Mitutoyo

IF Module for LSM Controller <EtherNet/IP>

LSM-EI-A

User's Manual

- Instructions for use -

Read this document thoroughly before operating the product. After reading, retain it close at hand for future reference.
This English language version of the document contains the original instructions.

No. 99MBC154A
Date of publication: June 1, 2023 (1)

■ Product names and model numbers covered in this document

Product name	Model number
IF Module for LSM Controller <EtherNet/IP>	LSM-EI-A

■ Notice regarding this document

- Mitutoyo Corporation assumes no responsibilities for any damage to the product, caused by its use not conforming to the procedure described in this document.
- Upon loan or transfer of this product, be sure to attach this document to the product.
- In the event of loss or damage to this document, immediately contact the agent where you purchased the product or a Mitutoyo sales office.
- Read this document thoroughly before operating the product. In particular, be sure to fully understand "Safety Precautions" and "Precautions for Use".
- The contents of this document are based on information current as of June 2023.
- No part or whole of this document may be transmitted or reproduced by any means without prior written permission of Mitutoyo Corporation.
- Some screen displays in this document may be highlighted, simplified or partially omitted for convenience of explanation. In addition, some of them may differ from actual ones to the extent that no user will misunderstand the functions and operations.
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Conventions and Wording Used in This Document

■ Safety reminder conventions and wording warning against potential hazards

DANGER	Indicates a hazard with a high level of risk which, if not avoided, **will result in death or serious injury**.
WARNING	Indicates a hazard with a medium level of risk which, if not avoided, **could result in death or serious injury**.
CAUTION	Indicates a hazard with a low level of risk which, if not avoided, **could result in minor or moderate injury**.
NOTICE	Indicates a situation which, if not avoided, **may result in property damage**.
	**Electricity** Alerts the user to a specific hazardous situation that means "Caution, risk of electric shock".
	**Hot surface** Alerts the user to a specific hazardous situation that means "Caution, risk of burns due to high temperature".
	**Flammable material** Alerts the user to a specific hazardous situation that means "Caution, risk of igniting gas".
	**Sharp element** Alerts the user to a specific hazardous situation that means "Caution, risk of injury".
	**Crushing of hands** Alerts the user to a specific hazardous situation that means "Caution, risk of hand pinching".
	**Optical radiation** Alerts the user to a specific hazardous situation that means "Caution, risk of high-intensity light".

■ Conventions indicating prohibited and mandatory actions

	Indicates concrete information about prohibited actions.
	Indicates concrete information about mandatory actions.
	Indicates that grounding needs to be implemented.

■ Conventions and wording indicating referential information or reference location

Tips Indicates further information and details relevant for the operating methods and procedures that are explained in that section.

Indicates reference location if there is information that should be referred to in this document or an extraneous User's Manual.

Example: For details about XX, see  "1.2 Features of This Product" on page 1 in "1 Introduction".

Safety Precautions

Read these "Safety Precautions" thoroughly before operating the product to use it properly.
These safety precautions include such information as to prevent injury to the operator and other persons, damage to property and product defects. Be sure to observe these precautions carefully.

■ Precautions for this product

⚠CAUTION

To prevent electric shocks, strictly observe the following.
Failure to observe these precautions could result in electric shocks or burns, or in some cases death.

- When mounting external devices or optional accessories, turn off the power to the device.
- Ensure that the product is properly grounded.
- Halt the system in case of a malfunction.

- Do not disassemble this product or remove its cover.
  There is a risk of electric shock or burns, and in some cases, death or serious injury. In addition, there is a risk of accidents due to intrusion of material such as metal powder.
- Do not touch the connection terminals with your hands or objects in order to prevent electric shocks due to connection faults.

NOTICE

Securely connect the connectors of the connecting cables for noise isolation.

Tips

Even if an error is displayed while measuring, it does not necessarily indicate a malfunction.
See "6 Troubleshooting" on page 39 to check the cause and solution.

Precautions for Use

■ Use and handling of the product

- Use this product only by connecting to measuring instruments which supports this product.

  Do not use this product for measuring instruments which does not support this product.
  For measuring instruments supported by this product, see "1.3 LSM System Diagram" on page 2.

- This product is for industrial usage.

  Do not use this product for purposes other than for industrial usage.

- This product is a precision instrument.

  - Do not subject the product to drastic shocks such as dropping it, or exert excessive force upon it.
  - Do not disassemble or modify the product.

  If the product is used beyond the conditions indicated in the specifications ("7 Specifications" on page 41), be aware that the functions and performance cannot be guaranteed.

■ Environment for placement

This product is a precision electronic instrument and is designed for indoor use. To obtain the highest accuracy, take into account the following conditions when installing the product. Mitutoyo assumes no responsibility for accidents or failures that result from disregarding the following items.

Use the product in the following places.

- Where there is minimal dust and grit
  Dust or grit in the usage area will adversely affect the mechanical and electronic components inside the product.
- Where there are minimal vibrations
  If the product is going to be used in places where there are lots of vibrations, problems will be generated in the precision components being used, which will cause measuring performance to be impaired.
  If use in a place with vibrations is inevitable, take measures to reduce vibrations, such as laying an anti-vibration rubber mat under the product.
- Where the ambient temperature is from 0 °C through 50 °C
- Where the humidity is from 20 % RH through 85 % RH (without condensation)
- Where the altitude is 2000 m or lower
  If the product is used in places where the altitude exceeds 2000 m, it will cause measuring performance to be impaired.

Do not use or store the product in the following places where the temperature and humidity drastically fluctuate, because the product's functions and measurement results will be adversely affected and it will cause malfunction.

- Where exposed to direct sunlight
  If installing this product in a place exposed to direct sunlight, such as near a window, is inevitable, take measures to shade the product from the sun, such as using a curtain.
- Where extremely hot or cold
- Where there are risks of getting wet

Tips

This product does not conform to the International Protection standard (IP standard). Sensors (LSM-02-A and LSM-30-A) are IP67 rated.

■ Maintenance

For information on the care of this product, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

Electromagnetic Compatibility (EMC)

This product complies with the EMC Directive and the UK Electromagnetic Compatibility Regulations; however, if this receives electromagnetic interference that exceeds these requirements, it will be out of warranty and require appropriate measures.

This product is an industrial product, and is not intended to be used in residential environment. If this product is used in residential environment, this product may cause electromagnetic interference with other instruments. In such a case, it is required to take appropriate measures for preventing such electromagnetic interference.

Export Control Compliance

This product falls into the Catch-All-Controlled Goods and/or Catch-All-Controlled Technologies (including Programs) under Category 16 of Appended Table 1 of Export Trade Control Order or under Category 16 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan.

If you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country.

Also, if an option is added or modified to add a function to this product, this product may fall under the category of List-Control Goods, List-Control Technology (including Programs) under Category 1 - 15 of Appended Table 1 of Export Trade Control Order or under Category 1 - 15 of Appended Table of Foreign Exchange Control Order, based on Foreign Exchange and Foreign Trade Act of Japan. In that case, if you intend re-export of the product from a country other than Japan, re-sale of the product in a country other than Japan, or re-providing of the technology (including Programs), you shall observe the regulations of your country. Please contact Mitutoyo in advance.

Notes on Export to European Countries

When you intend exporting of this product to any of the European countries, it may be required to provide User's Manual(s) in English and Declaration of Conformity in English (in some cases, the official language of the country to be exported). For detailed information, please contact Mitutoyo in advance.

Disposal of Products outside the European Countries

Please follow the official instruction in each community and country.

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Countries with Separate Collection Systems)

This symbol on the product or on its packaging is based on WEEE Directive (Directive on Waste Electrical and Electronic Equipment), and this symbol indicates that this product shall not be treated as household waste.

To reduce the environmental impact and minimize the volume of landfills, please cooperate in reuse and recycle.

For how to dispose of the product, please contact the agent where you purchased the product or a Mitutoyo sales office.

China RoHS Compliance Information

This product meets China RoHS requirements. See the table below.

产品中有害物质的名称及含量

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
本体	○	○	○	○	○	○
电气设备部分	×	○	○	○	○	○
配件	○	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

环保使用期限标识是根据《电器电子产品有害物质限制使用管理办法》以及《电子电气产品有害物质限制使用标识要求(SJ/T11364–2014)》制定的,适用于中国境内销售的电子电气产品的标识。

电器电子产品只要按照安全及使用说明内容在正常使用情况下,从生产日期算起,在此期限内产品中含有的有毒有害物质不致发生外泄或突变,不致对环境造成严重污染或对其人身、财产造成严重损害。

产品使用后,要废弃在环保使用年限内或者刚到年限的产品,请根据国家标准采取适当的方法进行处置。

另外,此期限不同于质量/功能的保证期限。

Warranty

This product has been manufactured under strict quality management, but should it develop problems within one year of the date of purchase in normal use, repair shall be performed free of charge. Please contact the agent where you purchased the product or Mitutoyo sales representative ("SERVICE NETWORK" on page App-1). This warranty, however, shall not affect any provisions of the Mitutoyo Software End User License Agreement.

If this product fails or is damaged for any of the following reasons, it will be subject to a repair charge, even if it is still under warranty.

- Failure or damage owing to fair wear and tear
- Failure or damage owing to inappropriate handling, maintenance or repair, or to unauthorized modification
- Failure or damage owing to transport, dropping, or relocation of the product after purchase
- Failure or damage owing to fire, salt, gas, abnormal voltage, lightning surge, or natural disaster
- Failure or damage owing to use in combination with hardware or software other than those designated or permitted by Mitutoyo
- Failure or damage owing to use in ultra-hazardous activities

This warranty is effective only where the product is properly installed and operated in conformance with the instructions in this document within the original country of the installation.

EXCEPT AS SPECIFIED IN THIS WARRANTY, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS, AND WARRANTIES OF ANY NATURE WHATSOEVER INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OR WARRANTY ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE, ARE HEREBY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW.

You assume responsibility for all results due to the selection of this product to achieve your intended results.

Disclaimer

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If, notwithstanding the foregoing, Mitutoyo is found to be liable to you for any damage or loss which arises out of or is in any way connected with use of this product by you, in no event shall Mitutoyo's and/or its affiliated and related companies' and suppliers' liability to you, whether in contract, tort (including negligence), or otherwise, exceed the price paid by you for the product only.

The foregoing limitations shall apply even if the above-stated warranty fails of its essential purpose. BECAUSE SOME COUNTRIES, STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR THE LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, IN SUCH COUNTRIES, STATES OR JURISDICTIONS, MITUTOYO'S LIABILITY SHALL BE LIMITED TO THE EXTENT PERMITTED BY LAW.

About This Document

■ Positioning of this document, document map

This describes the positioning of this document and its relationship with other installments.

Laser Scan Micrometer <Controller> User's Manual	Describes use of LSMPAK to set up and operate the controller of the Laser Scan Micrometer.
Laser Scan Micrometer <Sensor> User's Manual	Describes the sensor of the Laser Scan Micrometer, including how to connect it to the controller and its specifications.
IF Module for LSM Controller <EtherNet/IP> User's Manual (This document)	Describes the IF Module for LSM Controller <EtherNet/IP> which is attached to the controller of the Laser Scan Micrometer, including its attachment to the controller and specifications.

■ Intended readers and purpose of this document

● Intended readers

This document is intended for operators and administrators of the Laser Scan Micrometer.

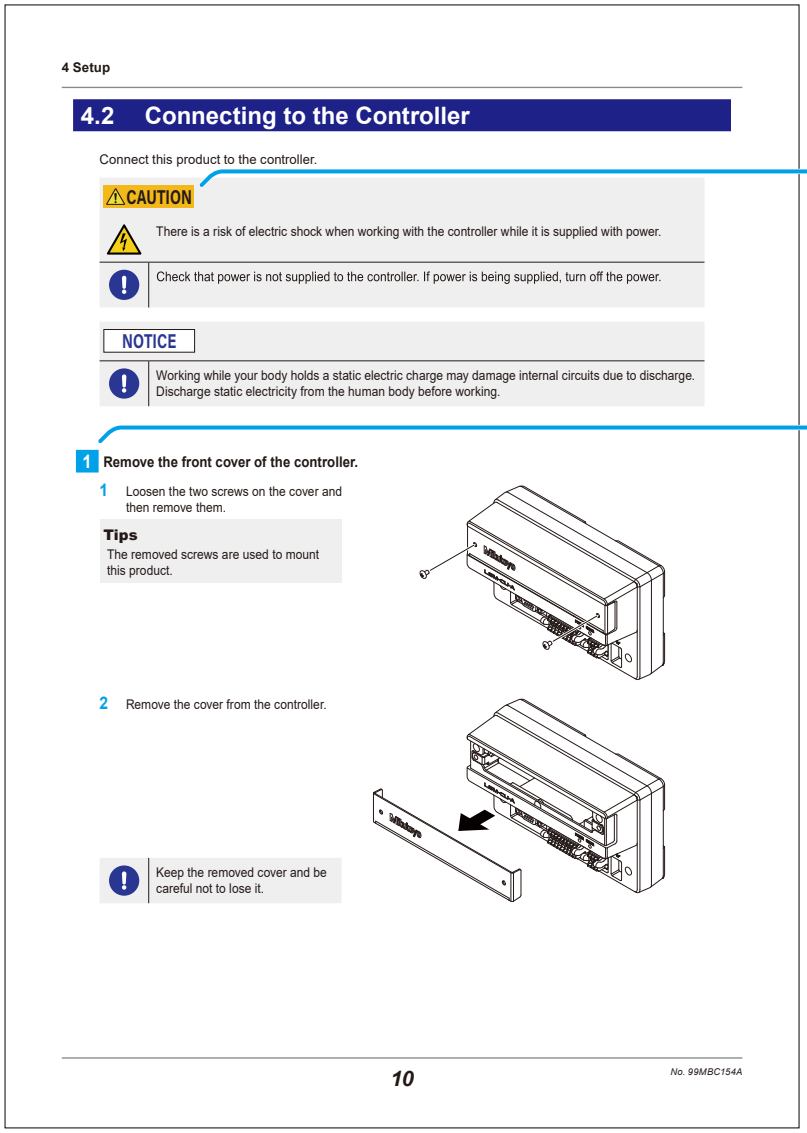
The readers are assumed to have been familiar with basic operations on a PC and Windows.

They are also assumed to be able to understand individual instructions by reading the described drawings.

● Purpose

The purpose of this document is to help you to understand the functional overview of the product, the functions of each part, the non-contact type sensor using a laser beam, operation procedures, and maintenance details.

■ How to read this document



Indicates safety information.

Indicates an operating procedure to be performed or its outline.

■ Brackets, quotation marks and numbers (1, 1)

The meanings of brackets, quotation marks and numbers to be used in this document are as follows.

( ): Round brackets	Represent a paraphrase of an immediately preceding phrase or a supplementary explanation.
" ": Double quotation marks	Represent a highlighted phrase. They also indicate an index where information to be referenced is described.
[ ]: Square brackets	Represent a menu name on the screen, screen name, dialog name, button, display item, tab name, or key on the keyboard. They also indicate an item to be purposely entered or selected by the customer.
1, 2, 3... 1, 2, 3...	Indicates the order and the contents of tasks. (1: indicates main tasks, 1: indicates detailed tasks)

Contents

1 Introduction

This product is an IF module that enables data communication using EtherNet/IP.

