E75.LVDT-H Inductive LVDT Micrometer

User Manual and Software Manual

Version: V2.0 Date: 2025.05

This document describes the following products:

- E75.LVDT-H inductive LVDT micrometer

Declaration

Thank you vrey much for choosing CoreMorrow's products!

For your smooth and correct use of this product, please read this manual carefully before use, and follow the relevant instructions in the manual for installation and use. Improper operation may cause damage to the product and/or injury to the operator, so it is required that the entire installation and operation process should be completed by professionals with a certain foundation and a certain understanding of product principles, or under the guidance of a professional.

If you disassemble or transform the product without permission, our company will not be responsible for any consequences arising therefrom.

To change the product model and other false sales of our company's products are illegal, users should be vigilant. Once found, you should actively report or contact our company, jointly crack down on illegal acts, and prevent fraud and economic losses. CoreMorrow will investigate for the legal responsibility of the illegal subject and related parties.

With the continuous development and innovation of technology, CoreMorrow will timely add the latest information to the manual as required. If you need, please contact us, or to our website (www.coremorrow.com) for download, we apologize for any inconvenience caused to you.

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Chapter 1 : Introduciton

E75.LVDT-H inductive LVDT micrometer is a contact micrometer, through the inductive probe to detect the external displacement deformation, the measurement range of 0~1mm, accuracy is better than 100nm. (Note: The two types of E75 LVDT-H inductive LVDT micrometers sold by CoreMorrow only have differences in the color of the main body casing, and their testing functions are completely identical. The casing color does not affect their functional implementation.)

1.1 Characteristics

- Measuring range 1mm;
- Contact measurement;
- Resolution of 0.05 microns;
- Touch screen display;
- Touch screen control or PC software control;

1.2 Typical Application

- Measurement of length (depth, height, thickness, diameter, taper, etc.);
- Vibration measurement;
- Precision positioning system;
- Micro displacement detection;
- Micro operation robot displacement detection;
- Fields such as fiber optic docking that require micro displacement detection;

1.3 Precautions for use

- To avoid explosion, please do not operate this equipment in an explosive environment.
- Gas supply: Under no circumstances should the pressure exceed LE/12/P and LE/25/P. Maximum humidity of 60% RH, filtered to a particle size of 0.1microns.
- Do not exceed the measuring range of the micrometer indicated in the manual during use.
- This device is not a sealed instrument, please be careful when installing instruments in environments that may come into contact with pollution.
- The device must operate below SELV, therefore it cannot operate within the range of low voltage commands.

1.4 User Manual Download

User manual download process instructions:

1. Open the website www.coremorrow.com;
2. Search for product model (e.g. E75.LVDT-H) or series (e.g. micrometer) on the website;
3. Click on the corresponding product to open the product details page;
4. On the product details page, scroll down to "Downloads";
5. Click on the desired file to download.

Be careful! If the manual is lost or there are problems downloading, please contact our customer service department.

1.5 Service and Maintenance

- This device does not include user repairable parts. If you need repair services, please contact our customer service department.
- All products have CE markings and comply with electrical emission standards.

