



Precision Digital Level User Manual

ML200





Before using Smart Level, please read the manual carefully.

This user manual is intended for use as a guide for initial setup, operational steps, trouble-shooting, and maintenance procedures.

Notes:

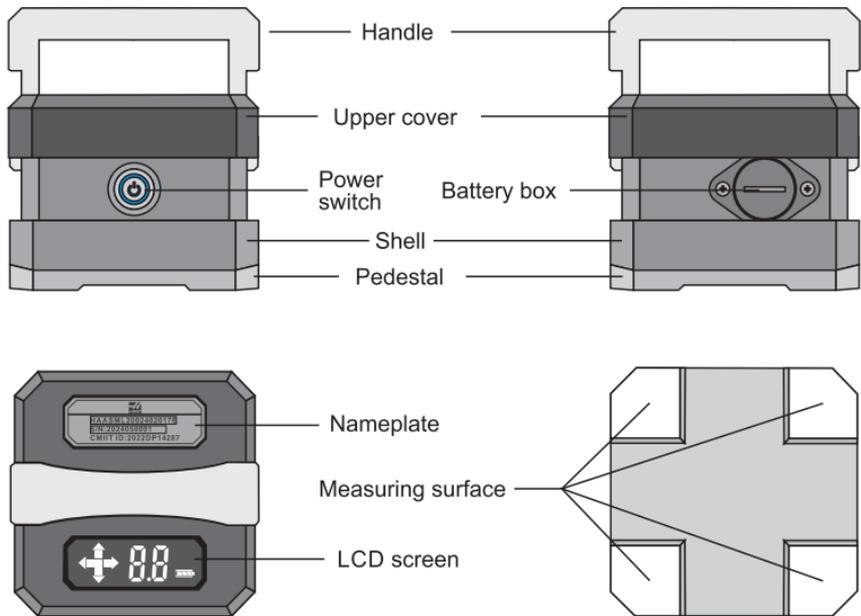
1. Without external interference, the data transmission distance can reach up to 10 meters (approximately 32.8 feet).
2. For the most accurate results, it is recommended to remove any debris on the base surface of the level, as well as the surface being tested prior to recording measurements.
3. Before and after each use, a thin layer of rust preventative should be applied to the base of the level to prevent corrosion, and enhance the life cycle of the tool.
4. Due to the possibility of thermal expansion in different testing environments, the smart level should be calibrated on a level surface before each use to ensure the best measurement accuracy. For calibration procedure, refer to page 14-15 for more details.

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1 Introduction

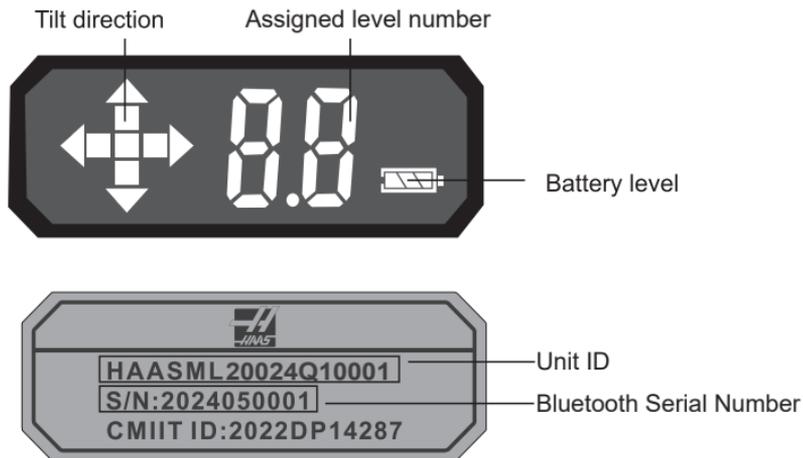
1.1 Products Description & Technical Parameters of Level



Technical Parameters of Level

Resolution	Accuracy	Measuring range	Power	Dimension	Weight
0.01mm/m 0.00012 in/ft 0.000573°	±0.02 mm/m ±0.00024 in/ft ±0.001°	±0.5mm/m ±0.006 in/ft ±0.029°	3x 1.5V AAA	100×100×78mm 4x4x3"	1.6kg 0.72 lbs

1.2 Instructions of LCD screen and nameplate



Tilt direction: the 3 phases of the arrow indicate the direction in which there is a higher level of inclination.