1.1 About EtherNet/IP

EtherNet/IP is an Ethernet standard for industrial use. The specification is managed by the Open DeviceNet Vendor Association, Inc. (ODVA) and is freely available. EtherNet/IP communicates using standard Ethernet technology and a protocol called CIP (Common Industrial Protocol). Therefore, it can coexist on a network along with Ethernet.

EtherNet/IP establishes a connection between the target devices for data communication before sending data. To establish the connection, one device requests the other device to open the connection and the other device accepts it. In EtherNet/IP communication, a node that makes a request for opening the connection is called the "originator", and the node that accepts the request is called the "target".

Also, devices that function as originators are called "scanners", and devices that only function as targets are called "adapters".

1.2 Features of This Product

This product connects to the LSM controller and is used together with the LSM controller and sensors connected to the controller to form an LSM system.

This product acts as an adapter for EtherNet/IP for communication with devices (such as PLCs) that function as EtherNet/IP scanners.

With cyclic communication, data such as the control status of the controller and the sensor that is connected to the controller as well as the current position of the workpiece can be output to the EtherNet/IP scanner device (PLC, etc.).

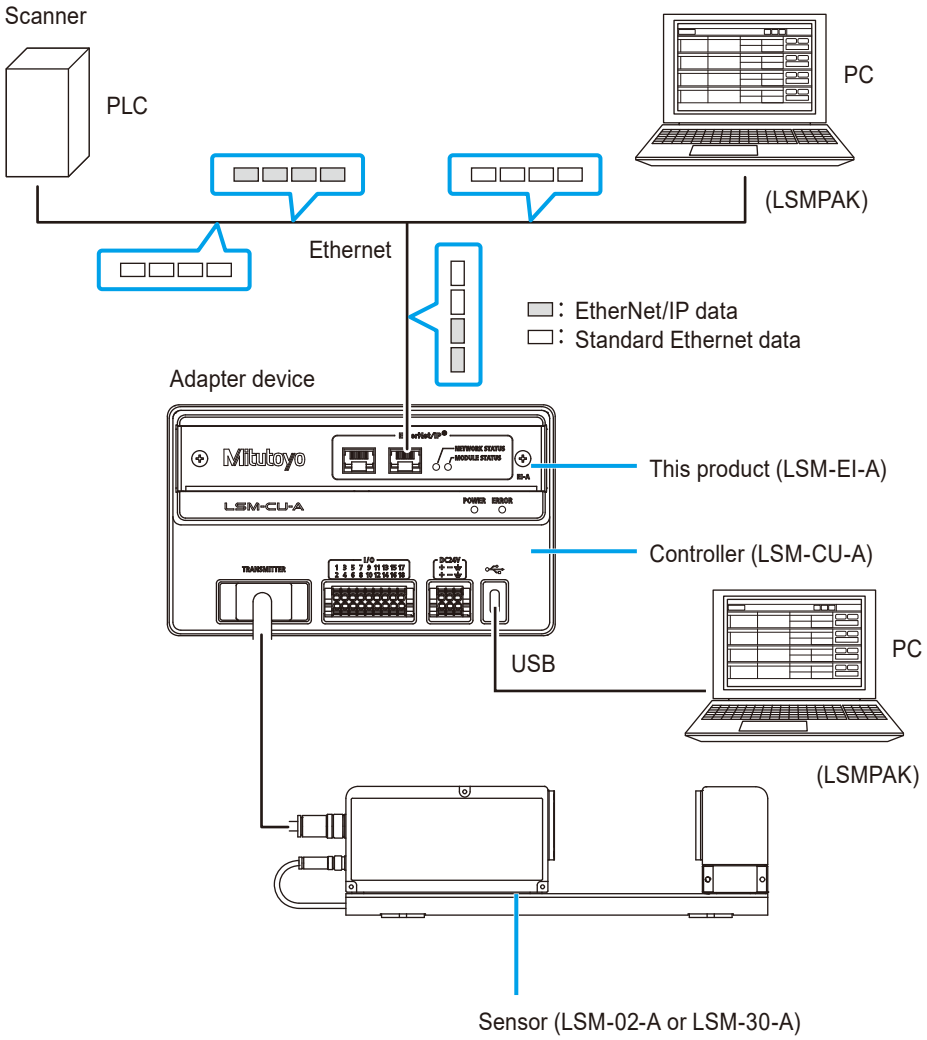
For details about cyclic communication, see "5.1 Communication Specification" on page 17.

For details about the controller, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).

For details about the sensor, see "Laser Scan Micrometer <Sensor> User's Manual" (separate document).

1.3 LSM System Diagram

The following is an example of a system configuration with this product connected with the controller.



Devices required for system configuration

Device name	Remarks
This product	This product is an optional accessory for controller LSM-CU-A. It is used in combination with the controller. This product enables EtherNet/IP communication. For details, see "7.3 Measurement Configurations Usable with This Product" on page 42.
Controller	The controller LSM-CU-A controls the Laser Scan Micrometer. For details about the controller, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).
Sensor	This is the sensor unit of the Laser Scan Micrometer. LSM-02-A (0.005 mm–2 mm) or LSM-30-A (0.3 mm–30 mm) can be used. For details, see "Laser Scan Micrometer <Sensor> User's Manual" (separate document).
LSMPAK (PC)	This is software used for controlling the controller. It is installed for use on a personal computer. The personal computer on which LSMPAK is installed is connected to the controller through a USB or Ethernet connection. For details about the controller, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).
Scanner (PLC, PC, etc.)	This is device that communicates with this product and functions as an adapter in EtherNet/IP communication. Typical adapters include scanner devices such as PLCs.

MEMO

2 Unpacking and Checking

After unpacking this product, first check the following.

- No missing parts (including the product and all accessories)
- No damage was sustained during transit

We take all possible measures to ensure the quality of our products, but in the unlikely event that you discover a missing or damaged product, please contact your nearest Mitutoyo sales office.

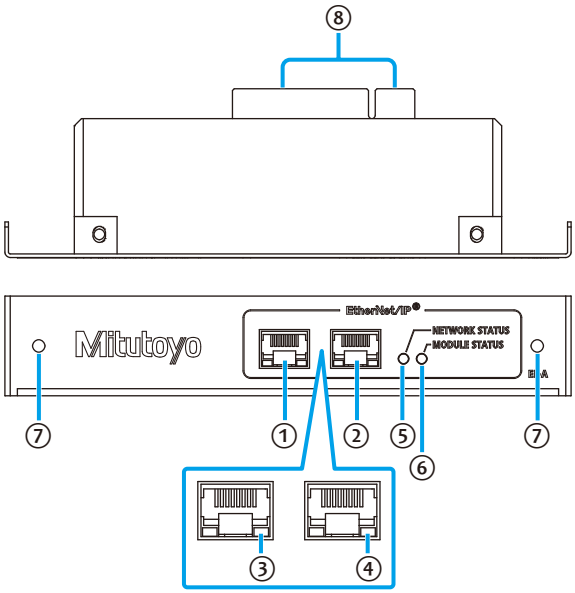
■ This product and included accessories

Part No.	Name	Quantity
02AGQ310	IF Module for LSM Controller <EtherNet/IP> (this product)	1
99MBC155B	Quick Start Manual	1
02NGA060	CD-ROM	1
02NGA073	LSM-EI-A device file	—
99MBC154J/A	User's Manual (PDF) (this document)	—
WA140	General product warranty (large)	1

MEMO

3 Part Names and Functions

This chapter describes the name and function of each part of this product.



No.	Name	Function	Reference
①	RJ-45 connector (port 1)	These are Ethernet ports. Connect to them with communication cables (Ethernet cables).	5.2.1
②	RJ-45 connector (port 2)		
③	Link/activity LED (port 1)	Indicates the status of communications.	
④	Link/activity LED (port 2)		
⑤	NETWORK STATUS indicator	Indicates the network status of this product.	
⑥	MODULE STATUS indicator	Indicates the operational status of this product.	
⑦	Mounting hole	Used for mounting the controller.	4.2
⑧	Edge connector	Insert into the socket of the controller.	

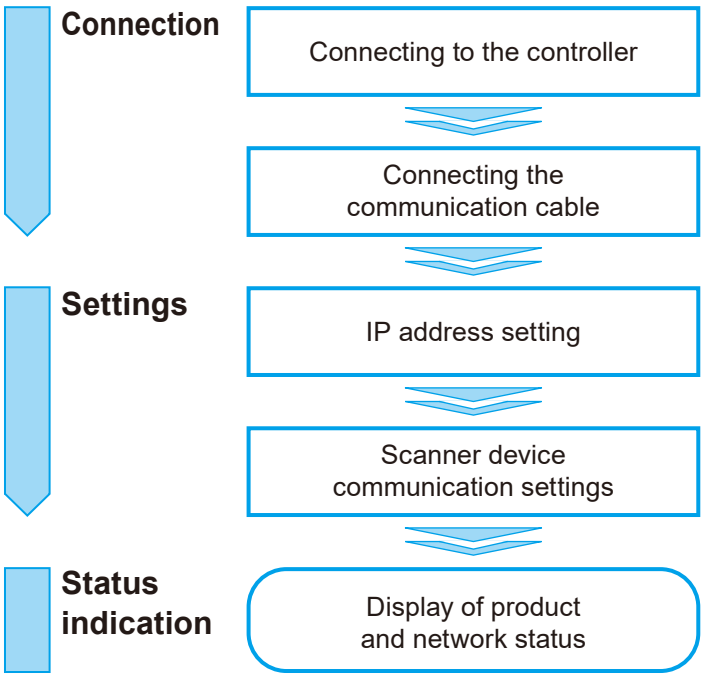
MEMO

4 Setup

Use the following procedure to connect this product and the system devices and configure the settings.

4.1 Work Flow

This section describes the work flow.



📖 "4.2 Connecting to the Controller" on page 10
📖 "4.3 Connecting the Communication Cable" on page 12
📖 "■ IP address setting" on page 13
📖 "■ Communication settings for the scanner device" on page 15
📖 "5.2 Status Indication" on page 36

4.2 Connecting to the Controller

Connect this product to the controller.

⚠CAUTION

There is a risk of electric shock when working with the controller while it is supplied with power.

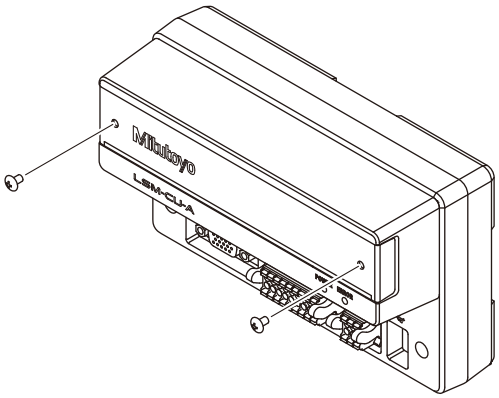
Check that power is not supplied to the controller. If power is being supplied, turn off the power.

NOTICE

Working while your body holds a static electric charge may damage internal circuits due to discharge. Discharge static electricity from the human body before working.

1 Remove the front cover of the controller.

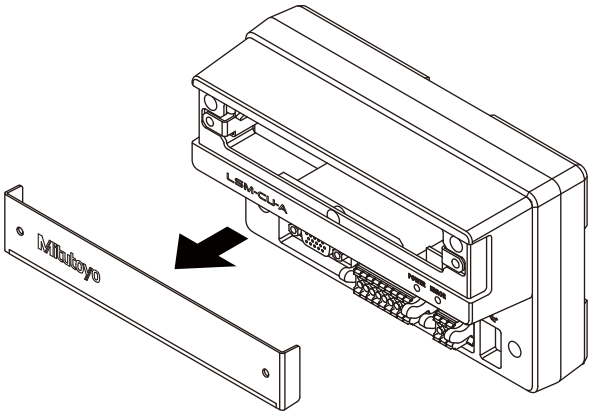
1 Loosen the two screws on the cover and then remove them.



Tips

The removed screws are used to mount this product.

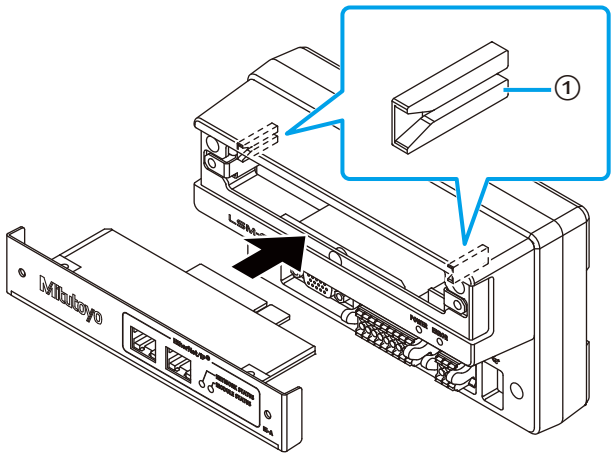
2 Remove the cover from the controller.



Keep the removed cover and be careful not to lose it.

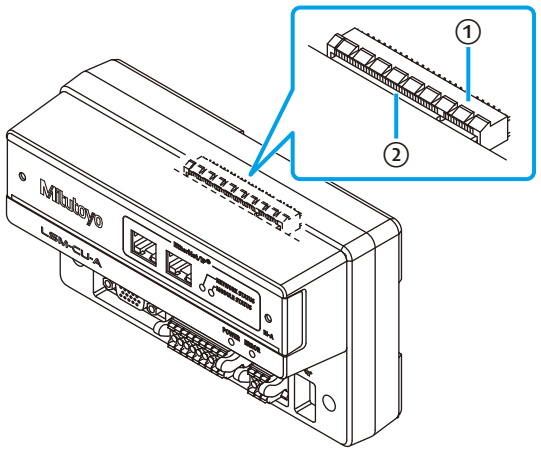
2 Mount this product on the controller.

1 Insert this product along the guides on either side of the controller.



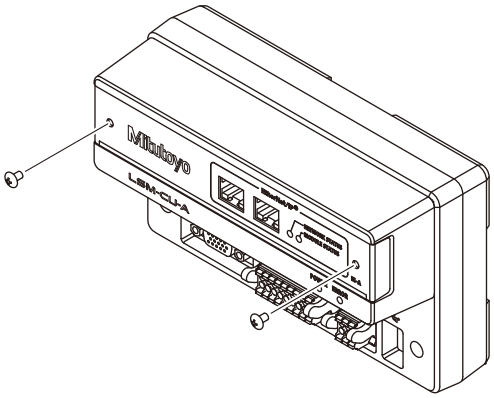
No.	Name
①	Guide

2 Insert the edge connector of this product into the socket of the controller.



No.	Name
①	Socket
②	Edge connector

3 Fasten with the two screws removed in step 1.



4.3 Connecting the Communication Cable

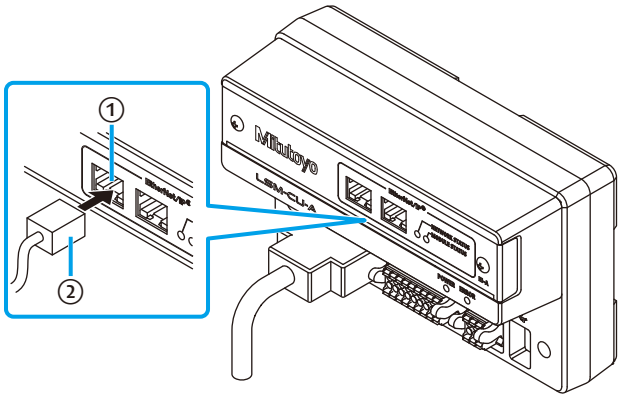
Connect the communication cable to this product.

