

# SONY

NEW



## Networking via Ethernet

# MG40 SERIES

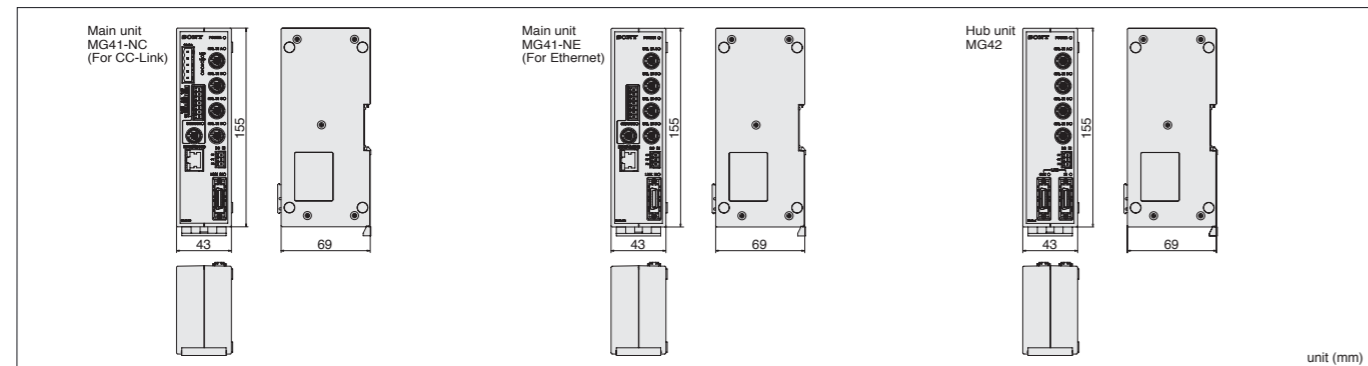
Multi-axis measurements & Simple wiring connections

High-speed data communication

### 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 units		
	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)	0.1 μm	0.5 μm, 1 μm, 5 μm, 10 μm	
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.	
Data format	Signed 7-digit fixed data with decimal (zero suppression for higher digits)			
	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.			
Peak-hold function	Output and display data are not updated during latching (internal data is updated)			
	Recalculation of peak value is started by start function.			
	Single axis			
Output data	Single axis	Current value, maximum value, minimum value, and peak-to-peak value for each axis	Single axis calculation of an addition/subtraction axis is not possible (for preventing inconsistencies in calculation).	
	Addition and subtraction	Current value, maximum value, minimum value, and peak-to-peak value for the two-axis addition/subtraction axis		
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	
Ethernet	100Base-T (compliant with IEEE 802.3) 100 Mbps/10 Mbps/1 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).			
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).			
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	Ethernet	Fieldbus	
		Reset function	<input type="checkbox"/>	<input type="checkbox"/>
		Preset function	<input type="checkbox"/>	<input type="checkbox"/>
		Datum point setting function	<input type="checkbox"/>	<input type="checkbox"/>
		Reference point function	<input type="checkbox"/>	<input type="checkbox"/>
		Master calibration function	<input type="checkbox"/>	<input type="checkbox"/>
		Comparator value setting	<input type="checkbox"/>	<input type="checkbox"/>
		Comparator group number setting	<input type="checkbox"/>	<input type="checkbox"/>
		Start	<input type="checkbox"/>	<input type="checkbox"/>
		Pause	<input type="checkbox"/>	<input type="checkbox"/>
		Latch	<input type="checkbox"/>	<input type="checkbox"/>
		Current value/Peak value (All axes)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		Current value/Peak value (each unit)	<input type="checkbox"/>	<input type="checkbox"/>
		Comparator result	<input type="checkbox"/>	<input type="checkbox"/>
		Alarm (Communication/Measuring unit)	<input type="checkbox"/>	<input type="checkbox"/>
Data output	Soft ware version	<input type="checkbox"/>	<input type="checkbox"/>	
	Measuring unit product information	<input type="checkbox"/>	<input type="checkbox"/>	
	Input resolution	<input type="checkbox"/>	<input type="checkbox"/>	
	Display and output resolution	<input type="checkbox"/>	<input type="checkbox"/>	
	Axis addition	<input type="checkbox"/>	<input type="checkbox"/>	
Settings	Comparator mode (2, 4, 8, or 16 values in 1 group)	<input type="checkbox"/>	<input type="checkbox"/>	
	Supply voltage	Terminal input	DC 12 to 24 V (11 to 26.4 V)	
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	Use a power supply with a current that is 4 A or higher. (Recommended: +24 V) (for every six MG42 hub units)	
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		

### External Dimensions



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# Network measurement system for high-speed communication, multi-axis measurements, and data management.

## Sony's new communication technology

Sony's new measurement system integrates the primary functions of a counter into the gauge itself to a high degree.

The MG40 series does not have to count analog outputs or AB phase outputs of the gauge and acquires positional information directly via full digital communication.

The theoretical response speed is 20 times faster than the response speed of our previous models.

Miscounts, caused by external noise, are eliminated and the system is capable of instantly recovering from a communication error by way of re-reads.

## High-speed and highly reliable communication shortens cycle times

### High-speed communication via Ethernet

Ethernet's high-speed data transmission (100Mbit/sec), incomparable to RS-232C, brings new possibilities to inline measurements.

### High-speed RISC processor dedicated to communication

The latest high-speed RISC processor, ARM7, was chosen as the CPU for controlling high-speed communications, which minimizes network waiting times.