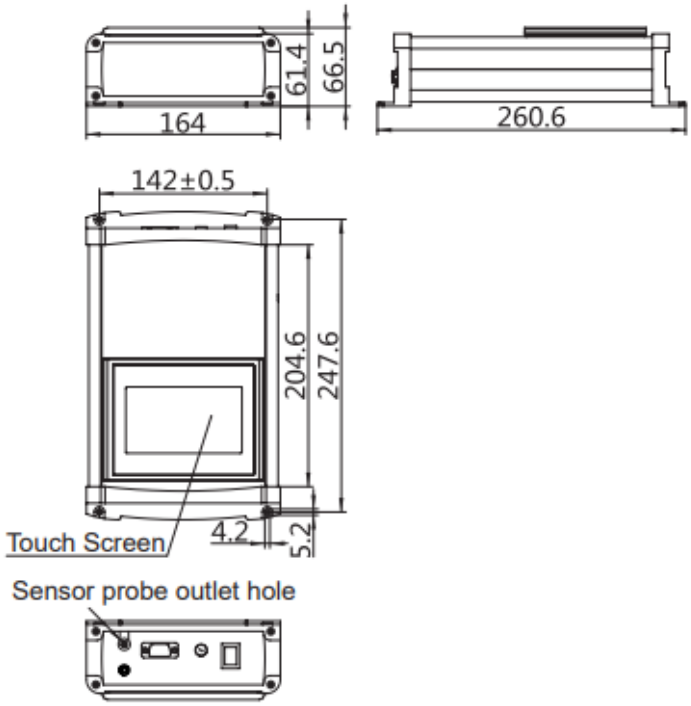
Chapter 2 : Parameter

2.1 Technical Data

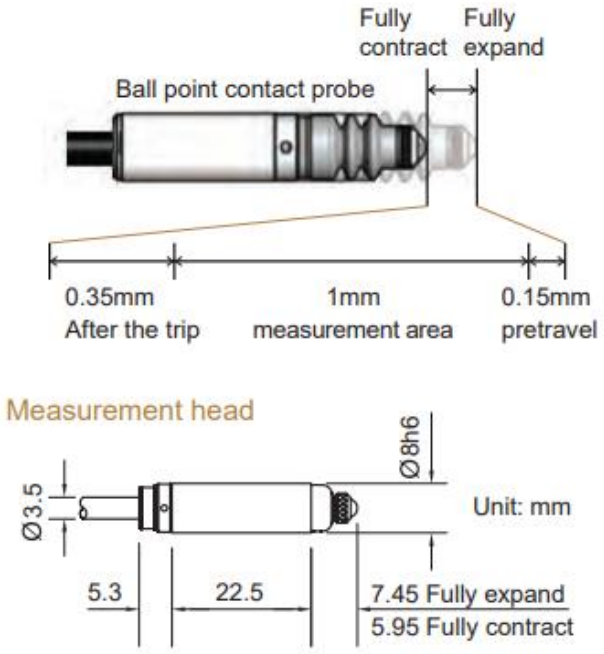
Type	E75.LVDT-H
Measuring range	1mm
Channels	Single Channel
Resolution	0.05μm
Display update frequency	10 times per second
Screen type	Touch
Display type	Digital rebound
Sensor reading rate	200 readings per second
Analog output	Voltage or 4~20mA optional
Operating temperature (°C)	5~50℃
Storage temperature (°C)	-20~50℃
Accuracy (percentage of readings)	0.05% or 0.1μm, whichever is larger
Repeatability (worst case)	0.15μm, the difference between the maximum and minimum values of the carbide surface was measured several times when the lateral force was used for the bearing
Repeatability (typical)	0.05μm, one standard deviation of multiple measurements of cemented carbide surface results (68%)
Pretravel (mm)	0.15
After the trip (mm)	0.35
Spring driven (force measurement in middle position)	0.70N±20%
Temperature drift coefficient of	0.01%FS/ºC
Probe life (number of runs)	100 million (without side load), more than 10 million in most applications
Probe shell material	Stainless steel
Probe materia	Tungsten carbide
Computer interface mode	RS-485
Power supply	24VDC 4A
Function	Data acquisition, storage, triggering, etc
Mass (g±5%)	1285

2.2 Drawing

2.2.1 Main body



2.2.2 Probe



Chapter 3 : Operating Instructions

3.1 Usage mode instructions

According to the position of the dip switch, this inductive LVDT micrometer can be divided into the following **3** usage modes:

3.1.1 The dip-switch is located at the LCD

1) Only connect the power adapter for external power supply, without using RS-485 to connect to the upper computer. In this state, the displacement data of external objects measured by the probe will be displayed in real time through the LCD screen;

