	22 m max.						
Guaranteed number of Strokes	Minimum 5 million cycles without shock						
Accessories	+P M4x5 screw (2 pcs.), Instruction Manual						

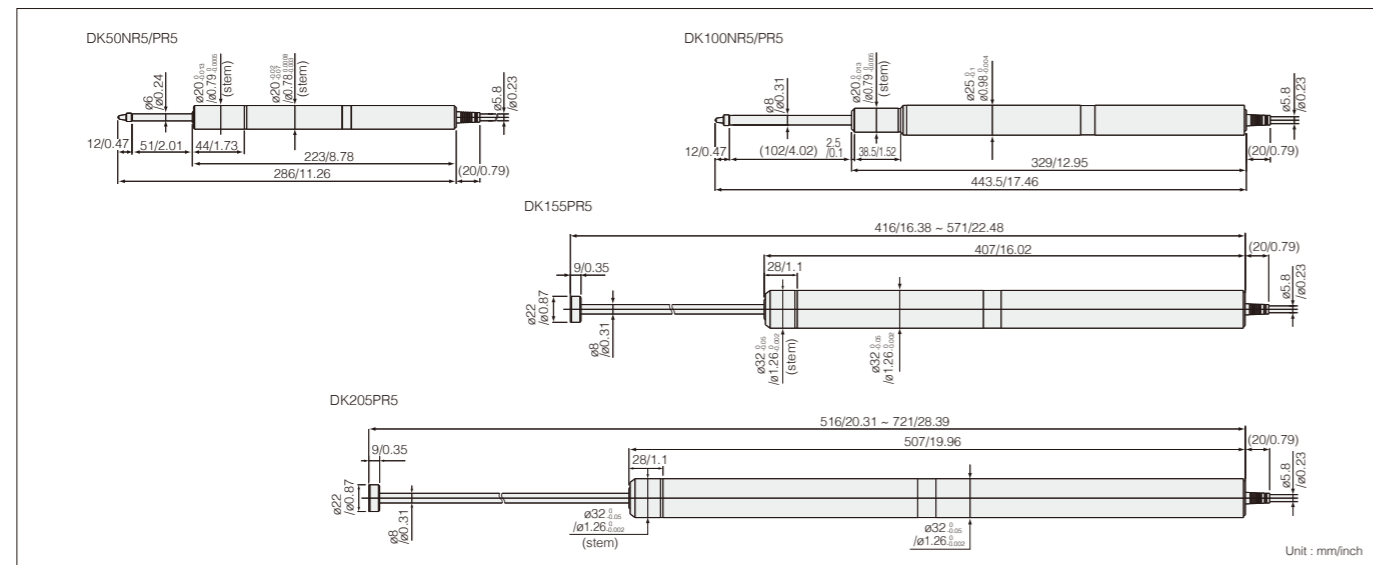
*1 : The resolution setting needs to be made when connecting to the LT30 series, MG series, and LY70 series. For details, please refer to the respective instruction manual.
 *2 : Please refer to P10 DK 802 A/B about the extension cable (Option). *3 : The mass indicated is the total mass excluding the cable and interpolation box.



DK50/100/155/205

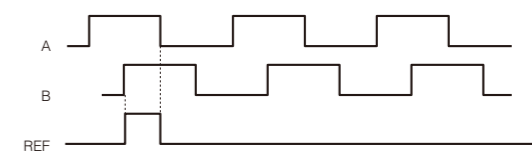
Specifications							
Model	DK50NR5	DK50PR5	DK100NR5	DK100PR5	DK155	DK205	
Output	A/B/ phase voltage-differential line driver output (compliant with EIA-422) *Please see P17 Output Signal Phase Difference.						
Resolution*1	0.5 μm			25 mm			
Measuring range	50 mm		100 mm		155 mm		205 mm
Accuracy (at 20°C)	2 μm		4 μm		5 μm		6 μm
Measuring force (at 20°C)	Upward	—	4.9 N or less	1.8 ± 0.65 N	4.9 N or less	—	—
	Horizontal	0.9 ± 0.4 N		2.7 ± 0.55 N		—	
	Downward	1.3 ± 0.5 N		—		—	
Reference point	One location (at 1 mm position of spindle movement)						
Maximum response speed	250 m/min						
Vibration resistance (10 to 2000 Hz)	150 m/s ²						
Impact resistance (11 ms)	1500 m/s ²						
Protective structure	IP50	IP64	IP50	IP64	IP64	IP64	IP64
Operating temperature	0°C to 50°C						
Storage temperature	-20°C to 60°C						
Power supply voltage	DC +5 V ±5%						
Power consumption	1 W or less						
Cable length*2	Approx. 2.5 m						
Diameter of stem	ø 20 ⁰ / _{-0.013} mm		ø 32 ⁰ / _{-0.05} mm		ø 32 ⁰ / _{-0.05} mm		
Mass*3	Approx. 360 g		Approx. 630 g		Approx. 1100 g		Approx. 1300 g
Feeler	Provided with a carbide ball tip DZ-122 (Mount screw M2.5)		Provided with a carbide ball tip DZ-122 (Mount screw M2.5)		Magnetic substance		
Output cable length	22 m max.						
Guaranteed number of Strokes	Minimum 5 million cycles without shock						
Accessories	+P M4x5 screw (2 pcs.), Instruction Manual						

