Mitutoyo

Mitutoyo Quality

Non-Contact Line-Laser Sensor
SurfaceMeasure-S Series

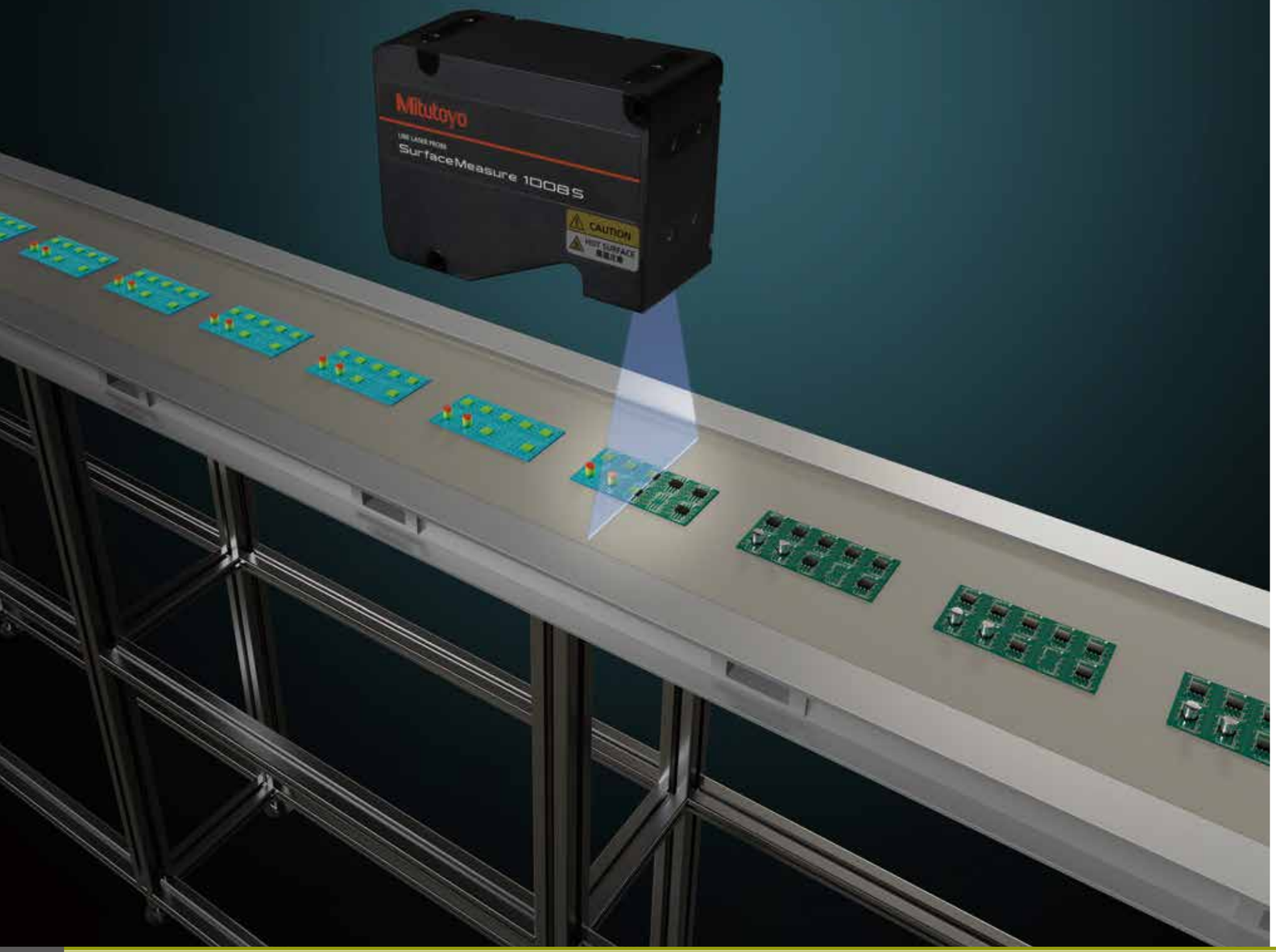
Sensor Systems

Catalog No. E13023(4)