: Indicates the measuring surface is level: 0 in/ft ; 0 mm/m



: Indicates inclination direction is ≤ 0.0024 in/ft ; ≤ 0.2 mm/m



: Indicates inclination direction is > 0.0024 in/ft ; > 0.2 mm/m

1.3 Handheld terminal



Technical Parameters of Handheld Terminal					
Power	Charging current	Power duration time	Charging port type	Dimensions	Weight
DC 5V	1A	>7hours	TYPE-C	150x77x22mm/ 6x3x0.9"	0.25kg/0.11lbs

1.4 List of product accessories

- (1) Type-C charging cable (1m)
- (2) AAA battery x6
- (3) Right angled ruler (160x100mm)
- (4) Rust protection base cover
- (5) User manual
- (6) Certificate of conformity

2.0 Getting Started

2.1 Battery Installation

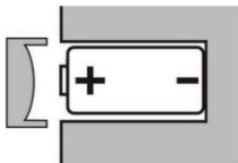
Turn the battery cover counter clockwise to access the battery cartridge. Insert 3 AAA batteries into their respective positive and negative directions and reinsert the cartridge to the battery slot. Place the battery cover back onto the battery slot and turn clockwise to lock in place.

2.1.1 Battery Icon for Level

The battery level icon is displayed at the bottom right of the LCD screen. It is recommended to replace the battery when the icon is at one bar.

2.1.2 Battery Icon for Terminal

The battery level icon is displayed at the top center of the terminal screen in the main menu. When the battery percentage is $\leq 5\%$, a warning message will alert the user to charge the battery.



Signs of positive and negative



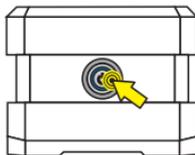
Battery box



Please dispose of batteries in accordance with local, state, and federal laws. For specific disposal instructions, contact your local waste management authorities.

2.2 Level and Terminal Connection

2.2.1 Turn on the level



Blue light will indicate the level is powered on.

Note: The level will automatically shut down within 1 minute of turning off the handheld terminal. For best conservation of battery, it is recommended to press the button located on the level to the off position.

2.2.2 Terminal Connection

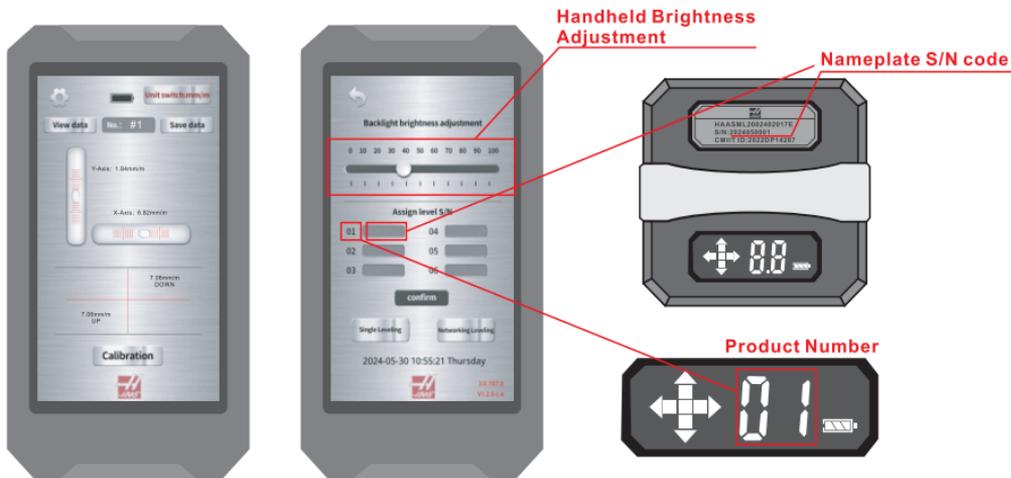
Power on the terminal and allow 3 seconds for boot-up. During Initial setup the handheld terminal connection will automatically be set to single leveling mode. Once connection is established with the level, live data will then be available. Network leveling can be set up following the initial connection in single leveling mode. Up to 6 level connections can be established per terminal control.

Note: Terminal screen dims after 10 min, sleeps after 20 min, and shuts down after 30 min of idle.



2.3 Set Bluetooth Serial Number

Click the “” icon on the measurement screen, Enter the S/N code of the ML200 into the corresponding numbered position. (Each ML200 equipped with a handheld terminal has the corresponding S/N code entered at the factory.) Click on “confirm” to complete the setting of the ML200 code. (TIP: This step is done at the factory, if you do not need to replace the connected device, please ignore this step.)