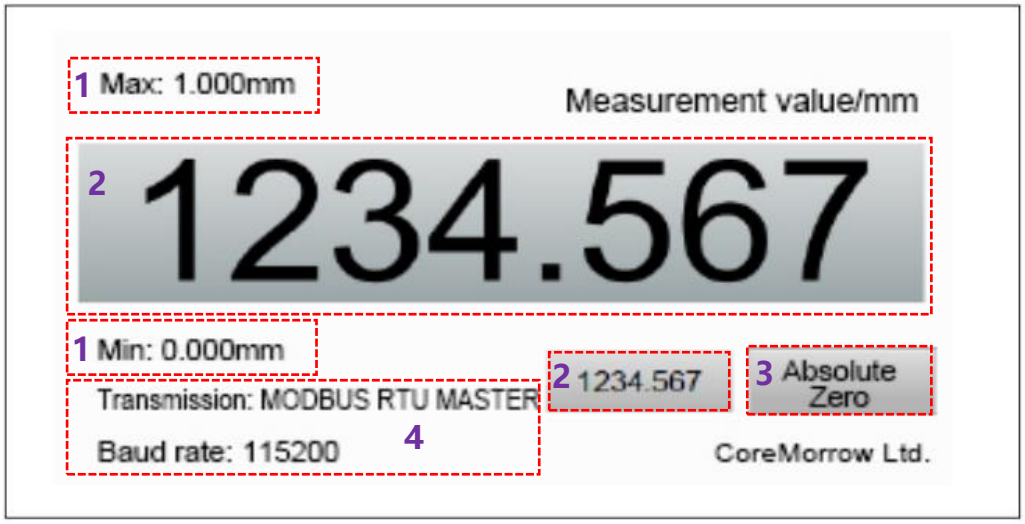
2) Connect the power adapter for external power supply and use RS-485 to connect to the upper computer. In this state, the measurement results can be displayed in real-time on the LCD screen, and can also be read, received, and stored by the upper computer software;

3.1.2 The dip-switch is located at RS485

3) In this state, the measurement results can only be displayed through the upper computer software, and the LCD reading is in a static state;

3.2 Introduction to LCD Touchscreen

When the micrometer is powered on and the power switch is turned to the closed state, the touch screen will light up after a delay of 5-10 seconds. At this time, the touch screen will display the following content:



The entire touch screen can be divided into the following **4** areas (refer to the numerical annotations in the above figure):

1) **Measurement range**: The measurement range (display range) is 0~1.000mm (i.e. 0~1000microns);

2) **Measurement value**: refers to the displacement change of external objects measured by the micrometer in passive mode;

3) **Zero point selection for measuring coordinates**: There are two types: absolute zero 0 and relative zero 1;

a)Absolute zero 0: represents the zero point of the micrometer as the measurement coordinate zero point;

b)Relative Zero 1: Refers to any point within the measurement range as the coordinate zero point, and this data value is displayed in the text box in front of Relative Zero 1;

be careful! There is only one valid absolute zero 0 and relative zero 1 at the same time;

4) **Transmission mode and baud rate collection selection**: The transmission mode defaults to MODBUS RTU MASTER, and the baud rate defaults 115200, no need to select;

Note: For the description of passive mode in the second part, please refer to 3.5 Upper Computer Software Operation Instructions.

3.3 Rear panel introduction

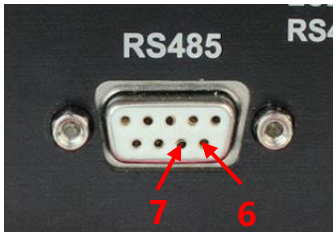
The rear panel can be divided into the following 5 parts(refer to the numerical annotations in the above figure):

1) **Power switch**: controls the power on state of the micrometer, 0 indicates that the power switch is in the off state, and the micrometer is not in use for testing; 1 indicates that the power switch is in a connected and closed state. When turned to 1, the touch screen will light up after a delay of 5-10 seconds, indicating a measurable state;

2) **Power interface**: Connect to the external 24V DC 4A power supply;

3) **RS-485 interface**: Communication interface(standard 9-pin interface), which can be used to connect the micrometer with the upper computer and achieve upper computer control. Its 6th and 7th pins are RS-485 communication interfaces.