4.3.1 How to Connect the Communication Cable

Tips

- Use an STP cable of Cat.5e or higher for the communication cable.
- This product is compatible with Auto MDI-X, which automatically detects whether the cable type is straight or cross for communication.
- This product does not support optical communication or single-pair Ethernet.
- Make sure that communication cable length does not exceed 30 m.

1 Connect the communication cable to one of the RJ-45 connectors (port 1 or port 2) on this product.



No.	Name
①	RJ-45 connector
②	Communication cable

2 Connect the other end of the communication cable to the RJ-45 connector on the network side.

4.4 Device Settings

This section describes the settings for network communication between this product and the scanner device.

■ IP address setting

IP address setting is required for network communication.

The IP address of this product is factory-set to 192.168.1.10.

The IP address can be changed in the following ways. Change the address according to the requirements of your network.

- Change by LSMPAK
- Change using the configuration tool of a scanner device, etc.

● Procedure for confirming or changing the IP address with LSMPAK

For details about LSMPAK, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

1 Connect the controller to the PC on which LSMPAK is installed with a USB cable.

Tips

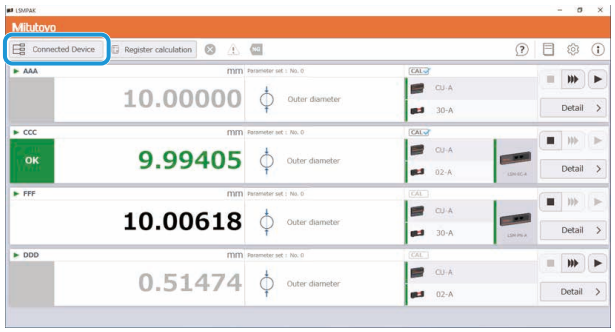
To change the IP address, connect the controller to the PC by USB.

2 Double-click the LSMPAK icon on the desktop.

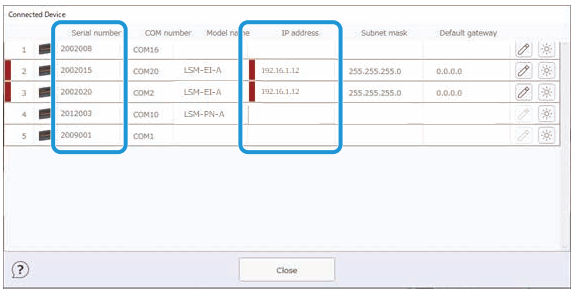
» The home screen is displayed.

3 Click [Connected Device].

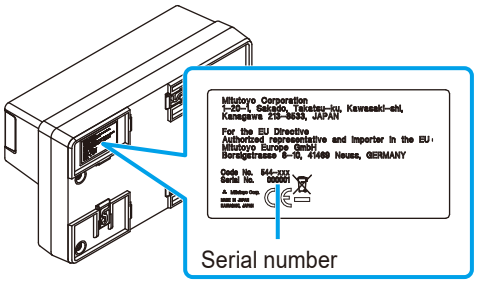
» The connected device screen is displayed.



4 Check the IP address from the serial number of the controller to which this product is connected.

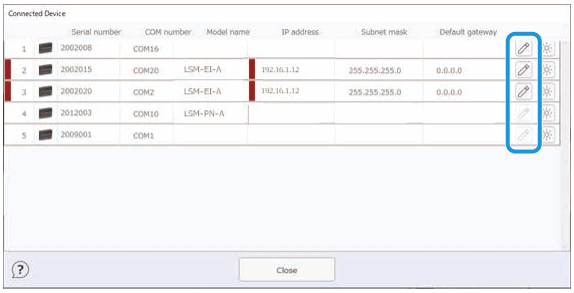


The serial number is affixed to the rear side of the controller.



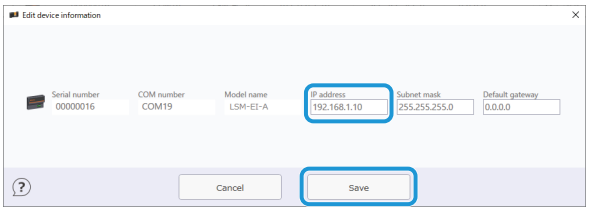
5 To change the IP address, click on the right side (with USB connection only).

» The edit device information screen is displayed.



6 Change the IP address.

1. Enter the new address in the [IP address] field.
2. Click [Save].



- Changing the IP address using the scanner device configuration tool, etc.

  The device IP address can be changed using engineering tools such as that provided with the scanner device. For instructions on how to use the tool, see the scanner device manual.

■ Communication settings for the scanner device

The settings required for EtherNet/IP communication with this product are made using the engineering tool of the scanner device. For information on how to operate the engineering tools, see the scanner device manual.

The general setup process to be performed on the scanner device is as follows.

● Registering the device profile

Register the device profile of this product to the scanner device.

Use the EDS (Electronic Data Sheets) file of this product to register device profiles.
Use the EDS file stored on the included CD-ROM or download it from the Mitutoyo web site or the ODVA web site.

● Setting the connection

Set the connection type (point-to-point/multicast), send and receive data size, transmission interval, etc.

● Assigning device input/output data

Assign the data area to be sent/received by this product in the program variables using the engineering tool, etc.

MEMO

5 Communication Function

This chapter describes the device settings and communication function of this product.

5.1 Communication Specification

5.1.1 EtherNet/IP Communication

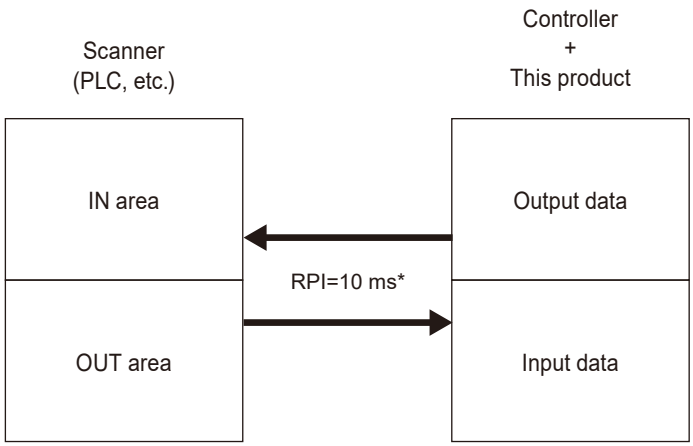
The scanner device and this product communicate by EtherNet/IP.

This section provides an overview of EtherNet/IP communication and details of the data used for communication.

■ Overview

The scanner device and this product perform cyclic data communication at a fixed cycle, and output and input data are exchanged according to the communication cycle (RPI).

The RPI of this product can be set between 1 ms and 3200 ms.



*RPI can be set individually.

When transmitting data, data is sent when a connection (logical communication channel) is successfully opened from one device to another.

The following shows the sequence for starting data transmission.

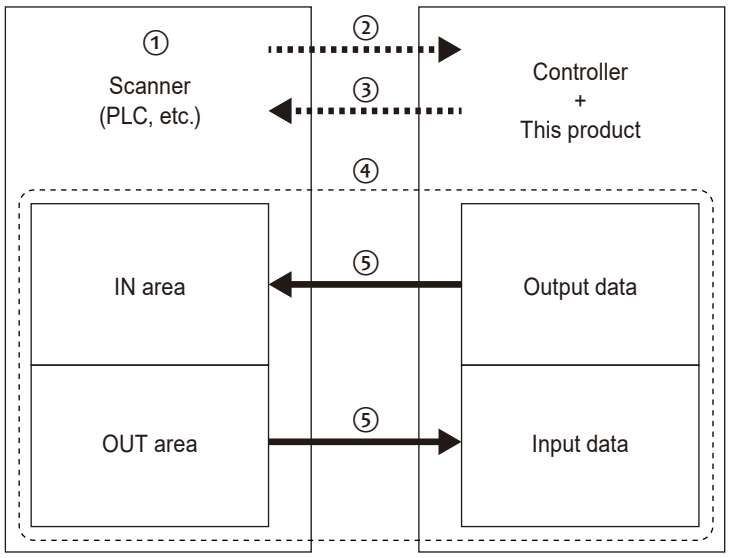
① The scanner device checks device compatibility.

② The scanner device requests the adapter device to open the connection.

③ The adapter device accepts the scanner device's request to open.

④ The connection is established (data communication is possible).

⑤ Data is sent.



■ Details of data

● Output data from this product to scanner

This product has two output data structures with different data identification numbers (Instance IDs): Basic (28 bytes) and Advanced (180 bytes).

The measurement data from a scanner such as a PLC can be acquired one measurement per cyclic communication with the Basic structure, or 20 measurements per cyclic communication with the Advanced structure.

The Instance IDs defined in the EDS file of this product are as follows: Basic=0x100, Advanced=0x103.

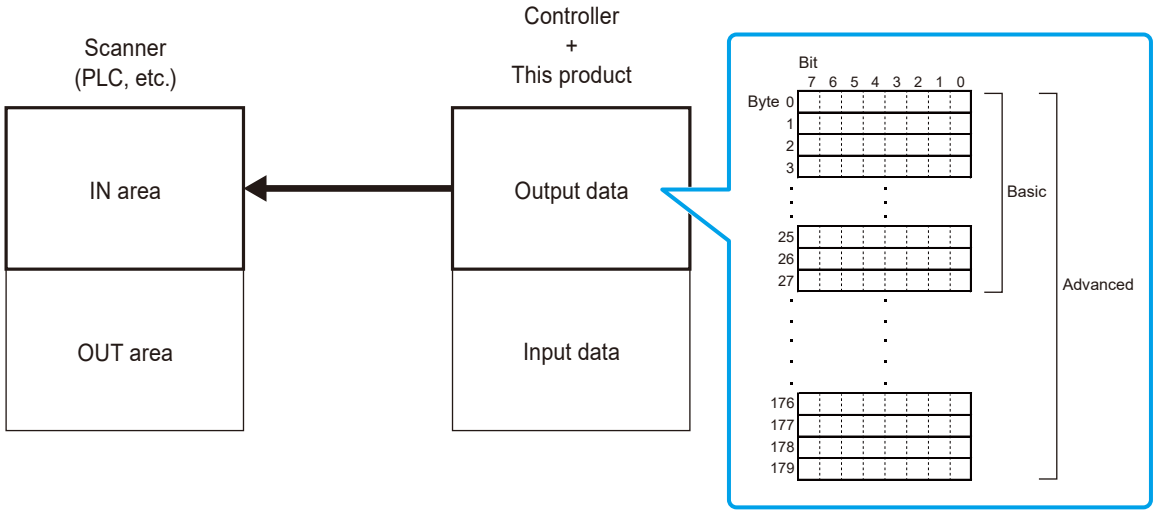
Tips

If the communication cycle between this product and the scanner is longer than the cycle for exchanging measurement data between the LSM controller and this product, measurement data may be lost on the scanner side.

The cycle of measurement data exchange between the LSM controller and this product depends on the number of averaging setting of the LSM controller.

Select Basic or Advanced and set the communication cycle between this product and the scanner according to the number of averaging setting of the LSM controller and the scanner's capability.

You can switch between Basic and Advanced and set the communication cycle between this product and the scanner using the scanner's configuration software. For details, see the scanner device manual.



Field type	TYPE	Byte	Bit	Description	Name	Current position display execution	Measurement execution
Status bit 1*1	BYTE	0	7	N/A	N/A	✓ Error record: 4 bytes	✓ Error status record: 4 bytes
			6	N/A	N/A		
			5	Automatic workpiece detection	AUTO_DET		
			4	N/A	N/A		
			3	N/A	N/A		
			2	N/A	N/A		
			1	Two items measurement	SUB		
			0	Measuring	MEAS		
		1	7	N/A	N/A		
			6	N/A	N/A		
			5	N/A	N/A		
			4	N/A	N/A		
			3	N/A	N/A		
			2	Calibrating	CAL_OK		
			1	Offset state	OFST_NOW		
			0	Preset state	PRST_NOW		
		2	7:0	N/A	N/A		
		3	7:0	N/A	N/A		

Field type	TYPE	Byte	Bit	Description	Name	Current position display execution	Measurement execution
Status bit 2*1	BYTE	4	7	N/A	N/A	✓ Status record: 4 bytes	✓ Status record: 4 bytes
			6	Calibration error	CAL_ER		
			5	Statistics buffer overflow	STAT_OVF		
			4	Overflow data	OVR_DATA		
			3	Waste removal (overflow)	RMV_DUST_OVR		
			2	Waste removal	RMV_DUST		
			1	Outlier elimination (all)	ABNML_DATA_OUT_ALL		
			0	Outlier elimination	ABNML_DATA_OUT		
		5	7	N/A	N/A		
			6	N/A	N/A		
			5	Edge error	EDGER		
			4	Edge not detected	NOEDG		
			3	No measurement sampling	NO_SCAN_SIG		
			2	Measurement interruption from outside	EXT_MEAS_STP		
			1	Ring buffer overflow	RING_OVF		
			0	No workpiece	NO_WORK_PCS		
		6	7	Dirt detection	DIRT_ER		
			6	N/A	N/A		
			5	Watchdog error	WDTO_ER		
			4	LD overcurrent	LD_OC_ER		
			3	Amount of light memorize error	LIT_INT_ER		
			2	FPGA config. error	FPGA_ER		
			1	Measurement unit EEPROM load error	MEPRM_ER		
			0	EEPROM load error	EPRM_ER		
		7	7	Total error	TOTAL_ER		
			6	Invalid setting	STCFT		
			5	N/A	N/A		
			4	N/A	N/A		
			3	N/A	N/A		
			2	N/A	N/A		
			1	N/A	N/A		
			0	Power supply error	PWR_ER		
Not used	N/A	8	7:0	N/A	N/A	N/A	N/A
		9	7:0	N/A	N/A	N/A	N/A
I/O bit	BYTE	10	7	LSM processing in progress	BUSY	-	✓
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A
			3	Next data available	NEXT	-	✓
			2	N/A	N/A	N/A	N/A
			1	Valid measurement data available	MDVLD	-	✓
			0	Valid display data available	DDVLD	✓	-
		11	7	N/A	N/A	N/A	N/A
			6	GO/NG judgment	LT7	-	✓
			5		LT6	-	✓
			4		LT5	-	✓
			3		LT4	-	✓
			2		LT3	-	✓
			1		LT2	-	✓
			0		LT1	-	✓