Note: the number on the level LCD should match the number that was assigned in settings from 1-6.

2.4 Set Terminal Brightness

Slide the "Backlight Brightness Adjustment" progress bar left or right.

2.5 Modify the time



Press and hold time and date



Pop-up keyboard will appear



Enter correct time and date and confirm using the arrow key



The time is modified successfully.

2.6 Switching connection mode

If multiple level connections need to be established, this can be achieved by switching from Single Leveling mode to Network Leveling Mode in the settings menu. Once the mode is switched, it will remain the same until it is manually switched back.



Note: When establishing connection for the first time, single leveling mode will be the default connection. If Network Leveling is not required, this step may be ignored.

If only one level connection needs to be established, select Single Leveling Mode (Single Machine Mode). If more than one level needs to be connected (up to 6), select Network Leveling (Multi-Machine Mode).

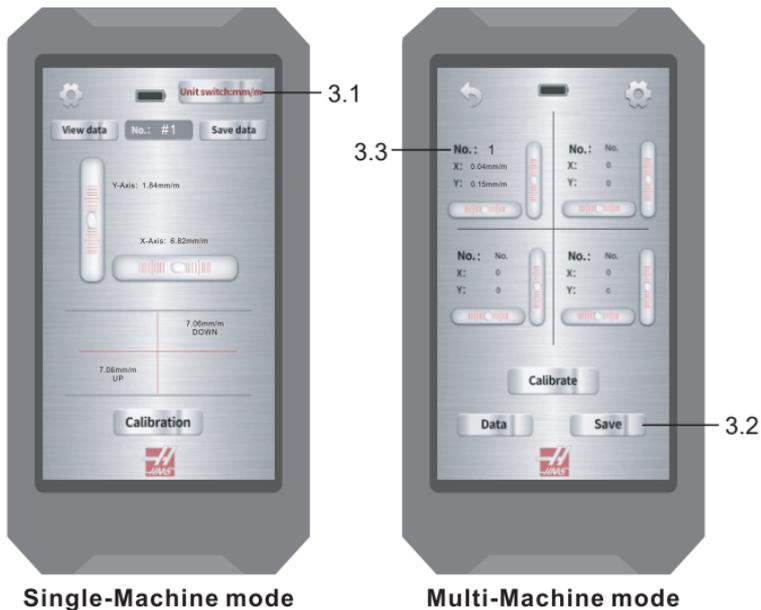
2.7 Establish Level and Terminal Bluetooth Connection (Multi-Machine Mode)

After selecting network leveling and inputting the serial number on the label of the level, restart the handheld terminal. Upon restarting, select the “Start searching” button to establish connection. Once the check marks are populated, Bluetooth connection is finalized and the “Completed” button must be pressed. “Next” can then be selected once the “Start searching” button with the check marks still populated is visible.



Up to 4 levels can be displayed at a single time.

3 Measurement function



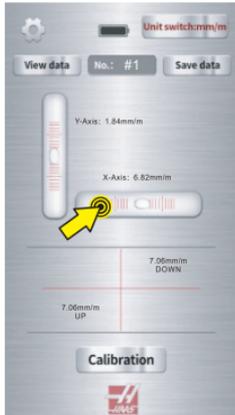
3.1 Unit switching (Single-Machine Mode): Metric (mm/m), Degrees ($^{\circ}$), or Inch (in/ft)

3.2 Data retention: Current measurement data can be saved.

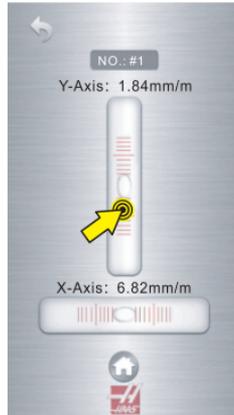
3.3 Product Number: No. and corresponding data will match value on LCD of level.

3.4 Measurement display:

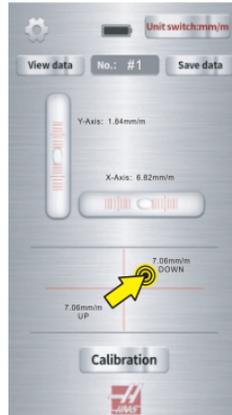
3.4.1 Single Machine mode (Single Leveling): Can display measurement data, digital bubble level visual, and provide leveling suggestions. Digital bubble level and leveling suggestions can be pressed to enhance size.