*1 : The resolution setting needs to be made when connecting to the LT30 series, MG series, and LY70 series. For details, please refer to the respective instruction manual.
 *2 : Please refer to P10 DK 802 A/B about the extension cable (Option). *3 : The mass indicated is the total mass excluding the cable and interpolation box.



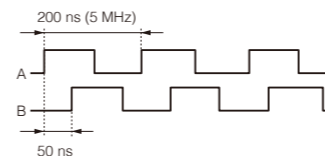
DK Series measuring unit output signals

The signals output from this measuring unit are A/B quadrature signal, Z signal in the form of voltage-differential line driver output compliant with EIA-422.

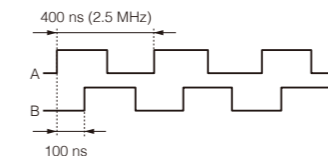


The reference point signal is synchronized with A and B signal.

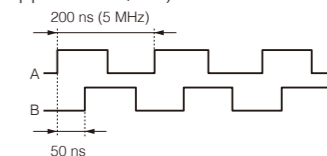
DK800A output signals at maximum response speed (at approx. 80 m/min)



DK800B output signals at maximum response speed (at approx. 42 m/min)



DK10/25/100/110/155/205 Output signals at maximum response speed (at approx. 42 m/min)



Before using, check that the minimum input phase difference of the control device connected to this measuring unit or the counter is smaller than 50 ns for the DK800A (A signal cycle: 200 ns, 5 MHz) or smaller than 100 ns for the DK800B (A cycle: 400 ns, 2.5 MHz).

Before using, check that the minimum input phase difference of the control device connected to this measuring unit or the counter is smaller than 50 ns for-DK 10~110 series (A signal cycle: 200 ns, 5 MHz).

*The minimum phase difference can be modified under special specifications.

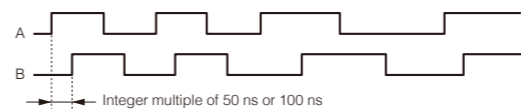
*The minimum phase difference can be modified under special specifications.

Output Signal Phase Difference

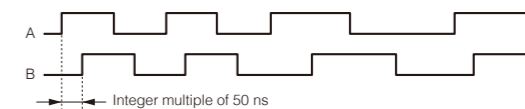
The travel amount of the measuring unit is detected every 50 ns for the DK800A and every 100 ns for the DK800B, and the phase difference proportional to the amount traveled is output. The phase difference changes in integer multiples of 50 ns or 100 ns. Also, the minimum phase difference for the A and B is 50 ns for the DK800A and 100 ns for the DK800B.

The travel amount of the measuring unit is detected every 50 ns, and the phase difference proportional to the amount traveled is output. The phase difference changes in integer multiples of 50 ns. Also, the minimum phase difference for the A and B is 50 ns.

DK800 Series



DK10/25/100/110/155/205



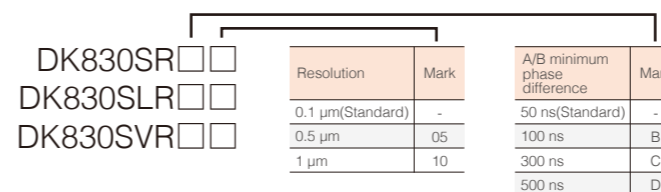
In maximum standard specifications, the minimum phase difference is fixed at 50 ns for the DK800A and 100 ns for the DK800B, but the minimum phase differences in the table below are available as special specifications.

In the standard specifications, the minimum phase difference is fixed at 50 ns, but the minimum phase differences in the table below are available as special specifications.