Field type	TYPE	Byte	Bit	Description	Name	Current position display execution	Measurement execution
I/O bit (echo back)	BYTE	12	7	Reboot request	RBTRQ		
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A
			3	Stream measurement	STRM		
			2	Single measurement	SNGL		
			1	Measurement start	RUN		
			0	Current value display	DPVAL		
		13	7	Endian switching	ENDN		
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	Parameter setting change request	CHGPRM		
			3	Error clear request	CLRRQ		
			2	Preset request	PSTRQ		
			1	Data reception OK	RCVOK		
			0	Measured data request	DREQ		
Device control bit (echo back)	BYTE	14	7:0	Parameter set number	PRM[7:0]		
		15	7	N/A	N/A	N/A	N/A
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A
			3	N/A	N/A	N/A	N/A
			2	N/A	N/A	N/A	N/A
			1	N/A	N/A	N/A	N/A
			0	GO/NG judgment ON	TOLON		
Number of valid data bits*2	INT	16	7:0	Valid data quantity	NODT[15:0] (Big endian)	✓	✓
		17	7:0				
Sequential number bits*2	UINT	18	7:0	Sequential number	SEQNO[15:0] (Big endian)		
		19	7:0				
Data bits (data ①)*2	FLOAT	20	7:0	Data	DATA01[31:0] (Big endian)	✓ Internal value ①: 4 bytes	✓ Measured value ①: 4 bytes
		21	7:0				
		22	7:0				
		23	7:0				
Data bits (data ①)*2	INT	24	7:0	GO/NG judgment information	TOL01[15:0] (Big endian)	-	✓ GO/NG judgment result①: 2 bytes
		25	7:0				
Data bits (data ①)*2	INT	26	7:0	Status information	STS01[15:0] (Big endian)	-	✓ Data status①: 2 bytes
		27	7:0				
:		:	:	:		:	:
:		:	:	:		:	:
Data bits (data ⑳) *2	FLOAT	172	7:0	Data	DATA20[31:0] (Big endian)	✓ Internal value ⑳: 4 bytes	✓ Measured value ⑳: 4 bytes
		173	7:0				
		174	7:0				
		175	7:0				
Data bits (data ⑳) *2	INT	176	7:0	GO/NG judgment information	TOL20[15:0] (Big endian)	-	✓ GO/NG judgment result⑳: 2 bytes
		177	7:0				
Data bits (data ⑳) *2	INT	178	7:0	Status information	STS20[15:0] (Big endian)	-	✓ Data status⑳: 2 bytes
		179	7:0				

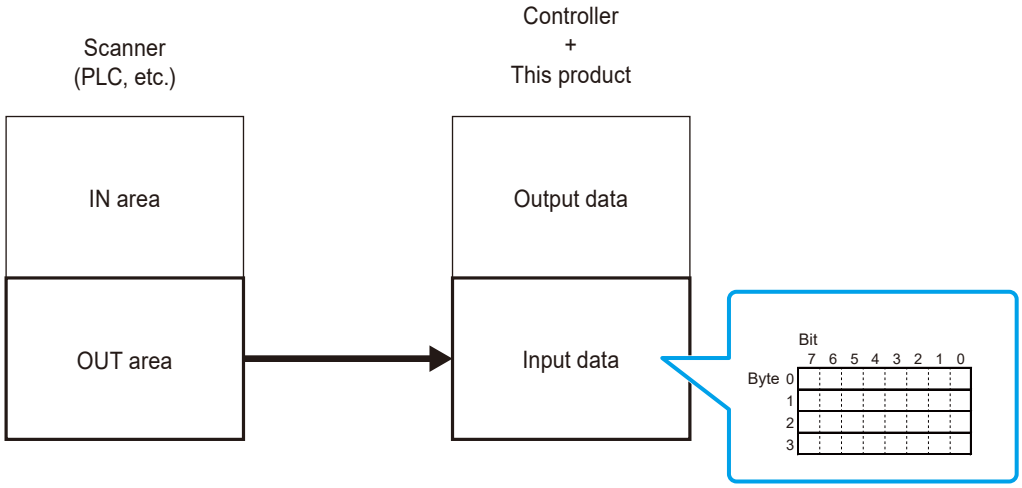
*1 To update the status, perform a measurement (RUN) or display current value (DPVAL) before referring to the status. Status information is not updated unless measurement (RUN) or current value display (DPVAL) is performed.

*2 Endian specification is available.

● Input data from scanner to this product

4-byte data (bytes 0 to 3) is received.

The Instance ID (data identification number) defined in the EDS file of this product is as follows: 0x101.



Field type	TYPE	Byte	Bit	Description	Name	Current position display execution	Measurement execution
I/O bit	BYTE	0	7	Reboot request	RBTRQ	✓	✓
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	N/A	N/A	N/A	N/A
			3	Stream measurement	STRM		
			2	Single measurement	SNGL	-	✓
			1	Measurement start	RUN	-	✓
			0	Current value display	DPVAL	✓	-
I/O bit	BYTE	1	7	Endian switching	ENDN	N/A	N/A
			6	N/A	N/A	N/A	N/A
			5	N/A	N/A	N/A	N/A
			4	Parameter setting change request	CHGPRM		
			3	Error clear request	CLRRQ	✓	✓
			2	Preset request	PSTRQ	✓	✓
			1	Data reception OK	RCVOK	✓	✓
			0	Measured data request	DREQ	✓	✓
Device control bit	BYTE	2	7:0	Parameter number	PRM[7:0]		
Device control bit	BYTE	3	7:1	N/A	N/A	N/A	N/A
			0	GO/NG judgment ON	TOLON	✓	✓

● Functions of definition bits

This product → scanner

Field name	Size	Description
AUTO_DET	1 bit	Auto Work Detect Automatic workpiece detection 1: ON 0: OFF
BUSY	1 bit	Busy Access under way between IF module and LSM controller 1: Access in progress 0: No access
CAL_ER	1 bit	Calibration Error Calibration error 1: Error occurred 0: Normal
CAL_OK	1 bit	Calibration Status Calibration status display 1: Calibration OK 0: Not calibrated
DAT01	4 bytes	Data storage area Measured value ① to ⑳ or indicated value ① to ⑳.
DAT02	4 bytes	
DAT03	4 bytes	
DAT04	4 bytes	
DAT05	4 bytes	
DAT06	4 bytes	
DAT07	4 bytes	
DAT08	4 bytes	
DAT09	4 bytes	
DAT10	4 bytes	
DAT11	4 bytes	
DAT12	4 bytes	
DAT13	4 bytes	
DAT14	4 bytes	
DAT15	4 bytes	
DAT16	4 bytes	
DAT17	4 bytes	
DAT18	4 bytes	
DAT19	4 bytes	
DAT20	4 bytes	
DDVLD	1 bit	Valid Display Value Display data availability indication 1: Display data available 0: Display data not available
DIRT_ER	1 bit	Dirt Error Sensor unit protective glass stain error

Field name	Size	Description
EDGER	1 bit	Edge Error Edge error (Occurs when, for example, an odd number of boundaries is detected on the measurement target.) 1: Error occurred 0: Normal
EPRM_ER	1 bit	EEPROM Error EEPROM load error 1: Error occurred 0: Normal
FPGA_ER	1 bit	FPGA Error FPGA configuration error 1: Error occurred 0: Normal
LD_OC_ER	1 bit	Laser Diode Over Current Error Measurement unit laser diode overcurrent error 1: Overcurrent detected 0: Normal
LIT_INT_ER	1 bit	Light Intensity Error Measurement unit laser diode brightness reduction error
LT1	1 bit	Limit1 to Limit7 GO/NG judgment LT1 to LT7 * Corresponds to R1 to R7 of the Multi-Limit Selection function.
LT2	1 bit	
LT3	1 bit	
LT4	1 bit	
LT5	1 bit	
LT6	1 bit	
LT7	1 bit	
MDVLD	1 bit	Valid Measurement Data Measurement data availability indication 1: Measurement data available 0: Measurement data not available
MEAS	1 bit	Measuring Measuring 1: Measuring 0: Idle
EPRM_ER	1 bit	Sensor EEPROM Error Measurement unit EEPROM load error 1: Error occurred 0: Normal
NEXT	1 bit	Next Data Next data availability indication 1: Next data available 0: Next data not available
NODT	2 bytes	Number of Valid Data Measurement data quantity indication

Field name	Size	Description
NOEDG	1 bit	No Edge Edge not detected error (Unable to properly detect boundary on the measurement target.) 1: Error occurred 0: Normal
OFST_NOW	1 bit	Offset Offset state indication 1: Offset set 0: No offset
PRM[0:7]	8 bit	Parameter Number Echo Measurement parameter set number display (0x0 to 0xff) * Up to 20 parameter sets can be stored.
PST_NOW	1 bit	Preset Preset state indication 1: Preset set 0: No preset
SEQNO	2 bytes	Sequence Number Sequence number assigned to the measurement data. * This is a sequential number from 0 through 65535 that is incremented each time the IF module acquires data from the LSM controller. Numbering returns to 0 upon reaching 65535.
STCFT	1 bit	State Conflict Error Setting mismatch 1: Mismatch error 0: Normal * Raised upon incorrect bit operation.
STS01	2 bytes	STATUS ① to ⑳ 0x0001: Outlier elimination 0x0002: Outlier elimination 0x0004: Dirt removal process applied 0x0008: Dirt removal process applied 0x0010: Overflow data 0x0020: Statistics buffer overflow 0x0040: Calibration error 0x0080: Outlier elimination CNT warning 0x0100: ERR-0 No workpiece 0x0200: Measurement ring buffer overflow 0x0800: ERR-8 No measurement sampling 0x1000: Edge not detected error (upon scan interrupt)
STS02	2 bytes	
STS03	2 bytes	
STS04	2 bytes	
STS05	2 bytes	
STS06	2 bytes	
STS07	2 bytes	
STS08	2 bytes	
STS09	2 bytes	
STS10	2 bytes	
STS11	2 bytes	
STS12	2 bytes	
STS13	2 bytes	
STS14	2 bytes	
STS15	2 bytes	
STS16	2 bytes	
STS17	2 bytes	
STS18	2 bytes	
STS19	2 bytes	
STS20	2 bytes	

Field name	Size	Description
TOL01	2 bytes	GO/NG judgment ① to ⑳ 1: Lower threshold exceeded (-NG) 2: Within limits (GO) 4: Upper threshold exceeded (+NG) * Threshold values are set from the LSM controller. For details about the controller, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).
TOL02	2 bytes	
TOL03	2 bytes	
TOL04	2 bytes	
TOL05	2 bytes	
TOL06	2 bytes	
TOL07	2 bytes	
TOL08	2 bytes	
TOL09	2 bytes	
TOL10	2 bytes	
TOL11	2 bytes	
TOL12	2 bytes	
TOL13	2 bytes	
TOL14	2 bytes	
TOL15	2 bytes	
TOL16	2 bytes	
TOL17	2 bytes	
TOL18	2 bytes	
TOL19	2 bytes	
TOL20	2 bytes	
TOTAL_ER	1 bit	Total Error Error status indication (determined from R-IN) 1: Error occurred 0: No error * All error causes are ORed for display.
WDTO_ER	1 bit	Watch Dog Time Out Error Watchdog timeout error 1: WDT timeout occurred 0: Error did not occur

Scanner → this product

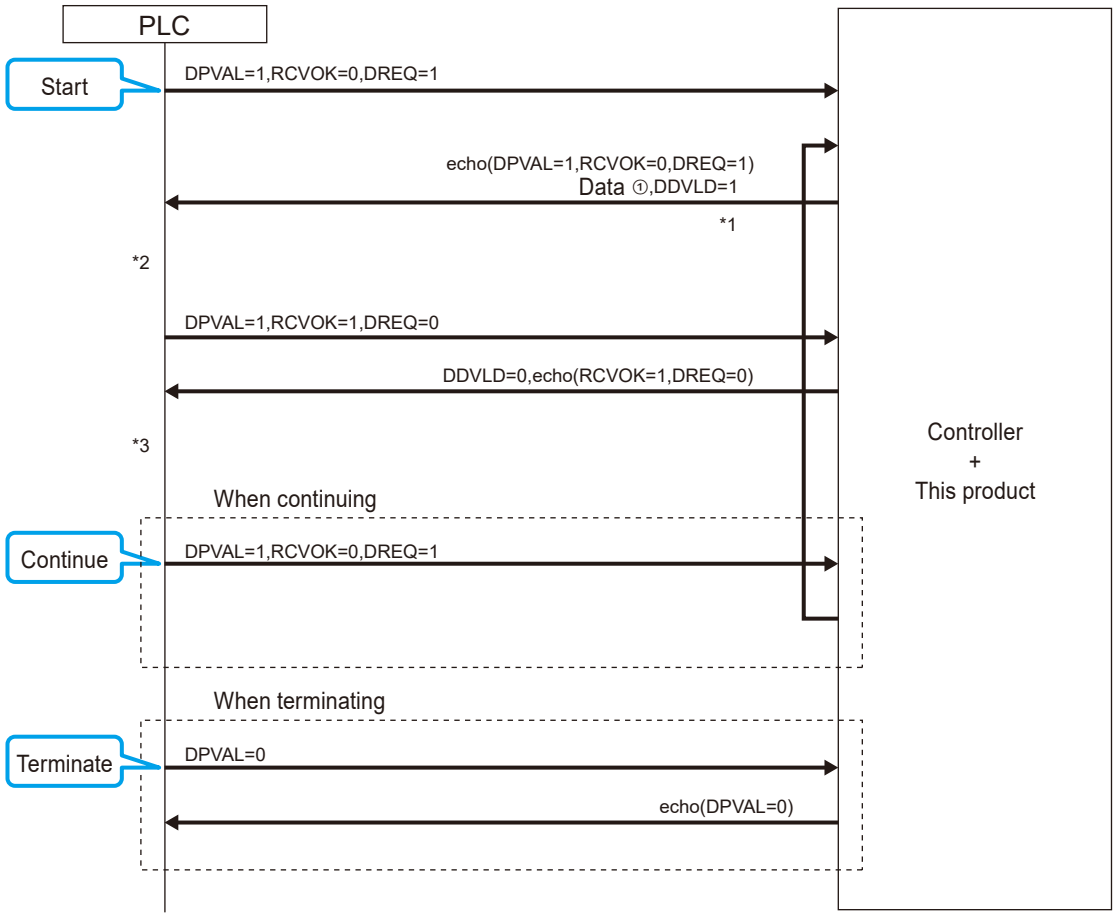
Field name	Size	Description
CHGPRM	1 bit	Change Parameter Parameter setting change 1: Change request 0: No change request * Changed on transition from 0 → 1.
CLRRQ	1 bit	Clear Request Error status clear request 1: Clear request 0: No clear request * Cleared on transition from 0 → 1.
DPVAL	1 bit	Display Value Display value acquisition start 1: Start display value acquisition 0: Stop display value acquisition

Field name	Size	Description
DREQ	1 bit	Data Request Measured/displayed value data request 1: Data request 0: No data request
ENDN	1 bit	Endian Swap Endian selection 1: Big endian 0: Little endian
PRM[0:7]	8 bit	Parameter Number Specify parameter set numbers 0 to 19 (0x00 to 0xff)
PSTRQ	1 bit	Preset Request Preset request 1: Preset request 0: No preset request * Set on transition from 0 → 1.
RBTRQ	1 bit	Reboot Request Device reset request 1: Reset request 0: No reset request * Reset on transition from 0 → 1.
RCVOK	1 bit	Receive OK Measurement data reception complete
RUN	1 bit	Run Measurement start/stop 1: Measurement start 0: Measurement stop
SNGL	1 bit	Single Measurement Single measurement specification 1: Single measurement 0: Continuous-run measurement
STRM	1 bit	Stream Measurement Measurement data streaming acquisition 1: Streaming acquisition 0: Normal acquisition
TOLON	1 bit	Tolerance On GO/NG judgment ON/OFF 1: GO/NG judgment ON 0: GO/NG judgment OFF

■ Communication method

This section describes communication works from the scanner device (PLC, etc.) to the adapter device (this product).