Mitutoyo

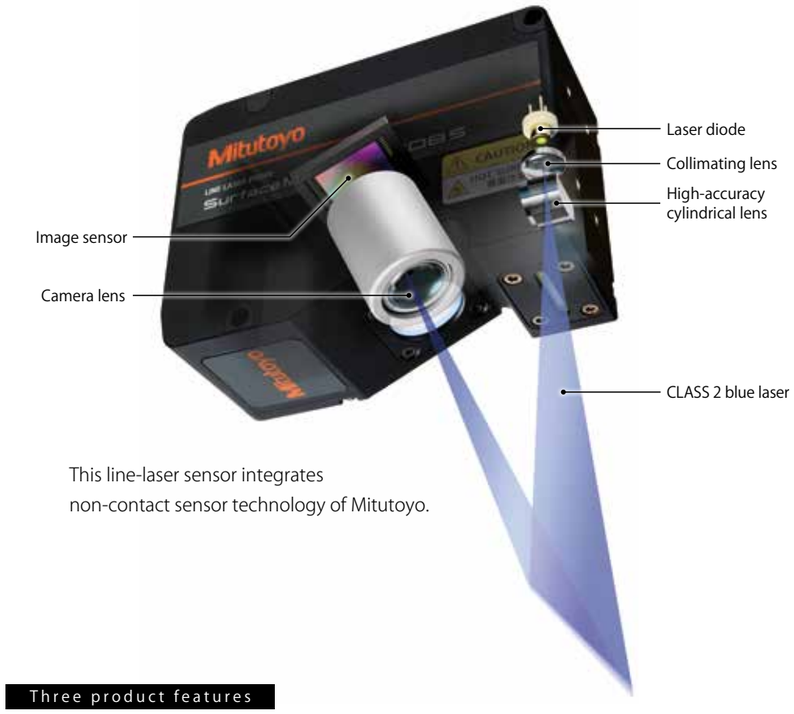
SurfaceMeasure-S Series NEW Products

Line-laser sensor providing stable measurements with simple operations



Mitutoyo

Product Structure



This line-laser sensor integrates non-contact sensor technology of Mitutoyo.

Three product features

— (1) High-accuracy and environment-resistant sensor

The sensor itself is guaranteed for accuracy, in addition, it has achieved the IP67 protection level, providing stable measurements.

— (2) Supporting automated measurement

The **SurfaceMeasure-S Series** can obtain the two-dimensional and three-dimensional shapes of measurement workpieces at high speed (a maximum frame rate of 10 kHz) and make an automatic judgement inside the sensor.
It is also equipped with a parts matching function that allows the measurement tool to be applied throughout, regardless of the orientations of the parts being measured. Measurements can be taken without performing alignment.

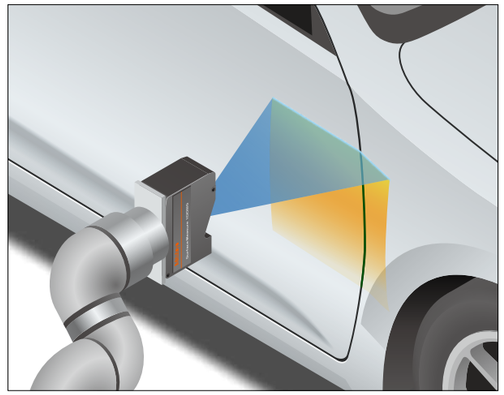
— (3) Simple operability

The software supports intuitive operation and is built into the sensor (software installation is not required), so you can use it immediately after mounting.

