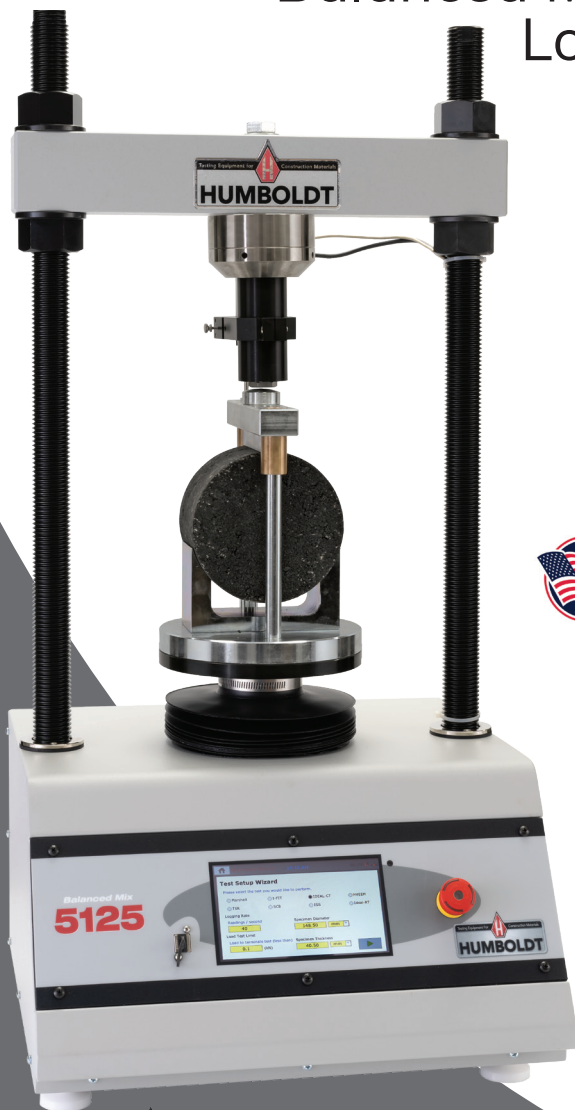


Balanced Mix Design Load Frame



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Unpacking

Initial inspection should include checking for physical damage during shipping and obvious external damage to the product.

Package contents are defined by your packing list. Each Load Frame is configured according to customer specifications. In your inspection, make certain that the contents of your shipment match the documentation provided by your packing list.

Place unit on a flat, smooth surface and use leveling feet (supplied) and a bubble level to ensure that the unit is level side-to-side and back-to-front.

Installation and Equipment Setup

Electrical Connections

The HM-5125A is equipped with an internal digital switching power supply, which allows it to be used with most power configurations throughout the world. The unit is supplied with an IEC electrical cord with a standard 110V plug.

The HM-5125A arrives ready for operation. Attach the supplied IEC electrical cord to the machine and plug into a standard wall receptacle for use in the United States. For locations other than the U.S., replace the supplied electrical cord with an IEC cord that has the correct plug for your application. The supplied cord can also be used by cutting the standard plug from the cord and attaching the correct plug.

Power Switch

The Power Switch is located on the left side of the back of the machine, above the electrical cord inlet. The Fuse Compartment is located between the electrical cord inlet and the Power Switch. The HM-5125A uses a 10 amp fuse.

To begin operation, attach the supplied electrical cord, plug it in and press the Power Switch.

Fuse Compartment



Fig. 1 Power Switch

Instrumentation Connections and Setup

HM-5125A Rear Instrumentation Panel



Above is a photo of the rear instrumentation panel of the HM-5125A.

Network (1)

Ethernet input for connecting machine to a local area network (LAN) and/or the internet.

USB Power (2)

The USB Power port is used for powering a wireless access appliance for those who want to use a wireless LAN setup.

Instrument Inputs (3)

The panel features two (2) inputs for connecting instrumentation to the machine. Each input represents a separate channel. If you have purchased instrumentation from Humboldt with your HM-5125A, it has been assigned to a specific channel and calibrated. Instrumentation will have a numbered tag attached to it and should be plugged into the corresponding input on the machine.

Below are photos of an instrumentation input and the instrumentation plug. Install the plugs into the inputs by lining up the guide at the bottom of the plug with the slot at the bottom of the input.



Instrumentation Input



Instrumentation Plug

Once you have installed the instrumentation into the correct inputs, your rear panel should look like this if you are using all four inputs.



If you purchased load cells and/or transducers with your machine, they will either be mounted and calibrated or calibrated and assigned to a specific input, but not mounted.

Additional load cells/transducers will be marked to indicate what input channel was used in their calibration. These load cells/transducers should be connected to the indicated channels when desired for use, however you will have to import the correct calibration information to that input before use.

This information can be found on a USB thumbdrive that was included with your machine. Refer to the Equipment Setup section of this manual, page 25 for additional information and instructions on how to accomplish this.

