# Magnescale



Read all the instructions in the manual carefully before use and strictly follow them. Keep the manual for future references.

This manual corresponds to the software version Ver 1.05.00US.

This manual describes only the added and changed functions compared to the software version Ver 1.04.00, so be sure to also read the software version Ver 1.02.00/1.04.00 Operating Manual.

**Operating Manual** 

Functions added by V1.05.00US

LT80-NE software version V1.05.00US adds and changes the following functions compared to V1.04.00US  $\,$ 

- - The measurement value display resolution can be set in the view frame.
    Measurement values can be displayed at a resolution lower than the input resolution of the measuring unit.
    Available display resolution settings: 0.1 µm, 0.5 µm, 1.0 µm, 2.0 µm, 5.0 µm, 10.0 µm

0.000001 inch, 0.000005 inch, 0.00001 inch, 0.00002 inch, 0.00005 inch, 0.0001 inch

- 2. Scaling
  - A function that sets a magnification for measurement display values has been added. This function sets the magnification for each view frame, and also supports frames with a calculation set.

Display value = Measurement display value × Set magnification

3. Preset settings for frames with a calculation set

• Preset values can be set for frames with a calculation set.

- 4. Measurement data save
  - Manual operation, display unit I/O operation, or auto save by number of data can be selected when saving measurement data to a USB memory or SD card.
- 5. Function change when using the MG80-LM ••••••••••••P.10
  - The function has been changed so that normal measurement can be performed while latch operation is stopped (standby status for operation).

<sup>\*</sup> Functions 1 to 3 above support MG80-MA with serial numbers 300001 and higher. When using functions 1 to 3 with MG80-MA with serial numbers 100001 to 299999, contact our sales representative or service desk.

### 1. Display resolution setting

This function sets the display resolution of the measurement values displayed in the view frame.

A display resolution lower than the input resolution of the measuring unit can be set.

• View	frame	setti	ngs	scree	ən			To sv be	ouch insid vitch the c etween "n	le the frame to display unit nm" and "inch"
С	M1 Frame	Valid	Axis1	Ope.	Axis2	Mode	Disp. Resolution (mm)	Scaling	Preset	
	A	$\checkmark$	1	+		REAL	0.1µm	1.000000	NaN	
	В	$\checkmark$	2	÷		REAL	0.1µm	1.000000	NaN	
	с	$\checkmark$	3	+		REAL	0.1µm	1.000000	NaN	2
	D	$\checkmark$	4	÷		REAL	0.1µm	1.000000	NaN	
	E	$\checkmark$	5	+		REAL	0.1µm	1.000000	NaN	
	F	$\checkmark$	6	+		REAL	0.1µm	1.000000	NaN	
	G	V	7	+		REAL	0.1µm	1.000000	NaN	
<	н	V	8	÷		REAL	0.1µm	1.000000	NaN	>

Display resolution setting Touch inside the frame to cycle through the available display resolution settings. mm:  $0.1 \rightarrow 0.5 \rightarrow 1.0 \rightarrow 2.0 \rightarrow 5.0 \rightarrow 10.0$ inch:  $0.000001 \rightarrow 0.00005 \rightarrow 0.00001 \rightarrow 0.00002 \rightarrow 0.00005 \rightarrow 0.0001$ 

- \* Display resolution values less than the input resolution of the measuring unit corresponding to that frame cannot be selected.
- \* When the display resolution has been changed, redo the comparator value, preset value, and reference point preset value settings.
- \* All processing such as comparator and data save is performed based on the display values at the set display resolution (hereafter, "measurement display values").

## 2. Scaling

This function sets the display magnification for the measurement display values.

This enables operations such as compensation in account of the linear expansion of the object to be measured, x2 display, 1/2 display, and average value processing of two measuring units using calculations.

С	M1 Frame	Valid	Axis1	Ope.	Axis2	Mode	Disp. Resolution (mm)	Scaling	Preset	₩
	А	$\checkmark$	1	+		REAL	0.1µm	1.000000	NaN	
	В	$\checkmark$	2	+		REAL	0.1µm	1.000000	NaN	6
	с	$\checkmark$	3	+		REAL	0.1µm	1.000000	NaN	2
	D	$\checkmark$	4	÷		REAL	0.1µm	1.000000	NaN	
	E	$\checkmark$	5	÷		REAL	0.1µm	1.000000	NaN	
	F	$\checkmark$	6	+		REAL	0.1µm	1.000000	NaN	
	G	$\checkmark$	7	÷		REAL	0.1µm	1.000000	NaN	
<	Н	V	8	÷		REAL	0.1µm	1.000000	NaN	>
	_							1		

View frame settings screen



Scaling setting Touch inside the frame and use the numerical keypad to set the magnification. Setting range: 0.000001 to 10.000000

The Scaling column displays the results of multiplying the measurement display values by the set magnification.