### Communication error detection

The system performs error detection on all communication lines to ensure excellent reliability. In the event of a communication error, the system acquires the correct positional information by repeating the communication process.

### Our proprietary high-speed processor for multi-axis data processing

Our newly developed high-speed data processor is capable of updating data 100 times per second\*1 for up to 100 gauging axes while monitoring current value/ max/ min/ p-p processes.

### Newly developed ASIC

A newly developed LSI has been utilized for our gauges in order to integrate the traditional counter function. As a result, gauge response speed has been improved 20-fold, thereby nearly eliminating response speed limits and external noise issues which are both deficiencies of conventional digital gauges.

## Quick and simple wiring connections

### Connection via a hub

The MG40 series, with its reduced connections and modular installation, is ideal for measurement systems used in large-scale manufacturing facilities. With a MG42 hub unit, installed near the measurement points, only one cable is required for hub-to-hub connections.

### PLC connections

Models equipped with a Fieldbus interface offer a one-touch connection with a PLC, possibly utilizing an existing Fieldbus network. This eliminates BCD connections, when 30 wires are needed per gauge (counter), as well as PLC peripherals.

### Power supply

A simple connection of a DC power supply (12-24V) to the main MG41 unit enables the unit to directly drive up to 6 MG42 hub units and 28 gauge axes. All subsequent sets of 6 hubs require their own power supply.

### Acquiring individual gauge information

It is now possible to acquire individual gauge information via digital communication. The MG40 series configures itself automatically for different models, resolutions, and measurement lengths without requiring any initial setup operations.

### DIN rail mount and frontal connections

The MG41\*2 and MG42 can be easily mounted to a DIN rail. All connectors have been brought to the front, enabling easy installation even in small distribution panels.

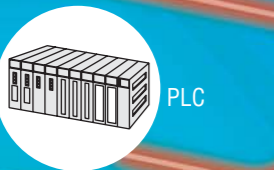
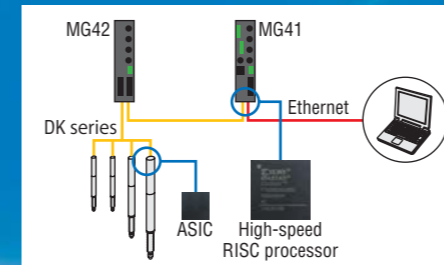
## Ethernet and CC-Link models are available

### Ethernet

Ethernet, both wired and wireless, has established a solid position in PC networking and is widely-used in various industries. The MG40 series, with its standard Ethernet interface, enables you to process and store remote data via your existing LAN.

### Fieldbus

A PLC (Programmable Logic Controller) is widely-used for controlling and managing FA lines. The MG41, which supports a variety of Fieldbus interfaces, eliminates the need for complicated BCD or RS-232C wiring connections between the PLC and counter. Furthermore, the MG41 interface lowers overall costs by reducing the number of peripheral devices and wiring connections while improving reliability.



Link cable



## Maximized system efficiency

### On the path to a revolution in quality

As production management becomes increasingly important, systems are required not only to provide Go/No Go evaluation, but also to provide real-time trend analyses based on actual measurements taken on the production line. Sony's digital gauges guarantee accuracy throughout their entire measurement length. Additionally, combined with our new MG40 series, they are able to help you accumulate actual measurements for analysis and increase your productivity.

### High-speed measurements enable shorter cycle time

High-speed measurement reduces your cycle time by performing over 100 times per second\*1, even when using up to 100 axes. Furthermore, it expands its applications to areas such as high-speed shape measurements.

### Lower overall system costs

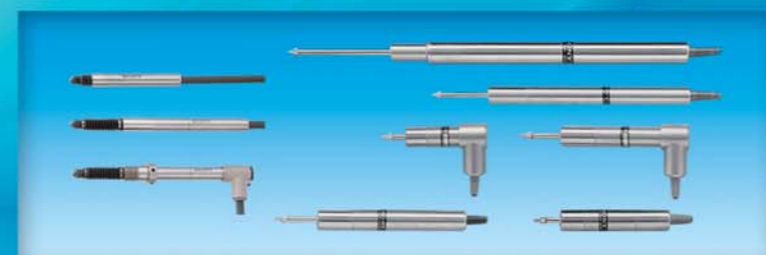
Costs that are required in addition to the cost of devices, such as installation costs, connections, configuration, and verification are often overlooked. The MG40 series enables you to reduce total costs in these areas substantially.

### Environmentally friendly

Sony continues to pursue reduced power consumption in all aspects of our measurement systems that consist of the MG40 series and DK digital gauges (A/B models). For example, the DK series (A/B models) consume 50% less power than their predecessors. Furthermore, no environmentally hazardous materials are used. These are some of the solutions offered by Sony that illustrate our commitment to tackling environmental issues.

## DK series Measurement unit Digital gauge

Specifications	DK802A/B	DK805A/B	DK812A/B	DK10	DK25	DK50	DK100	DK110	DK155	DK205
Min. resolution	0.1µm			0.5µm						
Accuracy	1µm			2µm		4µm		5µm	6µm	
Measuring Range	2mm	5mm	12mm	10mm	25mm	50mm	100mm	110mm	155mm	205mm



# MG40 SERIES

\*1. Number of data transmission varies with the performance of a computer or a PLC to be connected to the MG41 main unit.

\*2. According to the data communication method, the model name of MG41 main unit differs, i.e. MG41-NE for Ethernet only and MG41-NC for Ethernet and CC-Link. For details please refer to the dimensional drawings on the reverse side.