APPLICATIONS

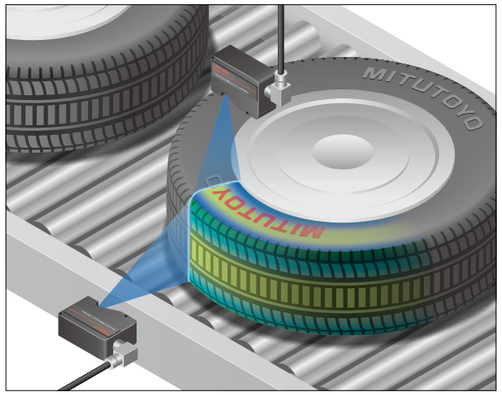
Automobile industry

Panel gap inspection



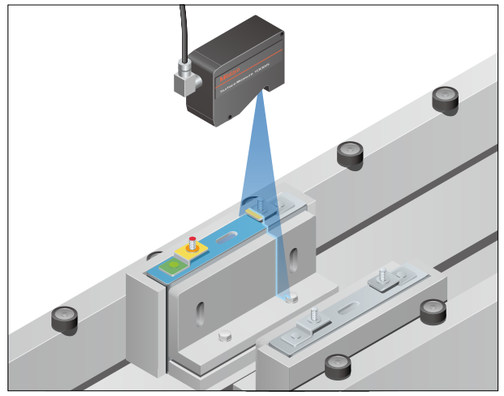
Rubber and tire industries

Tire shape inspection



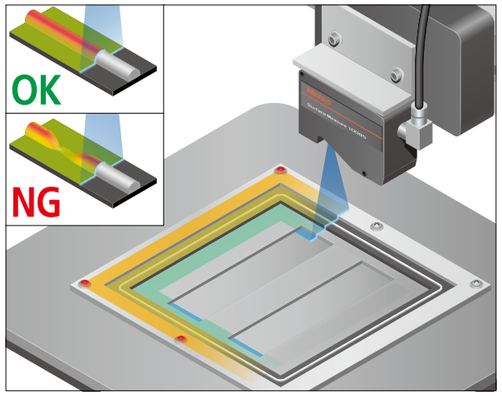
Electric vehicle battery industry

Cell assembly inspection



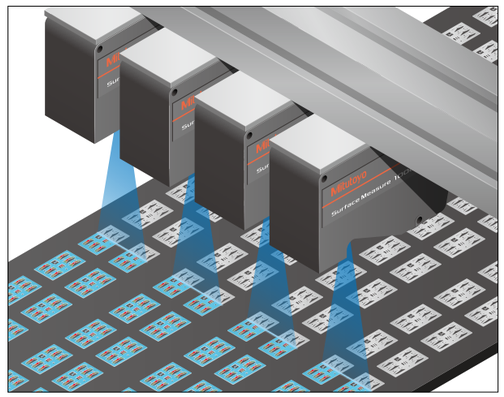
Electrical and electronic industries

Adhesive inspection



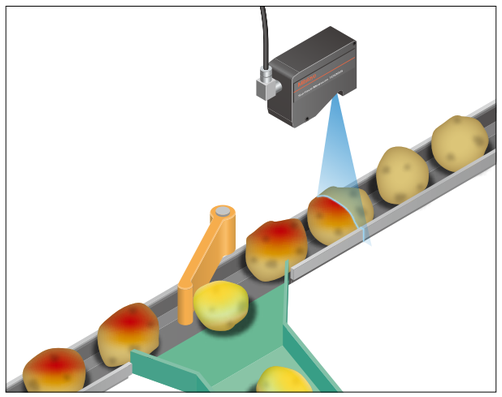
Electrical and electronic industries

Connector pin inspection



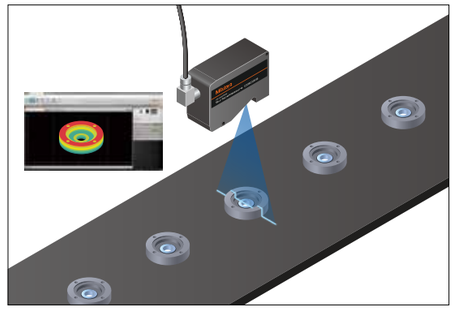
Food industry

Standard inspection of food, etc.