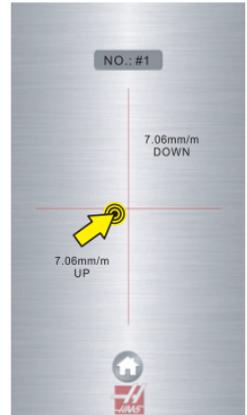
Click to enlarge



Click to return to previous screen

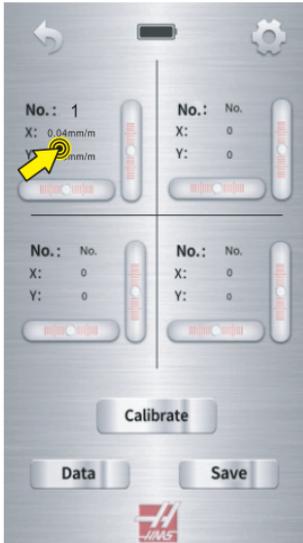


Click to enlarge

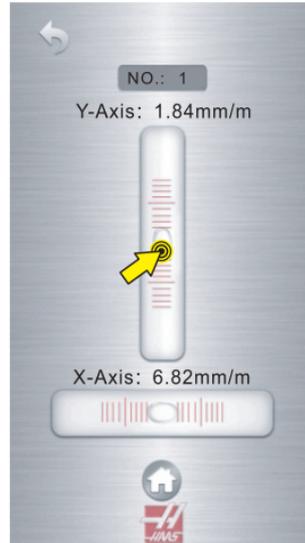


Click to return to previous screen

3.4.2 Multi-Machine mode: up to four level measurements can be displayed at once. Digital bubble levels can be pressed to enhance size.



Click to enlarge



Click to return to previous screen

3.5 View data

- 3.5.1 Click "Data" to view the saved data;
- 3.5.2 Click "Single Clear" to clear the data at the end of the form;
- 3.5.3 Click "Clear All" to clear all the data in the form;
- 3.5.4 Click "Data Export" to export the form data to SD card.
Type: EXCEL.

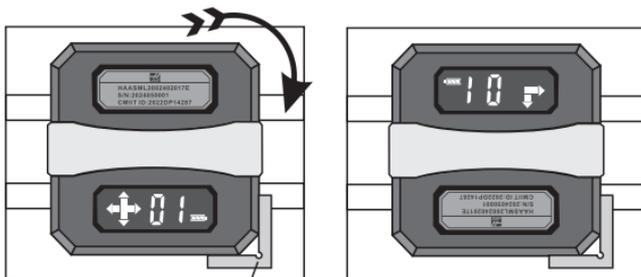
The screenshot shows a data entry form with a metallic background. At the top, there is a back arrow, a battery icon, and a gear icon. The form is divided into two sections by a vertical line. Each section contains two columns of input fields: 'No.', 'X:', and 'Y:'. Each field has a numeric keypad and a 'Clear' button. Below the input fields, there is a 'Calibrate' button. At the bottom, there are 'Data' and 'Save' buttons. The JACS logo is at the bottom center.

The screenshot shows a data export table with a metallic background. At the top, there is a back arrow and three buttons: 'Clear All', 'Single Clear', and 'Data Export'. Below the buttons is a table with four columns: 'No.', 'X-Axis Data', 'Y-Axis Data', and 'Date'. The table has 15 rows. The JACS logo is at the bottom center.

No.	X-Axis Data	Y-Axis Data	Date

4 Calibration function

In order to eliminate the thermal expansion error due to change in testing environment, it is recommended to calibrate the level prior to use. To begin calibration, select the “Calibrate” button in either Single-Machine mode or Multi-Machine mode. Follow prompts accordingly to complete the calibration procedure.