Display value = Measurement display value × Set magnification

\* All processing such as comparator and data save is performed using the display values after scaling.

# 3. Preset settings for frames with a calculation set

Starting from this version, preset values can also be set for frames with a calculation set.

С	M1 Frame	Valid	Axis1	Ope.	Axis2	Mode	Disp. Resolution (mm)	Scaling	Preset	븗
	A	$\checkmark$	1	÷	2	REAL	0.1µm	1.000000	NaN	<b>13</b>
	в	$\checkmark$	2	÷		REAL	0.1µm	1.000000	NaN	6
	с	$\checkmark$	3	÷	-	REAL	0.1µm	1.000000	NaN	2
	D	$\checkmark$	4	÷	-	REAL	0.1µm	1.000000	NaN	
	E	$\checkmark$	5	÷	-	REAL	0.1µm	1.000000	NaN	
	F	$\checkmark$	6	÷	-	REAL	0.1µm	1.000000	NaN	
	G	$\checkmark$	7	+	-	REAL	0.1µm	1.000000	NaN	
<	н	$\checkmark$	8	+	-	REAL	0.1µm	1.000000	NaN	>
									1	

View frame settings screen



Touch inside the frame and use the numerical keypad to enter the preset value. (unit: mm)

#### 4. Measurement data save

An auto save function by number of data has been added, and the Data menu has been changed.

The operation related contents are as follows.



Setting contents: Import setup parameters from external memory

Export setup parameters and measurement data to external memory Measurement data auto save setting

Clear measurement data saved in display unit



Device selection

Touch this button to select the external device for import and export operation.

Device	SD card	Device	USB memory
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Data type selection

Touch this button to select the type of data to be imported or exported.

Data type	Parameter	Data type	Measuring data

Device removal

Touch this button when removing the external memory from the display unit.

Clear cache

Touch this button to clear the measurement data saved in the display unit.

• Import/Export data

These buttons are used to import and export data from and to an external memory. Import: Imports setup parameters from an external memory to the display unit.

Export: Exports setup parameters and measurement data from the display unit to an external memory.

Follow the instructions in the pop-up message to perform import and export operation. Example: Operation to import setup parameters from a SD memory card to the display unit

С	Device	SD card		₩ L
	Data type	Parameter		
	Import configuration para	meters from SD card. OK?	<b>~</b> ×	Ð
	Import Export	t Device removal	Clear cache	
С	Device	SD card		
	Data type	Parameter		
	Configuration parameters	have been imported.	_	๖
			$\checkmark$	
	Import Export	t Device removal	Clear cache	

\* Do not cut off power supply to the display unit while data import or export is in progress. Doing so may corrupt the data. Measurement data format settings and auto save settings

The following date and time formats and Decimal points can be selected for the format when saving measurement data in an external memory.

Save mode selects whether to export data to an external memory manually or automatically according to the number of measurement data.



• Data menu (when reading measurement data)

• Examples of selectable date and time formats

Date format	Example of display
yyyy/MM/dd	2019/06/13
yyyy.MM.dd	2019.06.13
MM/dd/yyyy	06/13/2019
MM.dd.yyyy	06.13.2019
dd/MM/yyyy	13/06/2019
dd.MM.yyyy	13.06.2019

Time format	Example of display
H:mm:ss	13:57:09
h:mm:ss AP	1:57:09 PM

Selection of Decimal points

Dot Decimal point .

Comma

Decimal point ,

\* The delimiter in the data format is a comma (,) when dot is selected or a semicolon (;) when comma is selected.

#### Save mode

The following selections are available.

Manual : Export operation using the Data menu, or save operation using the display unit I/O No. of data : Set the number of data. The measurement data is automatically saved in the

external memory when the set number of data is reached. (Export operation can be performed via the Data menu even when this number of data is set.)