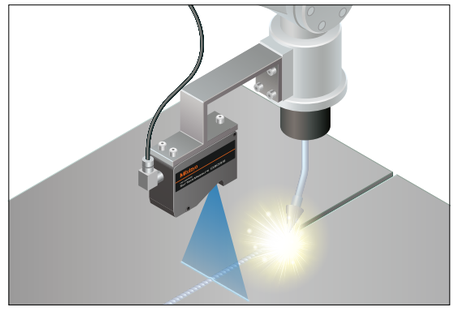
Electrical and electronic industries

Dimensional measurement on precision resin molded components



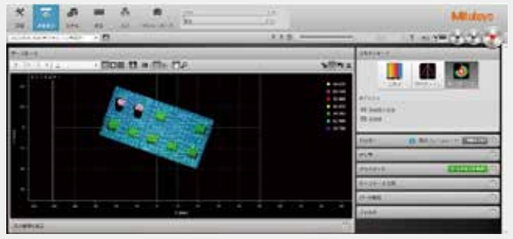
Automobile industry

Condition inspection after welding



SOFTWARE

Powerful interface with excellent operability and functionality



- Excellent operability simply by using a mouse
- Simple and intuitive interface
- Web browser-based, no need to install software
- Various built-in measurement tools
- 2D and 3D data can be obtained

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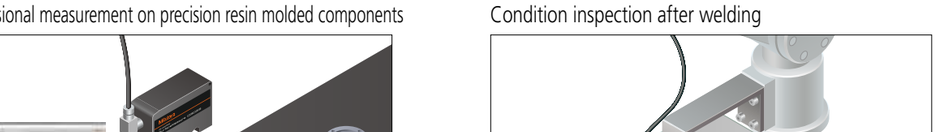
Easy-to-configure measuring system

Measurement tool

A variety of measurement tools are available.



Pattern matching | Countersink Hole | OCR | Gap & Flush | Groove | Size

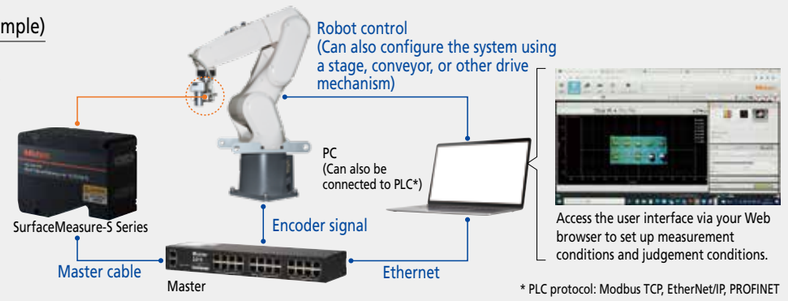
Emulator

Using the emulator makes it possible to consider measurement conditions or make an analysis with obtained data even when offline.

SYSTEM

System configuration (example)

This is an example of the system configuration of the SurfaceMeasure-S Series. Various other system configurations are also available.



* PLC protocol: Modbus TCP, EtherNet/IP, PROFINET

FEATURES

SurfaceMeasure1008S

The sensor is guaranteed for scanning error of 20 µm (1 σ) and a Z axis repeatability of 0.5 µm. In addition, it has achieved the IP67 protection level, providing stable measurements.

SurfaceMeasure0303S

This is a non-contact line-laser sensor for inline measurement with high resolution (13 to 17 µm in X direction) and scanning error of 9 µm (1σ).

SurfaceMeasure2929S

This is a non-contact line-laser sensor for inline measurement that boasts a maximum measuring width of 292 mm and a maximum measuring depth of 290 mm.