● Idle value display

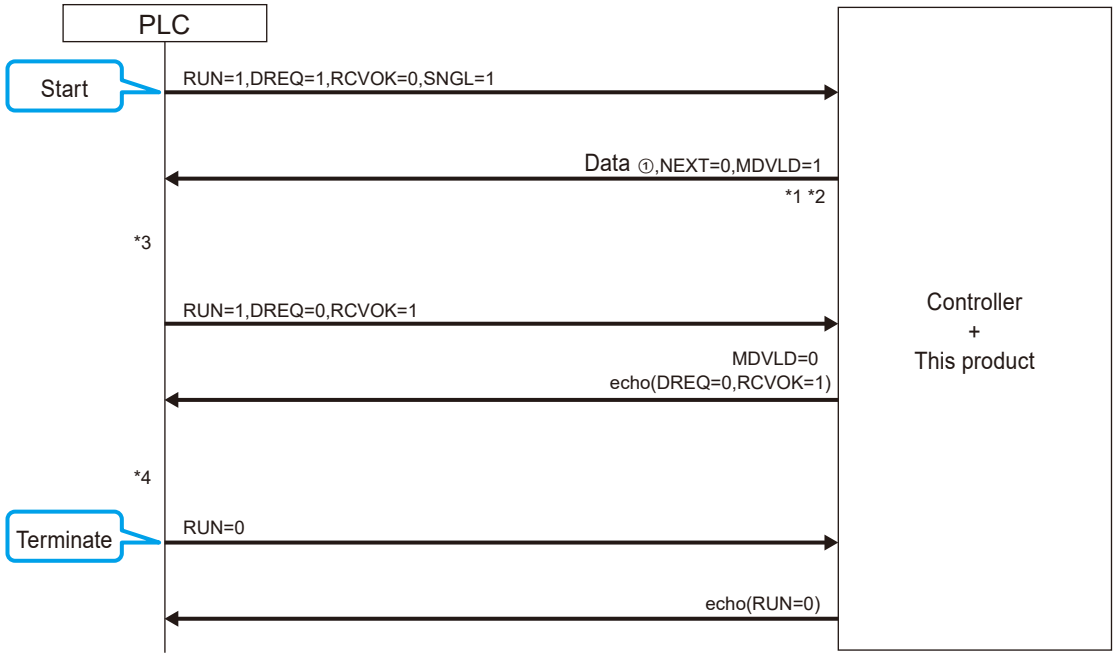


*1 Response (output data to IN area on the scanner device (PLC, etc.))
- Idle value ①: Bytes 20 to 23 data ①
- Status record: Bytes 4 to 7
- Error record: Bytes 0 to 3
- Valid data quantity: Bytes 16 to 17 (valid data quantity=1)

*2 Processing on PLC side
- Checks that DDVLD=1 was set.
- Reads the valid data quantity to check the data count.
- Reads in the number of pieces of data from data areas ① through ⑳ as written in the valid data quantity.
- Sets the data reception OK flag.
  RCVOK=1
  DREQ=0

*3 Processing on PLC side
After confirming DDVLD=0, sets RCVOK=0.

● Single measurement execution



*1 For single measurement: NEXT=0

*2 Response (output data to IN area on the scanner device (PLC, etc.))
- Status record: Bytes 4 to 7
- Error record: Bytes 0 to 3
- Valid data quantity: Bytes 16 to 17
- Measured value ①: Bytes 20 to 23
- GO/NG judgment result of measured value ①: Bytes 24 to 25
- Data status of measured value ①: Bytes 26 to 27
  (When two items measurement is performed, the acquired two items of data are stored in the data ① and ⑪ areas, respectively.)
  For details about two items measurement, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

*3 Processing on PLC side
- Checks that MDVLD=1 was set.
- Reads the valid data quantity to check the data count.
- Reads in the number of pieces of data from data areas ① through ⑳ as written in the valid data quantity.
  (When two items measurement is performed, the acquired two items of data are stored in the data ① to ⑩ and ⑪ to ⑳ areas, respectively.)
  For details about two items measurement, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).
- Sets the data reception OK flag.
  RCVOK=1
  DREQ=0

*4 Processing on PLC side
After confirming MDVLD=0, sets RCVOK=0.

● Continuous measurement execution

Data can be acquired either by normal acquisition or streaming acquisition.

Streaming acquisition allows measurement data acquisition at shorter intervals than normal acquisition.

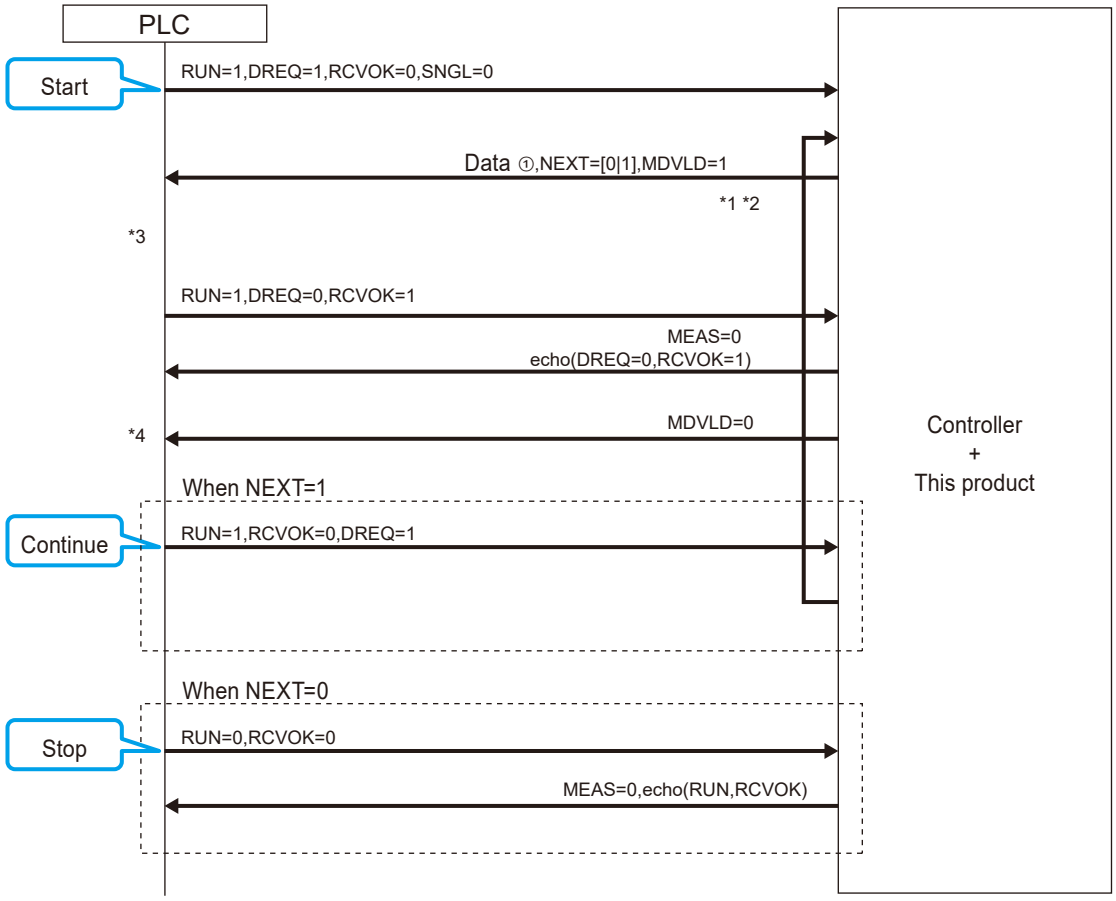
Use of streaming acquisition is recommended if the number of averaging is set to less than 4 times by the LSM controller.

For details about the number of averaging, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

IMPORTANT

Communication handshaking between the PLC and LSM is omitted during streaming acquisition, so data is not assured. If you want to detect missing data, create a PLC program to check using sequence numbers.

With normal acquisition



*1 If the valid data quantity is not -1: NEXT=1

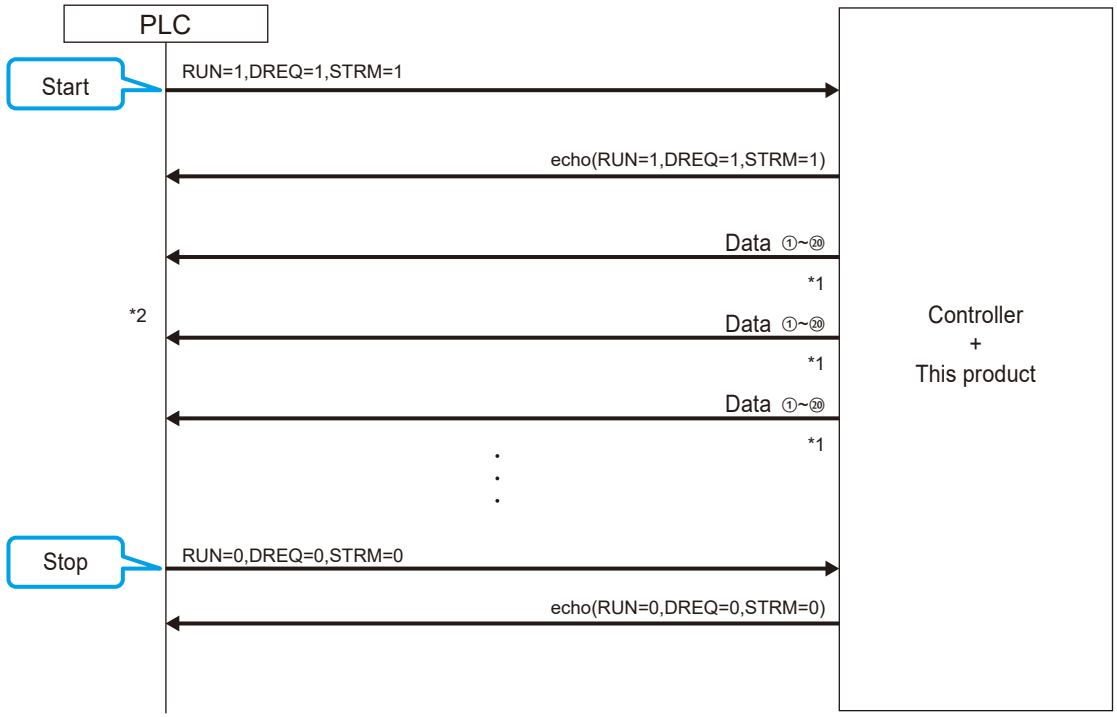
*2 Response (output data to IN area on the scanner device (PLC, etc.))

- Status record: Bytes 4 to 7
- Error record: Bytes 0 to 3
- Valid data quantity: Bytes 16 to 17
- Measured value ①: Bytes 20 to 23
- GO/NG judgment result of measured value ①: Bytes 24 to 25
- Data status of measured value ①: Bytes 26 to 27
  (When two items measurement is performed, the acquired two items of data are stored in the data ① and ⑪ areas, respectively.)
  For details about two items measurement, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

*3 Processing on PLC side
- Checks that MDVLD=1 was set.
- Reads the valid data quantity to check the data count.
- Reads in the number of pieces of data from data areas ① through ⑳ as written in the valid data quantity.
  (When two items measurement is performed, the acquired two items of data are stored in the data ① to ⑩ and ⑪ to ⑳ areas, respectively.)
  For details about two items measurement, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).
- Sets the data reception OK flag.
  RCVOK=1
  DREQ=0

*4 Processing on PLC side
After confirming MDVLD=0, sets RCVOK=0.

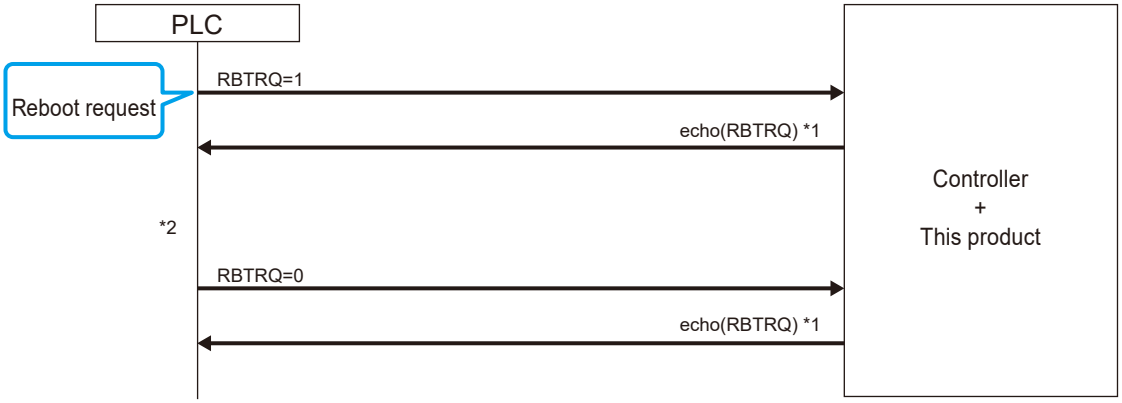
With streaming acquisition



*1 Response (output data to IN area on the scanner device (PLC, etc.))
- Status record: Bytes 4 to 7
- Error record: Bytes 0 to 3
- Valid data quantity: Bytes 16 to 17
- Measured value ①: Bytes 20 to 23
- GO/NG judgment result of measured value ①: Bytes 24 to 25
- Data status of measured value ①: Bytes 26 to 27
  (When two items measurement is performed, the acquired two items of data are stored in the data ① and ⑪ areas, respectively.)
  For details about two items measurement, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).

*2 Processing on PLC side
Data is acquired by repeating the following steps.
Data is updated at the specified communication cycle, and SEQNO is incremented at each update.
- Check the sequence number (SEQNO) of the data.
- Reads the valid data quantity to check the data count.
- Reads in the number of pieces of data from data areas ① through ⑳ as written in the valid data quantity.
(When two items measurement is performed, the acquired two items of data are stored in the data ① to ⑩ and ⑪ to ⑳ areas, respectively.)
For details about two items measurement, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).

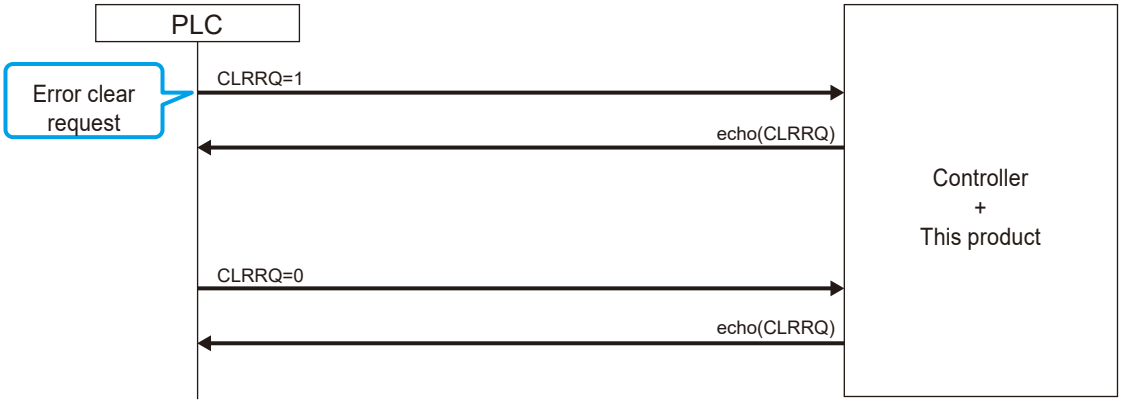
● Reboot request



*1 Depending on the timing, this response may not be received by PLC. This is because when RBTRQ is issued, the device enters reboot operation and echo(RBTRQ) becomes 0.