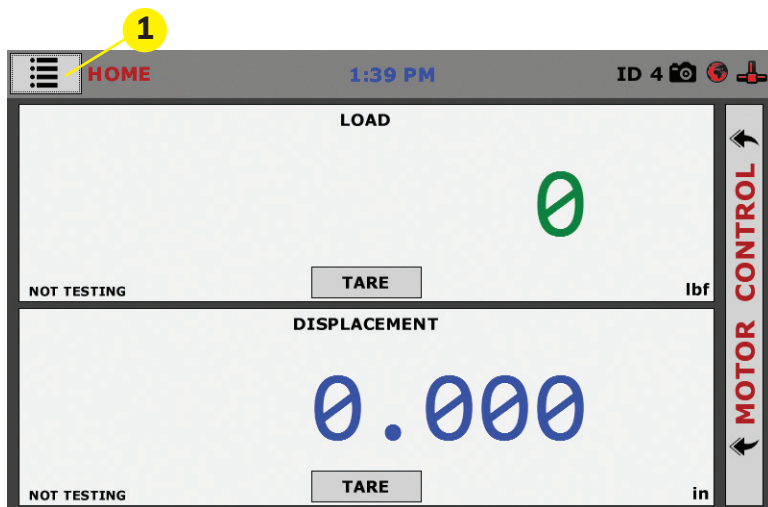
Third-party instrumentation, which is compatible, can also be used with the HM-5125A. If you plan to use third-party load cells and/or transducers, please refer to the Equipment Setup section of this manual, page 30 for instructions.

Initial Set Up

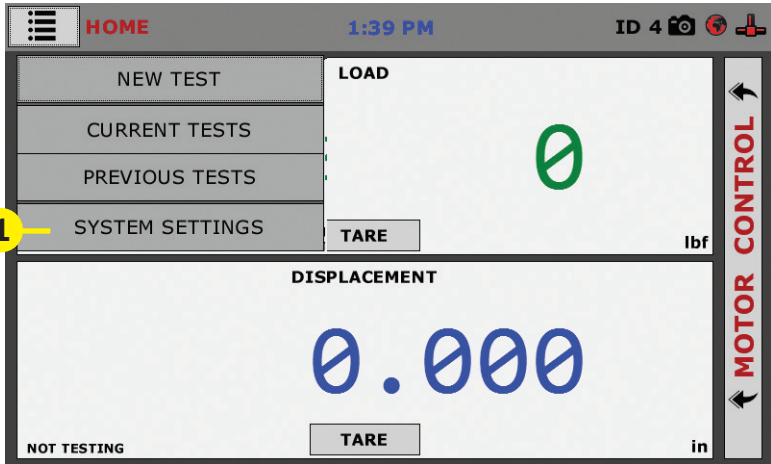
Remember, if you purchased Humboldt instrumentation with your HM-5125A, it is already calibrated and assigned to a channel and will not need calibration, however you should confirm that the instrumentation has been set up and calibrated. If you are using 3rd-party instrumentation, go to the Equipment Setup section for calibration instructions.

DO NOT RECALIBRATE!

When your HM-5125A is first turned on, the screen below will appear.

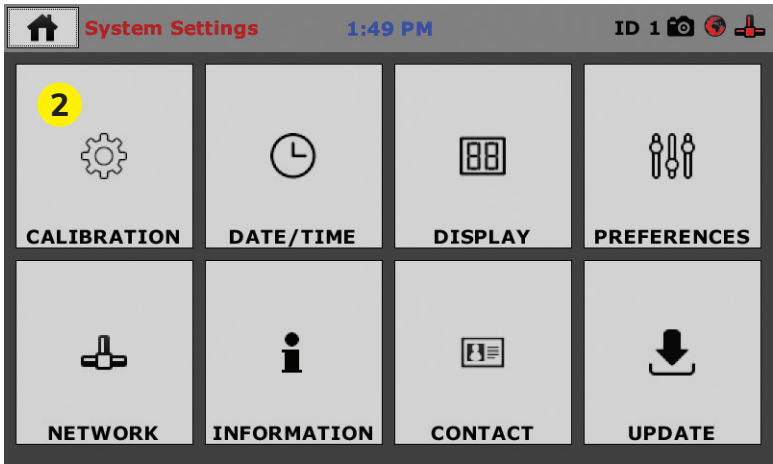


From this screen, to confirm your machine instrumentation has been calibrated, navigate to the Calibration section by clicking the Menu icon in the top left corner of the screen (1). When you click on this button, you will see a drop-down menu appear, see below.