A/B minimum phase difference	A signal cycle	Counter allowable frequency	Maximum response speed		Remarks
			Resolution 0.1 μm	Resolution 0.5 μm	
50 ns	200 ns	5 MHz	80 m/min	250 m/min	DK800A standard product
100 ns	400 ns	2.5 MHz	42 m/min	100 m/min	DK800B standard product
300 ns	1.2 μs	833 kHz	14 m/min	33 m/min	Special specifications
500 ns	2 μs	500 kHz	8.4 m/min	20 m/min	Special specifications

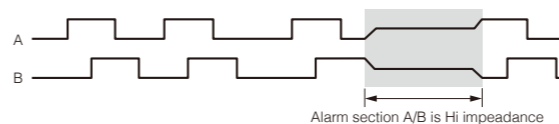
A/B minimum phase difference	A signal cycle	Counter allowable frequency	Maximum response speed		Remarks
			Resolution 0.5 μm	Resolution 0.5 μm	
50 ns	200 ns	5 MHz	250 m/min	250 m/min	Standard product
100 ns	400 ns	2.5 MHz	100 m/min	100 m/min	Special specifications
300 ns	1.2 μs	833 kHz	33 m/min	33 m/min	Special specifications
500 ns	2 μs	500 kHz	20 m/min	20 m/min	Special specifications

DK830S series model name



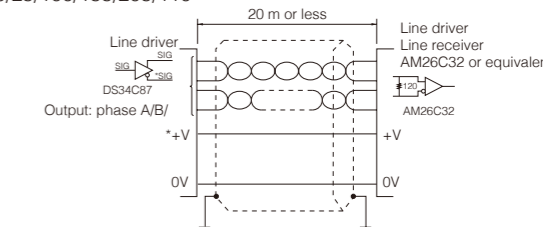
Output Signal Alarm

If the response speed is exceeded, the A/B output from this measuring unit changes to Hi impedance for about 400 ms to serve as an alarm.



Receiver

DK10/25/100/155/205/110



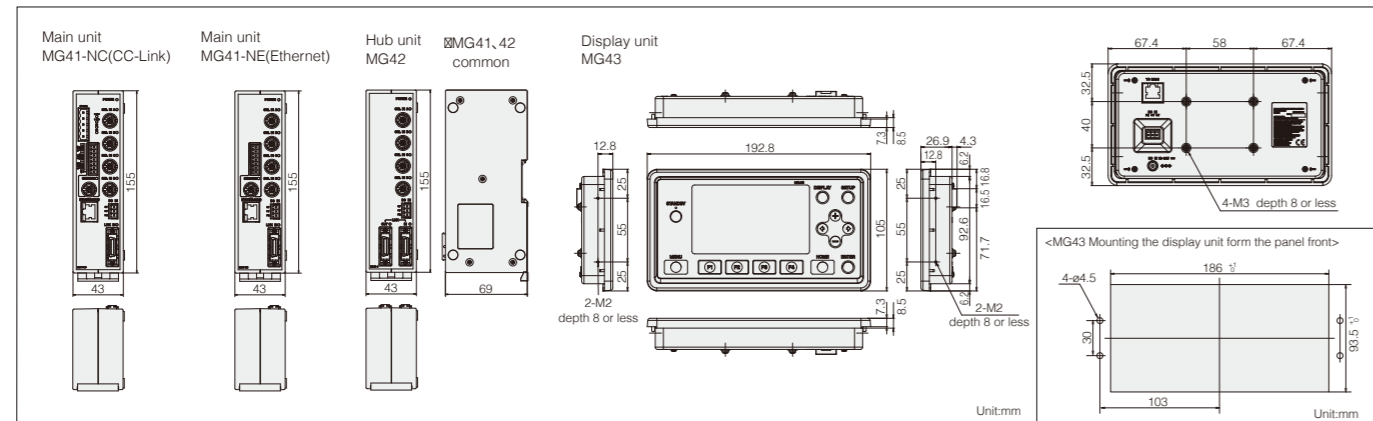
(*If extending the cable, the supply voltage is +5 V±5%.
 *Use the CE22 series extension cables for bare wires (optional accessories).