• Data menu (when No. of data is selected for Save mode)

	С	Device	USB memory		<b>₩</b>
		Data type	Measuring data		
	ſ	Date and time format	yyyy/MM/dd	H:mm:ss	5
	1	Decimal point			
Save mode		Save mode	No. of data		
Number of data		Number of data	1000		
		Export	Device remov	val Clear cache	

#### Number of data

Touch the Number of data frame and use the numerical keypad to set the number of data at which to automatically save the data.

The number of data can be set up to 300000.

\* When auto save by number of data is selected, export operation is performed during measurement, and a progress bar such as the following is displayed while export is in progress. Note that measurement processing is not performed while export is in progress.



Data export finished

- \* When the amount of data to be exported is large, export will take some time.
- \* The display unit I/O SaveProc output (refer to the following page) changes to ON while export is in progress, enabling to confirm that save is in progress.
- \* When the available space in the external memory is approximately 310 MB or less, data cannot be saved, and the progress bar is not displayed. (SaveProc does not change to ON.)

#### Addition of data save function set via the display unit I/O

Save operation can be performed from the display unit I/O regardless of whether manual or auto (No. of data) is selected for Save mode.

\* Save operation can be performed before the set number of data in auto mode is reached, but note that measurement operation stops while save is in progress.

Input			
Selection	Description	Function	Terminal logic
symbol			
SaveMeas	Data save	Saves the acquired cache data in	ON
		the external memory.	





#### Output

Calpal			
Selection	Description	Function	Terminal logic
symbol			
SaveProc	Data export in progress	Outputs ON while cache data save to the external memory is in progress.	ON



## 5. Function change when using the MG80-LM

In previous versions, measuring screen refresh was not performed while latch operation is stopped (standby status for operation, measurement start button text color is gray). From this version, however, normal operation is possible and the display is refreshed even while latch operation is stopped.

		Meas	urement start/s	stop b	utton					
С	M0-A 10000.0000 mm	REAL 1 MO-I	+0000.0000mm REAL 1		7	M0-A	+0000 0000mm	M0-I	+0000.0000mm	E.
M	-5.0000 +5 +0000.0000mm -5.0000 +5	REAL 1 5.0000 MO-J 5.0000 -5.0000	+5.0000 +0000.0000mm REAL1 +5.0000	i	M	M0-B	+0000.0000mm	M0-J	+0000.0000mm	i
Comp	+0000.0000mm	REAL 1 MO-K -5.000	+0000.0000mm REAL1	All		M0-C	+0000.0000mm	М0-К	+0000.0000mm	All
Mode	M0-D +0000.0000mm	REAL 1 MO-L -5.0000	+0000.0000 mm REAL 1 +5,0000 +0000.0000 mm REAL 1	Ref		M0-D	+0000.0000mm	M0-L	+0000.0000mm	
Start	M0-E -5.0000 +5 +0000.0000mm	REAL 1 MO-N	+5.0000 +0000.0000mm REAL1	Preset		M0-E	+0000.0000mm	M0-M	+0000.0000mm	
Pause	-5.0000 +5 MO-G -5.0000 +5	REAL 1 MO-O -5.0000	+0000.0000mm REAL1	Reset .		M0-G	+0000.0000mm	мо-о	+0000.0000mm	Reset .
<	M0-H -5.0000 +1 360 CT/ 10.0 deg	REAL 1 MO-P -5.0000	+0000.0000mm REAL1 +5.0000 0/100000	>	<	М0-Н	+0000.0000mm 360 CT/ 10.0 deg	M0-P	+0000.0000mm	>

When set to "Encoder"

When set to "Encoder (High-speed)"

Measurement start/stop button

Measurement is performed using the measurement start/stop button. The button text color changes according to the status as follows.



: Latch operation stopped (Standby status for operation) The button text color changes to gray after power-on, after settings are changed, and after latch operation ends (the set latch count is reached). Normal operation can be performed.



: Latch operation in progress, standby for encoder signal input When the measurement start/stop button is touched while latch operation is stopped, operation enters the standby status for encoder operation and the button text color changes to orange.

|--|

: Latch operation in progress

When the encoder signal is detected and latch operation starts, the button text color changes to green.



: When a latch error or encoder error occurs

When a latch timing or encoder abnormality is detected, the button text color changes to red.

Touch the measurement start/stop button to cancel the error.

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