Specifications

Code No.		553-100	553-110	553-120
Product Name		SurfaceMeasure1008S	SurfaceMeasure0303S	SurfaceMeasure2929S
Maximum measuring width		100 mm	32.5 mm	292 mm
Measuring range		80 mm	25 mm	290 mm
Working distance		80 mm	60 mm	299.5 mm
Scanning error (1 σ) *1		20 µm (Sphere measurement)	9 µm (Sphere measurement)	65 µm (Sphere measurement)
Z axis repeatability		0.5 µm	0.4 µm	1.2 µm
Frame rate		Max. 10 kHz		
Laser class	EN / IEC	CLASS 2		
	JIS	(IEC 60825-1:2014, EN 60825-1:2014+A11:2021)		
Line laser	Laser medium	CLASS 2 (JIS C 6802: 2014)		
	Wavelength	Semiconductor laser		
	Max. output	405 nm (visible)		
Mass		2.2 mW		
		650 g	1480 g	
Operating environment	Temperature	0 ℃ to 40 ℃		
	Humidity	RH 20 to 80%, non-condensing		
Storage environment	Temperature	-30 ℃ to 70 ℃		
	Humidity	RH 20 to 95%, non-condensing		
IP code		IP 67 *2		
Power supply (power consumption)		24 to 48 VDC (15 W)		

*1 Accuracy inspection environment:
Temperature 20 ℃ ± 1 ℃, Humidity 50%RH ± 10%RH
Measurement workpieces: Specified reference ball for inspection (ϕ25 mm)
Inspection method: Determined by Mitutoyo-specified inspection method.
The operating environment and the storage environment are different from the guaranteed accuracy environment.

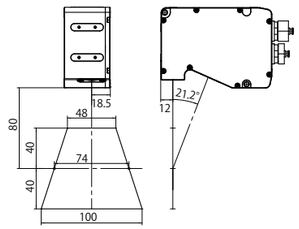
*2 Measuring accuracy may deteriorate if any water droplet or dust particle adheres to the optical path.

External dimensions

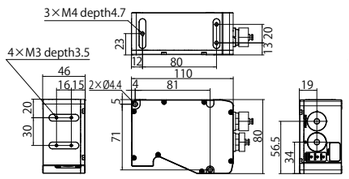
Unit: mm

SurfaceMeasure1008S

Measuring range

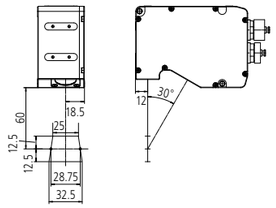


Mounting size

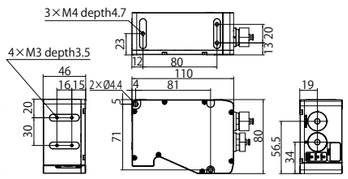


SurfaceMeasure0303S

Measuring range

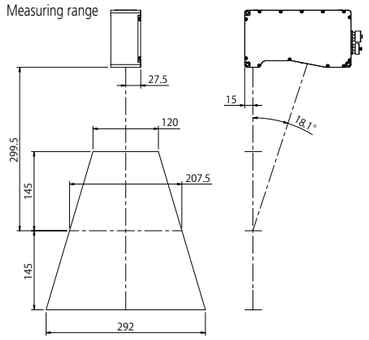


Mounting size

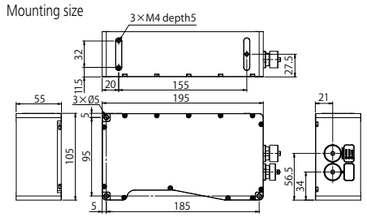


SurfaceMeasure2929S

Measuring range



Mounting size



OPTIONAL ACCESSORIES

Sensor networking hub Master

Device used for distributing power to sensors and synchronizing the sensors in the multi-sensor system
Input: Power supply 24 to 48 V, Laser Enable input, Encoder input, External input

Master810

Master2410

Code No.	Product Name	Remarks
02AQL401	Master810	Accepting a maximum of 8 sensors
02AQL402	Master2410	Accepting a maximum of 24 sensors

Master cable

Cable for the connection between sensor and Master

Specifications	Sensor side	M16 connector (Straight or 90° upward-pointing can be selected)
	Power supply side	RJ45 (Connect to Master)
	Communication side	RJ45 (Ethernet connection)