Specifically, the 6th pin interface is the A/R+ of the micrometer, and the 7th pin interface is the B/R- of the micrometer;



4) **LCD/RS485 dip-switch**: By adjusting the position of the dip switch, the control mode of the micrometer can be switched:

a) Switch to the LCD above: Passive mode, where the measurement results are mainly displayed on the touch screen or in the upper computer software. In this state, the LCD plays the role of a master in MODBUS RTU, with RS-485 as the data output interface. External devices (computers or microcontrollers) connected to the RS-485 interface are passive receiving devices that can decode the data received from the micrometer; (External device in receiving state)

LCD master mode

b) Switch to the RS485 below: query mode. At this time, the measurement results can only be displayed in the upper computer software, and the touch screen numbers will remain static. In this state, the upper computer plays the role of master in MODBUS RTU, and the measurement data is displayed on the upper computer software operation interface. Use a computer to send query commands, and then the micrometer returns data through the RS-485 interface. At this time,

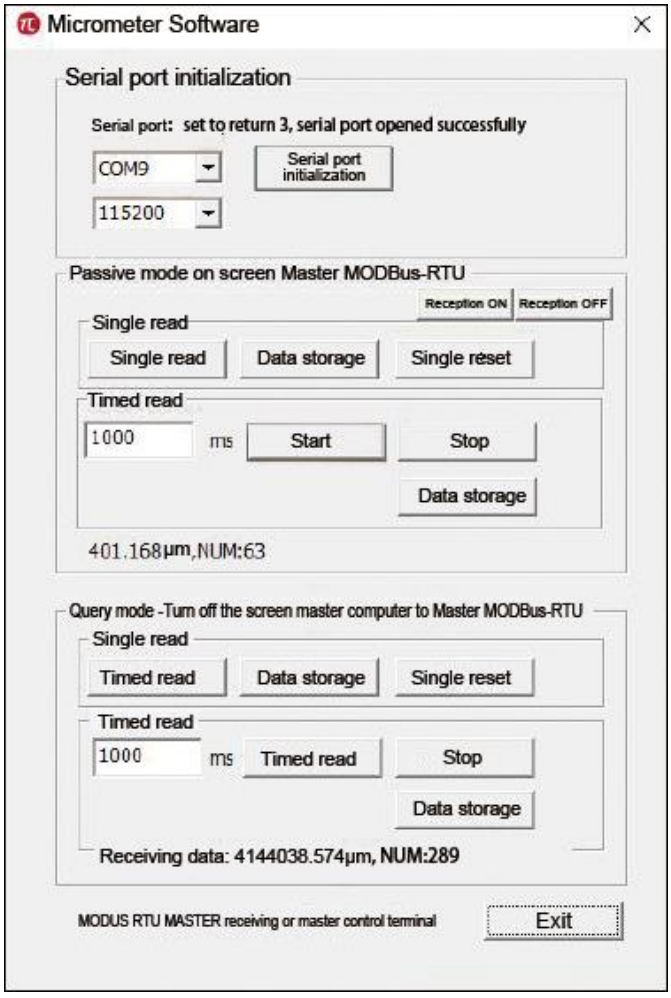
the LCD screen data is in a static state;

Upper computer master mode

5) **Sensor probe outlet hole**: Connect the outgoing line to the inductance probe;

3.4 Introduction to the upper computer software interface

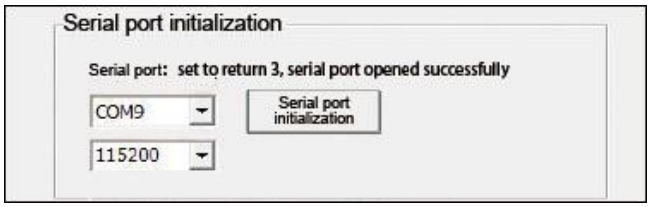
Double click the desktop icon to enter the control software operation page. The specific page is as follows:



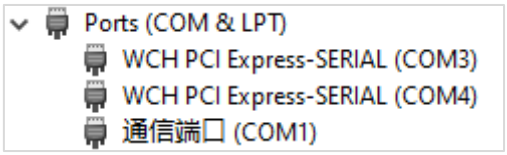
It can be divided into **4** parts: serial port initialization, passive mode, query mode,

and exit. The specific introduction is as follows:

1) **Serial port initialization**: Mainly to realize the connection between the micrometer and the upper computer;

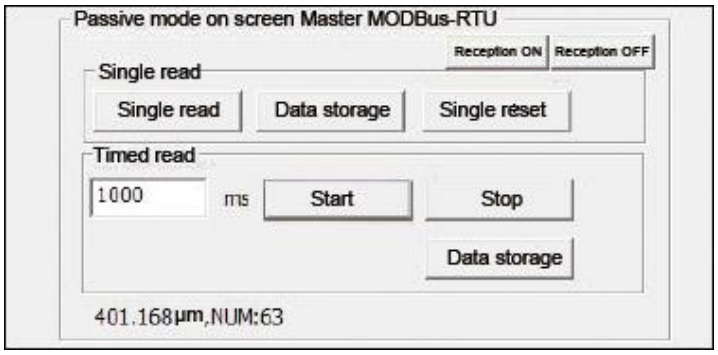


according to the actual communication interface to select the corresponding RS-485 corresponding interface, The confirmation method for the Win10 serial port is as follows: Win10→This PC→Properties→Device Manager→Ports(COM & LPT) to view;



The default baud rate is 115200. After selecting the serial port and baud rate, click on the "serial port initialization" to connect the micrometer to the upper computer;

2) **passive mode**: In this mode, the LCD/RS485 dip-switch is switched to the LCD above, and the measurement results are mainly displayed on the touch screen or on the upper computer software. In this state, LCD plays the role of master in MODBUS RTU.



Reception ON: Start reading the measurement data of the micrometer displayed on the LCD interface, and the upper computer is passively receiving it (the data transmission interval is about 100ms and is transmitted through the RS-485 interface);

Reception OFF: Stop reading the micrometer measurement data displayed on the LCD interface;

Single read: Read data once;

Single read - Data storage: Store the data of single read;

Single read - Single reset: Clear the data of single read to zero;

Timed read - Start: Start reading the data of the micrometer according to the set time interval;

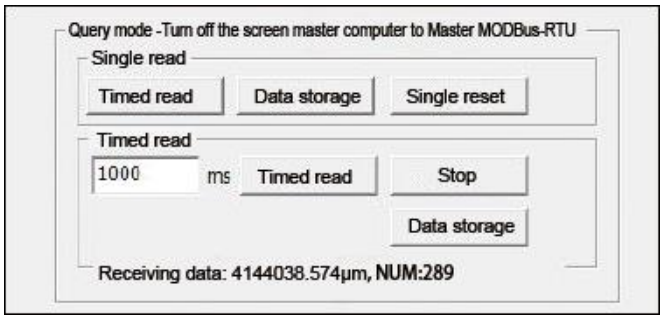
Timed read - Stop: Stop the operation of reading the data of the micrometer according to the set time interval;

Timed read - Data storage: Store the data of timed read;

Note: The stored data will be stored in Excel format on the upper computer.

3) **Query mode**: In this mode, the LCD/RS485 dip-switch is switched to the RS485 below, and the measurement results are only displayed on the upper computer software operation interface. In this state, the upper computer plays the role of

master in MODBUS RTU.



Single read - Timed read: Read data once;

Single read - Data storage: Store the data of single read;

Single read - Single reset: Clear the data of single read to zero;

Timed read: Start reading the data of the micrometer according to the set time interval;

Timed read - Stop: Stop the operation of reading the data of the micrometer according to the set time interval;

Timed read - Data storage: Store the data of timed read;

Note: The stored data will be stored in Excel format on the upper computer.

4) **Exit:** After use, click this button to disconnect the micrometer from the upper computer and exit the operation interface.

Chapter 4 : Contact us

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