MG40

Specifications						
Item	Conditions	Description			Remarks	
No. of connectable measuring units	Entire system	1 to 100 units (Connection disabled after connection of 101st unit.)			Up to 24 connected MG42 hub units	
	MG41 main unit	0 to 4 axis				
	MG42 hub unit					
Connectable measuring units		DK800A/DK 800B series, DK10, DK25, DK50, DK100, DK110, DK155, DK205				
Connection cable length		Between MG41 main unit and MG42 hub unit, between MG42 hub unit and MG42 hub unit: 0.5 m, 1 m, 2 m, 5 m, 10 m Total cable length from MG41 main unit: Maximum 30 m (Maximum current: 4 A or less)				
Resolution		Settable output data resolution and display resolution				
Measuring unit resolution (input resolution)	0.1µm	0.1µm	0.5µm	1µm	5µm	10µm
	0.5µm	-	0.5µm	1µm	5µm	10µm
Measuring unit data import capacity	10 Mbps data transfer	Maximum 10,000 data/s (when 100 axes are connected)			The data for one axis is counted as one data.	
Peak-hold function		Calculation of maximum value, minimum value, and peak-to-peak value for each axis (including pause, latch, and start functions) Peak value is not updated during pause.				
		Output and display data are not updated during latching (internal data is updated) Recalculation of peak value is started by start function.				
		Current value, maximum value, minimum value, and peak-to-peak value for each axis				
Output data	Single axis	Current value, maximum value, minimum value, and peak-to-peak value for the two-axis addition/subtraction axis			Single axis calculation of an addition/subtraction axis is not possible (for preventing inconsistencies in calculation).	
Comparator function		Data for each axis (single axis, addition/subtraction axis) is compared and measured, and the comparator results are output (Comparator during latch is also latched.)				
Comparator setting values		2 values	4 values	8 values	16 values	
No. of setting value groups		16 groups	8 groups	4 groups	2 groups	
Ethernet		100Base-T (compliant with IEEE 802.3) 100 Mbps/10 Mbps (Auto-negotiation) Command input, data output, and parameter setting are possible.				
Reset function		Current value for each axis is reset (by command).				
Preset function		Value is preset to the current value of each axis (by command).				
Datum point setting function		Datum point of each axis can be set (by command).			When master calibration function is not used	
Reference point function		Reference point can be used to relocate the datum point of each axis (by command).				
Master calibration function		Reference point can be used to perform master calibration for each axis (by command).			Addition/subtraction axis cannot be used.	
Measuring unit product information		The product information of the connected measuring unit can be acquired.				
Command/setting enabled or disabled for each communication line	Command	Reset function	Ethernet	CC-Link		
		Preset function				
		Datum point setting function				
		Reference point function				
		Master calibration function				
		Comparator value setting				
		Comparator group number setting				
		Start				
		Pause				
		Latch				
		Current value/Peak value (All axes)	Available		Available	
		Current value/Peak value (each unit)				
		Comparator result				
		Alarm (Communication/Measuring unit)				
		Soft ware version				
Data output	Measuring unit product information					
	Input resolution					
	Display and output resolution					
Settings	Axis addition					
	Comparator mode (2, 4, 8, or 16 values in 1 group)					
Supply voltage	Terminal input	DC 12 to 24 V (11 to 26.4 V)			Use a power supply with a current that is 4 A or higher. (Recommended: +24 V) (for every six MG42 hub units)	
Power consumption	Note the connection conditions.	System total: Max. current 4 A When the maximum current is exceeded, the connection can be enabled by providing a power supply to the MG42 hub units that come later in the connection. <Details of power consumption for each unit> MG41 main unit : 4 W, MG42 hub unit : 1 W/unit, Measuring unit supply : 1 W/unit				
Operating temperature and humidity range		0 to +50 °C (no condensation)				
Storage temperature and humidity range		-10 to +60 °C (20 to 90 % RH)				
Mass		MG41 : 300 g, MG42 : 250 g				

Display unit MG43

Specifications			
Item	Description	Item	Description
Compatible main units	MG41-NE/MG41-NC	Network interface	100Base-TX / 10Base-T (compliant with IEEE802.3) Auto-negotiation
Compatible hub units	Hub units compatible with the main unit	Power consumption	DC12~24V(11~26.4V)
Compatible measuring units	Measuring units compatible with the main unit or hub unit	Power supply	4W
Main functions	Measure Monitor, Setting Monitor, System Monitor	Operating temperature range	0 to +40°C (no condensation)
Communication protocol	MG40 original protocol on TCP/IP	Storage temperature and humidity range	-10~+60°C(20~90%RH)
Screen display	480 x 272 pixels, 4.3-inch TFT LCD with backlight	Mass	Approx.500g



MG10/20/30 SERIES

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)
	Delimiter	CR / CR+LF (set with DIP switch)
Linkage function	Maximum number of linkages	16 (total of counter modules: 64)
	Maximum length of linking cable	10m
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 reset, pause, start, latching, and data out trigger to whole channels integrated alarm
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
	Allowable resolution setting *2	10 / 5 / 1 / 0.5 / 0.1µm	10 / 5 / 0.5µm
	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 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	
Output setting	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)	