*2 The RBTRQ bit should be held for at least one cycle of cyclic communication.

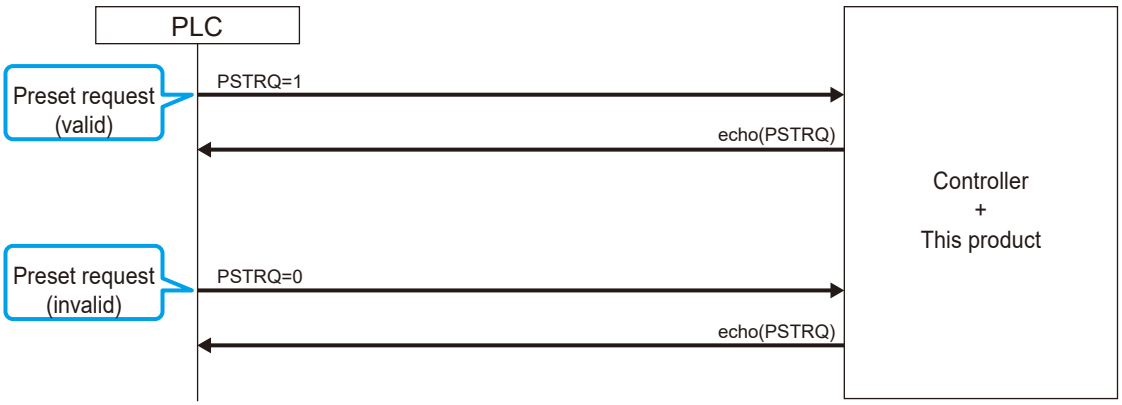
● Error clear request



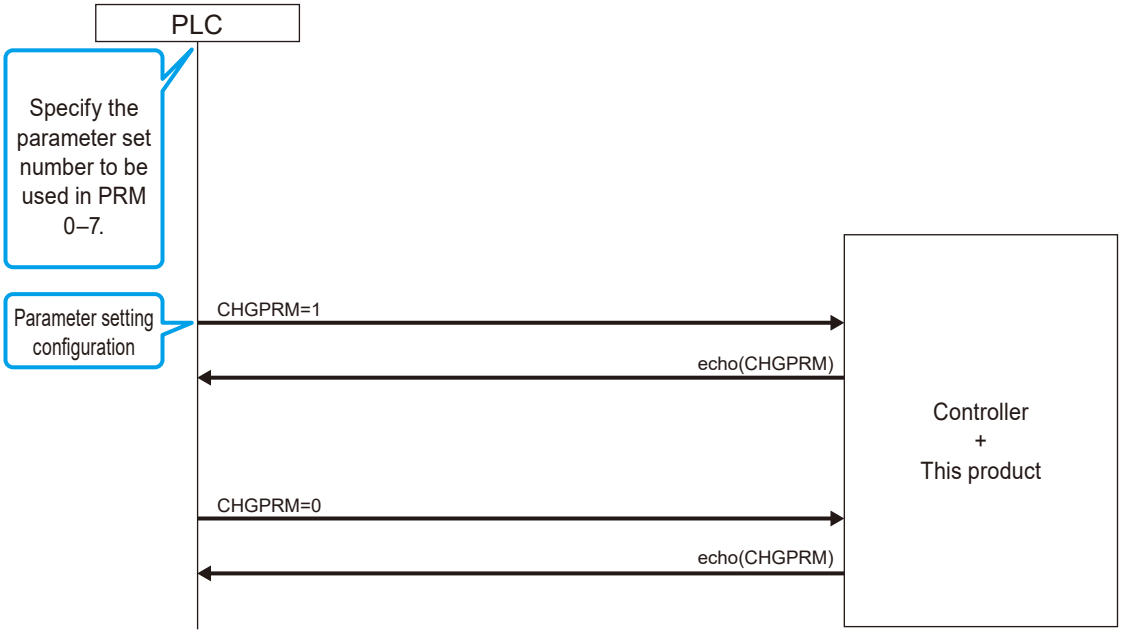
Tips

To update the error status after assertion of CLRRQ, set DPVAL ON and update the current value display.

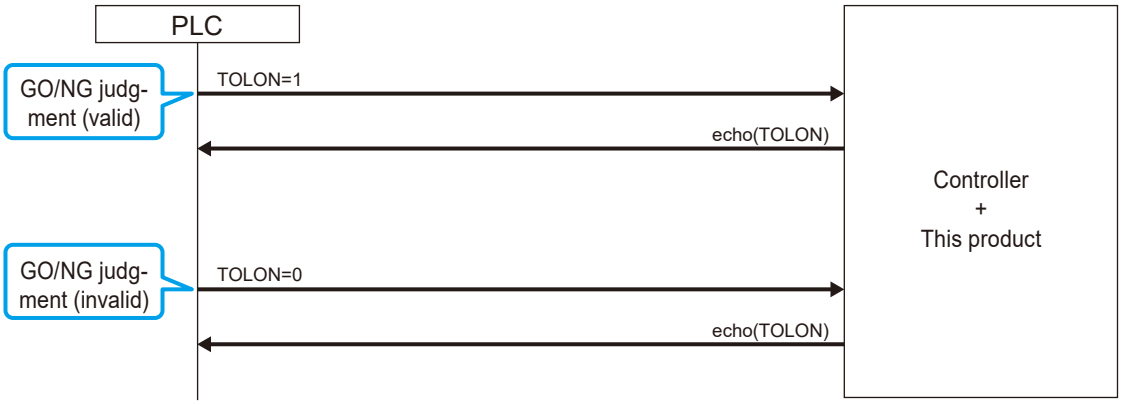
● Preset request



● Parameter setting configuration

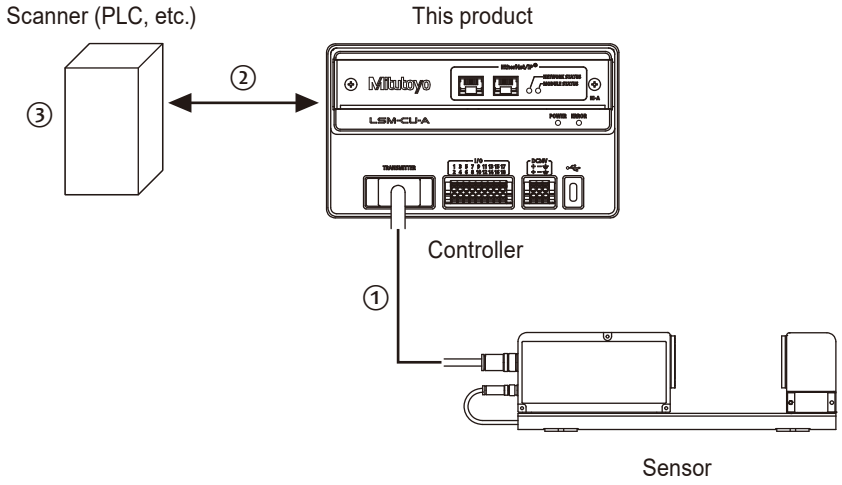


● GO/NG judgment setting



5.1.2 Duration of Data Processing

Time required from measurement execution to data processing by the scanner (PLC, etc.) is shown below.



Maximum data processing time = ① + ② + ③

① Response time of the controller

② RPI (transmission interval)

③ Scanning time of the scanner device (PLC, etc.)

① For detail about response time of the controller, see 📖 "Laser Scan Micrometer <Controller> User's Manual" (separate document).

② RPI is set in the configuration software on the scanner device. The settable range is from 1 ms through 3200 ms.

③ Program scan times of scanners vary according to device processing capacity and program size. Check specifications of the device used and program execution time.

Tips

If the scanner's scan time is shorter than the communication cycle, data may not be acquired correctly.

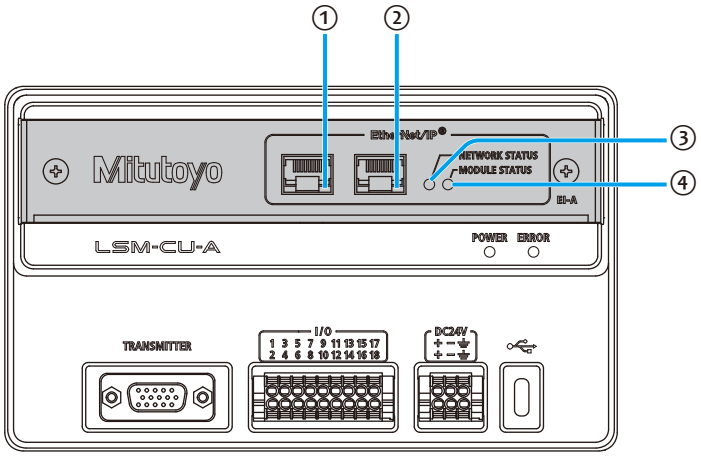
5.2 Status Indication

The status of the controller and network can be checked with the LEDs on this product or with LSMPAK.

For details about LSMPAK, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).

5.2.1 LED Indicators on This Product

The LED indications of this product change according to the status of the controller and network.

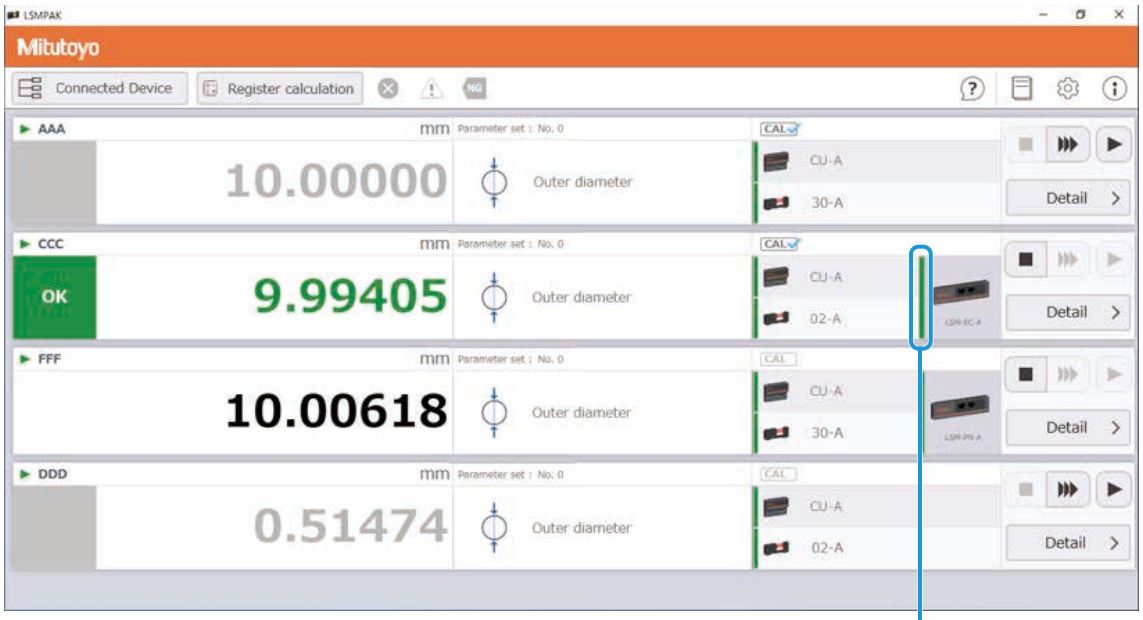


No.	Name	Application	Indicator color		Description
①	Link/activity LED (port 1)	Ethernet	Off		Communication is not available.
			Steady yellow		Lights when a link is established and flashes during transmission and reception.
②	Link/activity LED (port 2)	Ethernet	Off		Communication is not available.
			Steady yellow		Lights when a link is established and flashes during transmission and reception.
③	NETWORK STATUS indicator	EtherNet/IP	Off		This product is offline. This product may not be receiving power.
			Steady green		This product is online, has established connection, and is ready to communicate.
			Flashing green		This product is online, but no connection has been established and communication is not possible.
			Flashing red		At least one I/O connection has timed out.
			Steady red		A failure or error that prevents communication on the network has been detected.
			Flashing green and red alternately		This product is performing a self-diagnosis test.

No.	Name	Application	Indicator color		Description
④	MODULE STATUS indicator	EtherNet/IP	Off		Power is not being supplied to this product.
			Steady green		This product is running normally.
			Flashing green		Incomplete or incorrect configuration. Check the communication settings.
			Steady red		Unrecoverable error occurred in this product. Replacement of this product may be required.
			Flashing green and red alternately		This product is performing a self-diagnosis test.

5.2.2 LSMPAK Screen

When this product is operating normally, the status LED lights green. (Red: Error occurred, Gray: Not working)



6 Troubleshooting

If you cannot access the network, check the LED indicators.

For details about the LED indicators, see "5.2.1 LED Indicators on This Product" on page 36.
For details about LSMPAK error messages, see "Laser Scan Micrometer <Controller> User's Manual" (separate document).

Problem	Cause	Solution
Power does not go on.	This product is not properly inserted into the socket of LSM-CU-A.	Insert this product correctly into the LSM-CU-A. "4.2 Connecting to the Controller" on page 10
Communication not working.	The cable is not properly connected.	Check cable connections and verify that the link/activity LED is lit.
	The connected device is not turned on.	Make sure the connected device is turned on and that the link/activity LED is lit.
	Incorrect communication settings on current device or connected device.	Check the LED indicators on the device and make communication settings required to obtain a normal lighting pattern. For details on LED lighting patterns, see "5.2.1 LED Indicators on This Product" on page 36. For communication settings for the connected device, see the manual or other document related to that device.
Operation of this product is unstable. • Correct measurement values cannot be obtained. • Communication errors occur. • This product restarts.	This product is receiving electromagnetic interference that exceeds the requirements of the EMC Directive and the UK Electromagnetic Compatibility Regulations.	Eliminate the electromagnetic interference. This product resumes normal operation after the electromagnetic interference is eliminated.
Operation of other devices is unstable. This product is causing loss of specified functionality of other devices.	This product is being used in other than the intended operating environment. This product generates electromagnetic emissions in an industrial environment. This product is not intended for use outside of an industrial environment, and its use in residential areas or other environments may cause electromagnetic interference with other devices.	Implement countermeasures to prevent electromagnetic interference with other devices.

MEMO

7 Specifications

This chapter describes the specifications of this product.