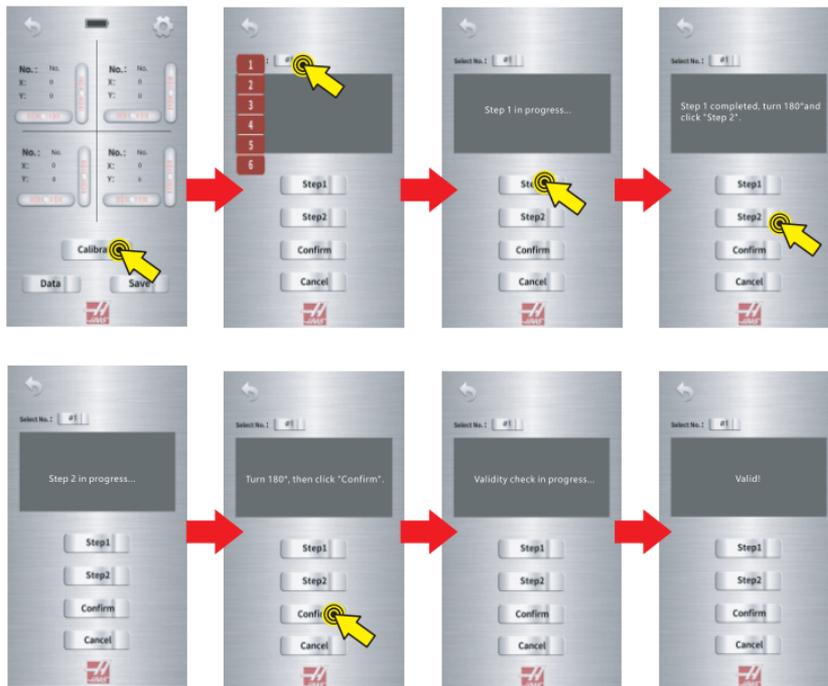
Machine Table Right Angle Attachment



Note: When calibrating, base of the level must be in full contact with the calibration surface. For best results, calibration surface is recommended to be leveled within 1mm/m (0.012 in/ft). Right angle attachment should be used to assist in the 180° rotation step. Calibration surface should be free of debris and vibrations must be kept at a minimum for the best accuracy.

Multi-Machine Calibration Steps

When calibrating in Multi-Machine mode, the assigned product number correlating to the desired level must be selected before proceeding with calibration steps. Product number will not need to be selected in Single-Machine mode.



After completing the calibration procedure, select the back button to return to measurement screen. If calibration is unsuccessful, repeat procedure until confirmation step is valid.

5 Troubleshooting

	Error	Cause	Solution
Smart Level	Blank or dim LCD display	Batteries installed incorrectly or low battery	Inspect battery placement and correct misplacement or replace with new batteries
	Display is frozen or flashing	Internal fault or low battery	Remove batteries and reinstall or replace if batteries are low
Handheld Terminal	Screen is not responding	System crash	Restart device
	Screen dimming	Low brightness setting	Increase brightness in settings
	Terminal does not power on when switch is actuated	Dead battery	Charge battery

6 Precautions

- a. The level should be acclimated to testing environment prior to use and calibration.
- b. For high precision applications, the testing workpiece should be solid and minimal vibrations should be allowed.
- c. It is recommended to use the level in an environment with stable temperature for the most accurate results.

Note: If change in testing environment is done too quick without allowing the level to acclimate, this may result in inaccurate results.

7. Level Maintenance

- a. It is recommended to remove the batteries of the level during transport, or if the unit will be stored for a long period of time.
- b. Keep battery contacts free of debris / residue.
- c. Store in dry environment to avoid damage to electronic components.
- d. Only charge and use batteries that are specified as “rechargeable”.

7.1 Terminal Maintenance

- a. Charging voltage of USB Type-C charger should not exceed 5V as this may effect battery performance.
- b. It is recommended to not allow excess charging of terminal to prolong life of battery.

7.2 Storage Notes

- a. Store in a dry place to avoid damage to electronic components due to moisture.
- b. Original case should be utilized when stored for a long period of time.
- c. It is not recommended to place the level in areas with extreme vibrations to avoid damage to internal components.
- d. Keep level and terminal free of dust and debris.
- e. The base of the level should be coated with a thin layer of rust preventative following each use to prevent wear and corrosion.
- f. Place level and terminal in provided case during transportation for maximum protection.

7.3 Working & Storage Conditions

Operating Temperatures: 10-40°C (50-104°F)

Transportation & Storage Temperatures: -20-70°C (-4-158°F)

Environmental Humidity: 0-85%

Electromagnetic Compatibility (EMC): Class II



8. Warranty Details

Service Warranty Card

Haas Tooling takes complete responsibility for the quality of the product, and provides 1-year warranty. This warranty covers defects in manufacturing materials only. The provisions of this warranty shall not apply to any product that has been misused, exposed to improper operating conditions, or been repaired or altered.

If there is an issue, contact Haas support at: customersupport@haascnc.com



Service Warranty Card

Customer	Name			
	Address			
	Telephone		E-Mail	
Product	Name		Serial Nr.	
	Invoice Nr.			
Service provider	Name			
	Address			
	Telephone		Date of Sale	