Code No.	Product Name	Remarks
02AQL373	2 m Power and Ethernet Master	2 × RJ45 ends
02AQL374	5 m Power and Ethernet Master	2 × RJ45 ends
02AQL375	10 m Power and Ethernet Master	2 × RJ45 ends
02AQL376	15 m Power and Ethernet Master	2 × RJ45 ends
02AQL377	20 m Power and Ethernet Master	2 × RJ45 ends
02AQL378	25 m Power and Ethernet Master	2 × RJ45 ends
02AQL391	2 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector
02AQL392	5 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector
02AQL393	10 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector
02AQL394	15 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector
02AQL395	20 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector
02AQL396	25 m Power and Ethernet Master 90deg	2 × RJ45 ends, 90° connector

Power and Ethernet cable

Cable to supply and control power without using the Master for the sensor

Specifications	Sensor side	M16 connector (Straight or 90° upward-pointing can be selected)
	Power supply side	Flying lead
	Communication side	RJ45 (Ethernet connection)

Code No.	Product Name	Remarks
02AQL367	2 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL368	5 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL369	10 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL370	15 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL371	20 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL372	25 m Power and Ethernet	1 × Open wire end, 1 × RJ45 end
02AQL385	2 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector
02AQL386	5 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector
02AQL387	10 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector
02AQL388	15 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector
02AQL389	20 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector
02AQL390	25 m Power and Ethernet 90deg	1 × Open wire end, 1 × RJ45 end, 90° connector

GoMax NX

Arithmetic unit to accelerate measurement processing without a PC

Specifications	NVIDIA module	Jetson Xavier NX
	CPU	6-core NVIDIA Carmel ARM v8.2
	GPU	Volta GPU, 384 CUDA core, 48 Tensor core
	Memory	Onboard 8 GB LPDDR4
	Storage	Onboard 16 GB eMMc
	I/O	2-port Ethernet
	Power supply	12 to 24 V, Max. 15 W
	Weight	2.1 kg
	Operating temperature	-15 to 55℃
	Mounting	DIN rail, wall mounting

Code No.	Product Name	Remarks
02AQL420	GoMax NX Power plug type: B	
02AQL421	GoMax NX Power plug type: F	
02AQL422	GoMax NX Power plug type: I	

I/O cable

Cable to connect the external I/O device to the sensor

Specifications	Sensor side	M16 connector (Straight or 90° upward-pointing can be selected)
	I/O device side	Flying lead
	Encoder input (2-phase square-wave signals Phase A, Phase B, Phase Z), Trigger input, Digital output, RS-485 output	

Note: Sensors cannot be synchronized by the signals input to and output from each sensor through this cable.

Code No.	Product Name	Remarks
02AQL361	2 m I/O	Open wire end
02AQL362	5 m I/O	Open wire end
02AQL363	10 m I/O	Open wire end
02AQL364	15 m I/O	Open wire end
02AQL365	20 m I/O	Open wire end
02AQL366	25 m I/O	Open wire end
02AQL379	2 m I/O 90deg	Open wire end, 90° connector
02AQL380	5 m I/O 90deg	Open wire end, 90° connector
02AQL381	10 m I/O 90deg	Open wire end, 90° connector
02AQL382	15 m I/O 90deg	Open wire end, 90° connector
02AQL383	20 m I/O 90deg	Open wire end, 90° connector
02AQL384	25 m I/O 90deg	Open wire end, 90° connector

2503(JP4), Printed in Japan

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring

Sensor Systems

Test Equipment

Digital Scale and DRO Systems

Small Tool Instruments and Data Management

Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

Find additional product literature and our product catalog

https://www.mitutoyo.co.jp/global.html

Notes on Export Regulations:
Do not commit an act, which could directly or indirectly, violate any law or regulation of Japan, your country or any other international treaty, relating to the export or re-export of any commodities.

Mitutoyo

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