7.1 Basic Specifications

Item	Specification		
Code No.	02AGQ300		
Model number	LSM-EI-A		
Interface	LED	NETWORK STATUS indicator	Dual Color LED1 (red/green)
		MODULE STATUS indicator	Dual Color LED2 (red/green)
	RJ45 connector	2 channels	
Operating environment	0 °C to 50 °C, 20 % RH to 85 % RH (non-condensing)		
Storage environment	-10 °C to 60 °C, 20 % RH to 85 % RH (non-condensing)		
CE marking/ UKCA marking	EMC Directive/Electromagnetic Compatibility Regulations: EN IEC 61326-1 Immunity test requirement: Clause 6.2 Table 2 Emission limit: Class A RoHS Directive/The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations : EN IEC 63000		

7.2 Ethernet Communication Specifications

Item	Specification
Communication port	RJ45×2
Transmission speed	100 Mbps, full duplex
Cable used	STP communication cables of type Cat.5e or higher

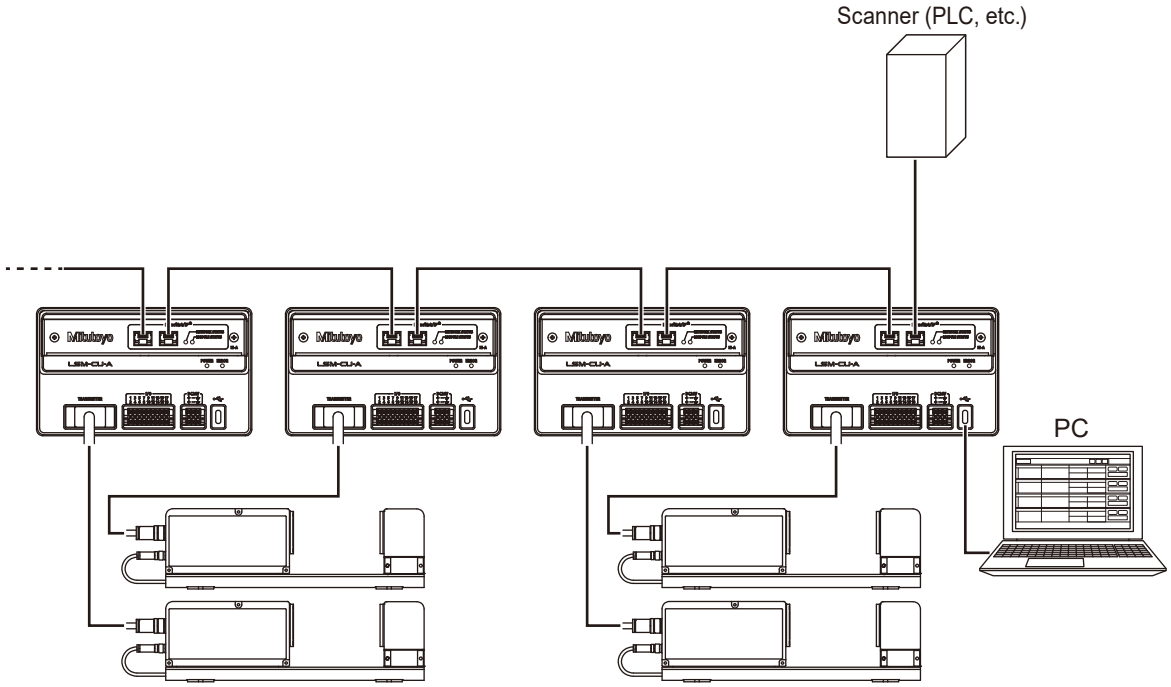
7.3 Measurement Configurations Usable with This Product

Using this device, multiple LSM controllers can be connected to a network.
Typical connection of multiple LSM controllers is shown below.
Networked LSM controllers can be managed from a PC using LSMPAK.
The maximum number of LSM controllers that can be managed using LSMPAK is eight.

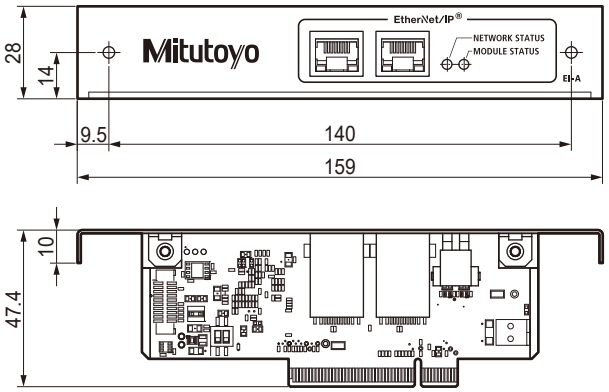
Duplicate IP addresses within the same network will result in incorrect communication.
Please be careful to avoid setting duplicate IP addresses.

Tips

It does not matter whether you use port 1 or port 2 of this product to configure the network.



7.4 External Dimensions Drawing



Unit: mm

SERVICE NETWORK

*As of June 2023

Europe

Mitutoyo Europe GmbH
Borsigstrasse 8-10, 41469 Neuss, GERMANY
TEL: 49 (0)2137 102-0 FAX: 49 (0)2137 102-351

Mitutoyo CTL Germany GmbH
Von-Gunzert-Strasse 17, 78727 Oberndorf, GERMANY
TEL: 49 (0)7423 8776-0 FAX: 49 (0)7423 8776-99

KOMEG Industrielle Messtechnik GmbH
Zum Wasserwerk 3, 66333 Völklingen, GERMANY
TEL: 49 (0)6898 91110 FAX: 49 (0)6898 9111100

Germany

Mitutoyo Deutschland GmbH
Borsigstrasse 8-10, 41469 Neuss, GERMANY
TEL: 49 (0)2137 102-0 FAX: 49 (0)2137 86 85

M³ Solution Center Hamburg
Tempowerkring 9·im HIT-Technologiepark 21079 Hamburg, GERMANY
TEL: 49 (0)40 791894-0 FAX: 49 (0)40 791894-50

M³ Solution Center Berlin
Ernst-Lau-Straße 6, 12489 Berlin, GERMANY
TEL:49(0)30 2611 267 FAX: 49 30 67988729

M³ Solution Center Eisenach
Neue Wiese 4, 99817 Eisenach,GERMANY
TEL: 49 (0)3691 88909-0 FAX: 49 (0)3691 88909-9

M³ Solution Center Ingolstadt
Marie-Curie-Strasse 1A, 85055 Ingolstadt, GERMANY
TEL: 49 (0)841 954920 FAX: 49 (0)841 9549250

M³ Solution Center Leonberg
Am Längenbühl 3, 71229 Leonberg, GERMANY
TEL: 49 (0)7152 6080-0 FAX: 49 (0)7152 608060

Mitutoyo Deutschland GmbH - Small Tool Sales Division
Heidenheimer Strasse 14, 71229 Leonberg, GERMANY
TEL: 49 (0)7152 9237-0 FAX: 49 (0)7152 9237-29

U.K.

Mitutoyo (UK) Ltd. HQ
Joule Road, West Point Business Park,
Andover, Hampshire SP10 3UX, UNITED KINGDOM
TEL: 44 (0)1264 353123 FAX: 44 (0)1264 354883

Coventry M³ Solution Centre
Unit6, Banner Park, Wickmans Drive, Coventry,
West Midlands CV4 9XA, UNITED KINGDOM
TEL: 44 (0)2476 426300

Halifax M³ Solution Centre
Lowfields Business Park, Navigation Close, Elland,
West Yorkshire HX5 9HB, UNITED KINGDOM
TEL: 44 (0)1422 375566

East Kilbride M³ Solution Centre
The Bairds Building, Rankine Avenue, Scottish Enterprise Technology Park, East Kilbride G75 0QF, UNITED KINGDOM
TEL: 44 (0)1355 581170

France

Mitutoyo France
Paris Nord 2-123 rue de la Belle Etoile, BP 59267 ROISSY EN FRANCE 95957 ROISSY CDG CEDEX, FRANCE
TEL: 33 (0)149 38 35 00

M³ Solution Center LYON
Parc Mail 523, cours du 3ème millénaire, 69791 Saint-Priest, FRANCE
TEL: 33 (0)149 38 35 70

M³ Solution Center STRASBOURG
Parc de la porte Sud, Rue du pont du péage, 67118 Geispolsheim, FRANCE
TEL: 33 (0)149 38 35 80

M³ Solution Center CLUSES
290 Avenue des Lacs, 74950 Scionzier, FRANCE
TEL: 33 (0)1 49 38 35 90

M³ Solution Center TOULOUSE
Aeroparc Saint Martin Cellule B08 ZAC de Saint Martin du Touch 12 rue de Caulet 31300 Toulouse, FRANCE
TEL: 33 (0)1 49 38 42 90

M³ Solution Center RENNES
2, rue Claude Chappe, PA le Vallon - ZAC Mivoie, 35230 Noyal-Châtillon-sur-Seiche, FRANCE
TEL: 33 (0)1 49 38 42 10

Italy

Mitutoyo Italiana S.r.l.
Corso Europa, 7 - 20045 Lainate (MI), ITALY
TEL: 39 02 935781 FAX: 39 02 93578255

M³ Solution Center BOLOGNA
Via dei Carpini1/A - 40011 Anzola Emilia (BO), ITALY
TEL: 39 02 93578215 FAX: 39 02 93578255

M³ Solution Center CHIETI
Contrada Santa Calcagna - 66020 Rocca S. Giovanni (CH), ITALY
TEL: 39 02 93578280 FAX: 39 02 93578255

M³ Solution Center PADOVA
Via G. Galilei 21/F - 35035 Mestrino (PD), ITALY
TEL: 39 02 93578268 FAX: 39 02 93578255

Netherlands

Mitutoyo Nederland B.V.
Storkstraat 30, 3905 KX Veenendaal,
THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Nederland B.V. / M³ Solution Center Enschede
Institutenweg 50, 7521 PK Enschede,
THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Nederland B.V. / M³ Solution Center Eindhoven
De Run 1115, 5503 LB Veldhoven,
THE NETHERLANDS
TEL: 31(0)318-534911

Mitutoyo Research Center Europe B.V.
De Rijn 18, 5684 PJ Best, THE NETHERLANDS
TEL:31(0)499-320200 FAX:31(0)499-320299

Belgium

Mitutoyo Belgium N.V. / M³ Solution Center Melsele
Schaarbeekstraat 20, B-9120 Melsele, BELGIUM
TEL: 32 (0)3-2540444

Sweden

Mitutoyo Scandinavia AB
Släntvägen 6, 194 61 Upplands Väsby, SWEDEN
TEL: 46 (0)8 594 109 50

Mitutoyo Scandinavia AB / M³ Solution Center Alingsås
Ängsvaktaregatan 3A, 441 38 Alingsås, SWEDEN
TEL: 46 (0)8 594 109 50

Mitutoyo Scandinavia AB / M³ Solution Center Värnamo
Kalkstensvägen 7, 331 44 Värnamo, SWEDEN
TEL: 46 (0)8 594 109 50

Switzerland

Mitutoyo (Schweiz) AG
Steinackerstrasse 35, 8902 Urdorf, SWITZERLAND
TEL: 41 (0)447361150

Mitutoyo (Suisse) SA
Rue Galilée 4, 1400 Yverdon-les Bains, SWITZERLAND
TEL: 41 (0)244259422

Poland

Mitutoyo Polska Sp.z o.o.
Ul.Graniczna 8A, 54-610 Wroclaw, POLAND
TEL: 48 (0)71354 83 50 FAX: 48 (0)71354 83 55

Czech Republic

Mitutoyo Česko s.r.o.
Dubská 1626, 415 01 Teplice, CZECH REPUBLIC
TEL: 420 417-514-011 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. M³ Solution Center Ivančice
Ke Karlovu 62/10, 664 91 Ivančice, CZECH REPUBLIC
TEL: 420 417-514-011 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. M³ Solution Center Ostrava Mošnov
Mošnov 314, 742 51 Mošnov, CZECH REPUBLIC
TEL: 420 417-514-050 Email: info@mitutoyo.cz

Mitutoyo Česko s.r.o. Slovakia Branch
Hviezdoslavova 124, 017 01 Považská Bystrica, SLOVAKIA
TEL: 421 948-595-590 Email: info@mitutoyo.sk

Hungary

Mitutoyo Hungária Kft.
Galamb József utca 9, 2000 Szentendre, HUNGARY
TEL: 36 (30) 6410210

Romania

Mitutoyo Romania SRL
1A Drumul Garii Odai Street, showroom, Ground Floor, 075100 OTOPENI-ILFOV, ROMANIA
TEL: 40 (0)311012088 FAX: +40 (0)311012089

Showroom in Brasov
Strada Ionescu Crum Nr.1, Brasov Business Park Turnul 1, Mezanin, 500446
Brasov-Judetul Brasov, ROMANIA
TEL/FAX: 40 (0)371020017

Finland

Mitutoyo Scandinavia AB Finnish Branch

Viherkiitäjä 2A, 33960, Pirkkala, FINLAND

TEL: 358 (0)40 355 8498

Austria

Mitutoyo Austria GmbH

Salzburger Straße 260 / 3 A-4600 Wels, AUSTRIA

TEL: 43 (0)7242 219 998

Mitutoyo Austria GmbH Goetzis Regional showroom

Lastenstrasse 48a, 6840 Götzis, AUSTRIA

Singapore

Mitutoyo Asia Pacific Pte. Ltd.

Head office / M³ Solution Center

24 Kallang Avenue, Mitutoyo Building, SINGAPORE 339415

TEL:(65)62942211 FAX:(65)62996666

Malaysia

Mitutoyo (Malaysia) Sdn. Bhd.

Kuala Lumpur Head Office / M³ Solution Center

Mah Sing Integrated Industrial Park, 4, Jalan Utarid U5/14, Section U5, 40150 Shah Alam, Selangor, MALAYSIA

TEL:(60)3-78459318 FAX:(60)3-78459346

Penang Branch office / M³ Solution Center

30, Persiaran Mahsuri 1/2, Sunway Tunas, 11900 Bayan Lepas, Penang, MALAYSIA

TEL:(60)4-6411998 FAX:(60)4-6412998

Johor Branch office / M³ Solution Center

70 (Ground Floor), Jalan Molek 1/28, Taman Molek, 81100 Johor Bahru, Johor, MALAYSIA

TEL:(60)7-3521626 FAX:(60)7-3521628

Thailand

Mitutoyo (Thailand) Co., Ltd.

Bangkok Head Office / M³ Solution Center

76/3-5, Chaengwattana Road, Kwaeng Anusaowaree, Khet Bangkaen, Bangkok 10220, THAILAND

TEL:(66)2080 3500 FAX:(66)2521 6136

Chonburi Branch / M³ Solution Center

7/1, Moo 3, Tambon Bowin, Amphur Sriracha, Chonburi 20230, THAILAND

TEL:(66)2080 3563 FAX:(66)3834 5788

ACC Branch / M³ Solution Center

122/8, 122/9, Moo 6, Tambon Donhuaroh, Amphur Muangchonburi, Chonburi 20000, THAILAND

TEL:(66)2080 3565

Indonesia

PT. Mitutoyo Indonesia

Head Office / M³ Solution Center

Jalan Sriwijaya No.26 Desa cibatu Kec. Cikarang Selatan Kab. Bekasi 17530, INDONESIA

TEL: (62)21-2962 8600 FAX: (62)21-2962 8604

Batam Branch Office

Business Center Adhya Building 3rd Floor Kompleks Permata Niaga Blok A No. 1, Jalan jendral Sudirman Kelurahan Sukajadi, Kecamatan Batam Kota, Kepulauan Riau 29444, INDONESIA

TEL: (62)-778-4888000

Vietnam

Mitutoyo Vietnam Co., Ltd

Hanoi Head Office / M³ Solution Center

1st & 2nd floor, MHDI Building, No. 60 Hoang Quoc Viet Road, Nghia Do Ward, Cau Giay District, Hanoi, VIETNAM

TEL:(84)24-3768-8963 FAX:(84)24-3768-8960

Ho Chi Minh City Branch Office / M³ Solution Center

Unit No. B-00.07, Ground Floor, C1 Building, No. 6, Street D9, An Loi Dong Ward, Thu Duc City, Ho Chi Minh City, VIETNAM

TEL:(84)28-3840-3489 FAX:(84)28-3840-3498

Hai Phong City Branch Office

Room 511, 5th Floor, Thanh Dat 3 Building, No. 4 Le Thanh Tong Street, May To Ward, Ngo Quyen District, Hai Phong City, VIETNAM

TEL:(84)22-5398-9909

Philippines

Mitutoyo Philippines, Inc.

Head Office / M³ Solution Center

Unit 1B & 2B LTI, Administration Building 1, Annex 1, North Main Avenue, Laguna Technopark, Binan Laguna 4024, PHILIPPINES

TEL/FAX:(63) 49 544 0272

India

Mitutoyo South Asia Pvt. Ltd. Head Office

C-122, Okhla Industrial Area, Phase-I, New Delhi-110 020, INDIA

TEL: (91) 11-40578485/86

MSA Technical Center

Plot no. 65, Ground Floor, Udyog Vihar, Phase-4 Gurgaon, Haryana - 122016, INDIA

TEL : (91) 124–2340286/287

Mumbai Region Head office

303, Sentinel Hiranandani Business Park Powai, Mumbai-400 076, INDIA

TEL: (91) 22-25700684/685/837/839

Pune Office / M³ Solution Center

G4/G5, Pride Kumar Senate, Off. Senapati Bapat Road, Pune-411 016, INDIA

TEL:(91) 20-25660043/44/45

Ahmedabad Office / M³ Solution Center

A-104 & A-105, First Floor, Solitaire Corporate Park, Near Divya Bhaskar Press, S.G. Road, Ahmedabad - 380 015, INDIA

TEL: (91) 079 - 29704902/903

Bengaluru Region Head office / M³ Solution Center

116/117-2, Ground Floor, Sy. No. 93 & 94, 3rd Phase, Peenya Industrial Area, Bengaluru-560 058, INDIA

TEL: (91) 80-25630946/47/48/49

Coimbatore Office

Regus, Srivari Srimath, 3rd Floor, Door No:1045, Avinashi Road, Coimbatore - 641 018,INDIA

TEL: (91) 9345005663

Chennai Office / M³ Solution Center

No. 624, Anna Salai Teynampet, Chennai-600 018, INDIA

TEL: (91) 44-24328823/24/25

Kolkata Office

Unit No. 1208,Om Tower, 32,J.L.Nehru Road, Kolkata-700 071, INDIA

TEL: (91) 33-22267088/40060635/22266817

Taiwan

Mitutoyo Taiwan Co., Ltd. / M³ Solution Center Taipei

4F., No.71, Zhouzi St., Neihu Dist.,Taipei City 114, TAIWAN

TEL:886(2)5573-5900 FAX:886(2)8752-3267

Taichung Branch / M³ Solution Center Taichung

1F., No. 299, Gaotie 1st Rd., Wuri Dist., Taichung City 414, TAIWAN

TEL:886(4)2338-6822 FAX:886(4)2338-6722

Kaohsiung Branch / M³ Solution Center Kaohsiung

1F., No.31-1, Haibian Rd., Lingya Dist., Kaohsiung City 802, TAIWAN

TEL:886(7)334-6168 FAX:886(7)334-6160

South Korea

Mitutoyo Korea Corporation

Head Office / M³ Solution Center

(Sanbon-Dong, Geumjeong High View Build.), 6F, 153-8, Ls-Ro, Gunpo-Si, Gyeonggi-Do, 15808 KOREA

TEL:82(31)361-4200 FAX:82(31)361-4201

Busan Office / M³ Solution Center

(3150-3, Daejeo 2-dong) 8,Yutongdanji 1-ro 49beon-gil, Gangseo-gu, Busan, 46721 KOREA

TEL:82(51)324-0103 FAX:82(51)324-0104

Daegu Office / M³ Solution Center

(Galsan-dong, Daegu Business Center), 301-Ho, 217, Seongseogongdan-ro, Dalseo-gu, Daegu 42704 KOREA

TEL:82(53)593-5602 FAX:82(53)593-5603

China

Mitutoyo Measuring Instruments (Shanghai) Co., Ltd.

8th Floor, Tower 1 Lujiazui Jinkong Square No.1788/1800 Century Ave., Pudong New District, Shanghai 200122, CHINA

TEL:86(21)5836-0718 FAX:86(21)5836-0717

Suzhou Office / M³ Solution Center China (Suzhou)

1/2 Floor, Building 4, No.175 Songbei Road, Suzhou Free Trade Zone, Suzhou City, Jiangsu 215000, CHINA

TEL:86(512)6522-1790 FAX:86(512)6251-3420

Wuhan Office / M³ Solution Corner

Room 1701, Wuhan Wanda Center, No. 96, Linjiang Road, Wuchang District, Wuhan Hubei 430060, CHINA

TEL:86(27)8544-8631 FAX:86(27)8544-6227

Chengdu Office

Room 1-102, 1st Floor, Unit 1, Building 1, No. 24, Wannian Road (Wanniancang Cool), Chenghua District, Chengdu City, Sichuan 610056, CHINA

TEL:86(28)8671-8936 FAX:86(28)8671-9086

Hangzhou Office

Room 804, Eastern International Business Center Building 1, No.600 Jinsha Road of

Hangzhou Economic and Technological Development Zone, 310018, CHINA

TEL: 86(571)8288-0319 FAX: 86(571)8288-0320

Tianjin Office / M³ Solution Center China (Tianjin)

Room D 12/F, TEDA Building, No.256 Jie-fang Nan Road Hexi District,Tianjin 300042, CHINA

TEL:86(22)5888-1700 FAX:86(22)5888-1701

Changchun Office

Room 815, 8F, Building A1, Upper East International No.3000 Dongsheng Street, Erdao District, Changchun, Jilin, 130031, CHINA

TEL:86(431)8192-6998 FAX:86(431)8192-6998

Chongqing Office

Room 1312, Building 3, Zhongyu Plaza, No.86, Hongjin Avenue,Longxi Street, Yubei District, Chongqing, 400000, CHINA

TEL:86(23)6595-9950 FAX:86(23)6595-9950

Qingdao Office

Room 638, 6F, No.192 Zhengyang Road, Chengyang District, Qingdao, Shandong, 266109, CHINA

TEL:86(532)8096-1936 FAX:86(532)8096-1937

Xi'an Office

Room 805, Xi'an International Trade Center, No. 196 Xiaozhai East Road, Xi'an, 710061, CHINA

TEL:86(29)8538-1380 FAX:86(29)8538-1381

Dalian Office / M³ Solution Center China (Dalian)

Room A-106 Shuijing SOHO, No.16 Harbin Road,Economic Development Zone,Dalian, 116600 CHINA

TEL:86(411)8718 1212 FAX:86(411)8754-7587

Zhengzhou Office

Room1801,18/F,Unit1,Building No.23, Shangwu Inner Ring Road, Zhengdong New District,Zhengzhou City, Henan 450018, CHINA

TEL:86(371)6097-6436 FAX:86(371)6097-6981

Dongguan Office / M³ Solution Center China (Dongguan)

Room 801, No 65, Chang'an Section Guanchang Road, Chang'an Town, Dongguan City, Guangdong 523841, CHINA

TEL:86(769)8541 7715 FAX:86(769)-8541 7745

Fuzhou Office

Unit 03, 7th floor of East Tower, Sansheng International Center, No.118 Wusi Road, Gulou Distrit, Fuzhou City, Fujian 350001, CHINA

TEL: 86 (591) 8761 8095
FAX: 86 (591) 8761 8096

Changsha Office

Room 2207, Building 1, Shiner International Plaza, No. 88, Kaiyuan Middle Road, Changsha City, Hunan 410100, CHINA

TEL: 86 (731) 8401 9276
FAX: 86 (731) 8401 9376

Changzhou Office

Room 1502, Joint Financial Tower, No.255, Tongjiang North Road, Tianning District, Changzhou City, Jiangsu 2130002, CHINA

TEL:86(519)8815 8319 FAX:86(519)8815 8319

Wenzhou Office

Room 512, Building 4, Xinjingdujiayuan, Sanyang Street, Ouhai District, Wenzhou City, Zhejiang 325014, CHINA

TEL:86(577)8641 5280

Shunde Office

Room 1603, Buliding 26, Vanke Golden Riverside Plaza Phase II, No.13 Mid DeSheng Road, ShunDe District, Foshan City, Guangdong 528300, CHINA

TEL/FAX: 86(757)2228 8621

Mitutoyo Measuring Technology (Suzhou) Co., Ltd.

1/2 Floor, Building 4, No.175 Songbei Road, Suzhou Free Trade Zone, Suzhou City, Jiangsu 215000, CHINA

TEL:86(512)6252-2660 FAX:86(512)6252-2580

USA

Mitutoyo America Corporation

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL:1-(630)820-9666 Toll Free No. 1-888-648-8869

FAX:1-(630)978-3501

Headquarters (Aurora) / M³ Solution Center

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

Seattle (Renton) Office / M³ Solution Center

1000 SW 34th St. Suite G, Renton, WA 98057 U.S.A.

TEL:1-(888)-648-8869

Houston Office / M³ Solution Center

4560 Kendrick Plaza Drive Suite 120 Houston, TX 77032, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(281)227-0937

Cincinnati (Mason) Office / M³ Solution Center

6220 Hi-Tek Ct., Mason, OH 45040, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(513)754-0718

Detroit (Novi) Office / M³ Solution Center

46850 Magellan Drive, Suite 100 Novi, MI 48377, U.S.A.

TEL:1-(888)-648-8869 FAX: 1-(248)-926-0928

Los Angeles (City of Industry) Office / M³ Solution Center

16925 E. Gale Ave., City of Industry, CA 91745, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(626)369-3352

Charlotte (Huntersville) Office / M³ Solution Center

11515 Vanstory Dr., Suite 140, Huntersville, NC 28078, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(704)875-9273

Boston (Marlborough) Office / M³ Solution Center

753 Forest Street, Suite 110, Marlborough, MA 01752, U.S.A.

TEL:1-(888)648-8869 FAX:1-(508)485-0782

Mitutoyo America Corporation Calibration Lab

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL:1-(888)-648-8869 FAX:1-(630)978-6477

Mituotyo America Corporation CT-Lab Chicago

965 Corporate Blvd., Aurora, IL 60502, U.S.A.

TEL: 1-(888)-648-8869 FAX: 1-(630)-820-3418

Mitutoyo Research & Development America, Inc.

11533 NE 118th St., Kirkland,
WA 98034-7111, U.S.A.

TEL:1-(425)821-3906 FAX:1-(425)821-32280

Mitutoyo Research & Development America, Inc. - California Office

16925 Gale Ave. City of Industry,
CA 91745-1806 U.S.A.

TEL: 1-(425)821-3906 FAX: 1-(425)821-3228

Canada

Mitutoyo Canada Inc.

2121 Meadowvale Blvd., Mississauga,
Ont. L5N 5N1., CANADA

TEL:1-(905)821-1261 FAX:1-(905)821-4968

Montreal Office

7075 Place Robert-Joncas Suite 129, Montreal,
Quebec H4M 2Z2, CANADA

TEL:1-(514)337-5994 FAX:1-(514)337-4498

Brazil

Mitutoyo Sul Americana Ltda.

Head office / M³ Solution Center

Avenida Mimes nº 25 – Loteamento Multivias II,
Jardim Ermida I, CEP 13212-216 Jundiaí - SP,
BRASIL

TEL: 55 (11) 5643-0004/0041

Filial Curitiba / M³ Solution Center

Rua Sergipe, nº 101, Sala A, Bairro Boneca
do Iguaçu, São José dos Pinhais – Paraná –
BRASIL CEP 83040120

TEL: 55 (41) 3534-1728

Argentina

Mitutoyo Sul Americana Ltda.

Argentina Branch / M³ Solution Center

Av. B. Mitre 891/899 – C.P. (B1603CQI)
Vicente López –Pcia. Buenos Aires – ARGENTINA

TEL:54 (11) 4730-1433 FAX:54 (11) 4730-1411

Sucursal Cordoba / M³ Solution Center

Av. Ricchieri 2872 L.4 – Bº Jardin – CP X5014O-
PJ Cordoba, ARGENTINA

TEL:54 (351) 464-4125

Mexico

Mitutoyo Mexicana, S.A. de C.V.

Industria Elēctrica No.15, Parque Industrial, Naucalpan de Juārez, Estado de Mēxico C.P.53370,
MÉXICO

TEL: 52 (01-55) 5312-5612
FAX: 52 (01-55) 5312-3380

Monterrey Office / M³ Solution Center

Blv. Interamericana No. 103, Parque Industrial
FINSA, C.P. 66636 Apodaca, N.L., MÉXICO

TEL: 52(01-81) 8398-8227/8228/8242/8244

FAX: 52(01-81) 8398-8226

Tijuana Office / M³ Solution Center

Calle José María Velazco 10501-C, Col. Cd. Industrial
Nueva Tijuana, C.P. 22500 Tijuana, B.C., MÉXICO

TEL: 52 (01-664) 647-5024

Querétaro Office / M³ Solution Center

Av. Cerro Blanco No.500-1, Colonia Centro Sur,
Querétaro, Querétaro, C.P. 76090, MÉXICO

TEL: 52 (01-442) 340-8018, 340-8019 and 340-8020
FAX: 52 (01-442) 340-8017

Mitutoyo Mexicana, S.A. de C.V. Querétaro Calibration Laboratory

Av. Cerro Blanco 500 30 Centro Sur,
Querétaro, Querétaro, C.P. 76090, MÉXICO

TEL: 52 (01-442) 340-8018, 340-8019 and 340-8020
FAX: 52 (01-442) 340-8017

Aguascalientes Office / M³ Solution Center

Av. Aguascalientes No. 622, Local 15 Centro Comercial El Cilindro Fracc. Pulgas Pandas Norte, C.P.
20138, Aguascalientes, Ags. MÉXICO

TEL: 52 (01-449) 174-4140 and 174-4143

Irapuato Office / M³ Solution Center

Boulevard a Villas de Irapuato No. 1460 L.1 Col. Ejido

Irapuato C.P. 36643

Irapuato, Gto., MÉXICO

TEL: 52 (01-462) 144-1200 and 144-1400

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Mitutoyo Corporation

20-1, Sakado 1-Chome, Takatsu-ku, Kawasaki-shi, Kanagawa 213-8533, Japan
Tel: +81 (0)44 813-8230 Fax: +81 (0)44 813-8231
Home page: https://www.mitutoyo.co.jp/global.html

For the EU Directive, Authorized representative and importer in the EU:
Mitutoyo Europe GmbH
Borsigstrasse 8-10, 41469 Neuss, Germany

For the UK Regulation, Authorized representative and importer in the UK:
Mitutoyo (UK) Ltd.
Joule Road, West Point Business Park, Andover, Hampshire SP10 3UX, UNITED KINGDOM

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