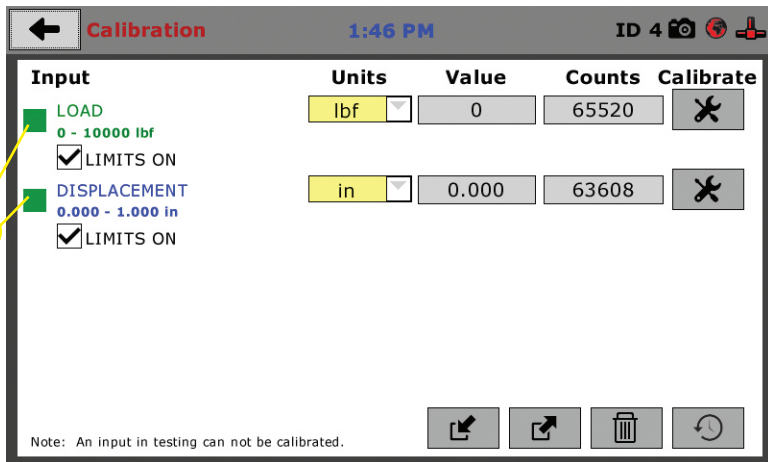


Navigate to the bottom of this drop-down menu and click on System Settings (1). You will see the following screen.

Initial Set Up — Calibration



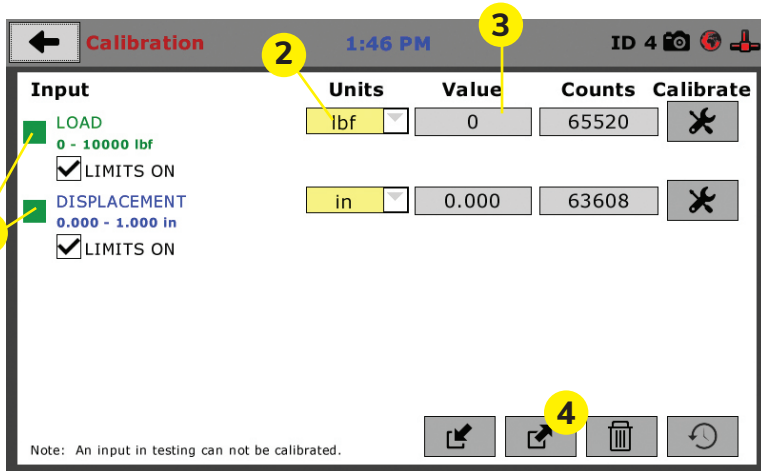
Click on the Calibration tab in the top left corner (2). You will see the following screen.



Calibration Input Screen

The Calibration Input Screen (above) is used to monitor and calibrate instrumentation and assign them to specific channels of the HM-5125A. The Calibration Input Screen provides a summary of the calibration status of each channel. At this time, verify the calibration information.

A green box at the left of a channel indicates that the channel is capable of use whether it is calibrated or not.



Each channel has a “Limits On” check box. Use the Limits On to keep the machine from exceeding the sensor limits of the instrumentation. By selecting this option, before the test can exceed the limits of the sensors, all tests will stop running and the motor will stop to avoid damaging connected instrumentation.

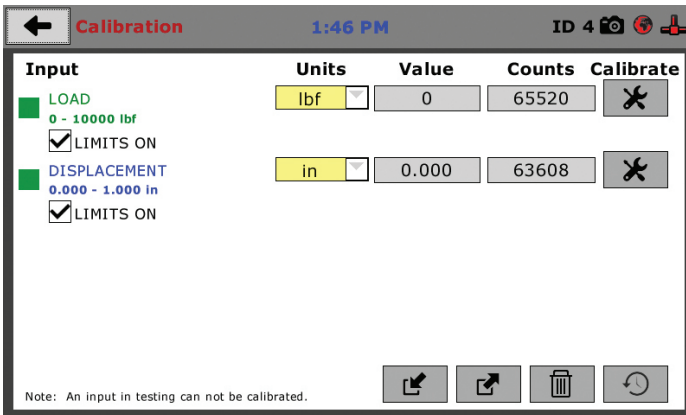
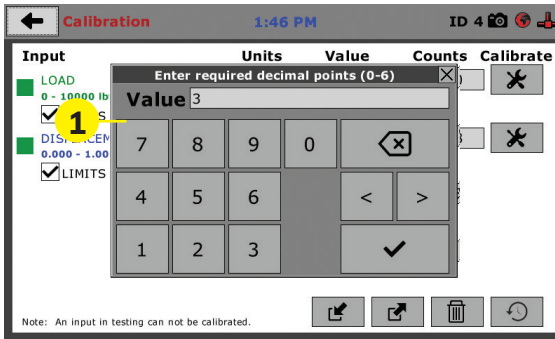
Note: An input cannot be calibrated or accessed during actual testing. This will be indicated by a Red Box at the left of a channel.

Units (2)

In this field, a calibrated instrument will display the units that were chosen for use at the time of calibration. This field can also be used to automatically toggle conversion of units between lb.-in. and SI units if the need arises.

Value (3)

This field displays the current calibration value. This value should already be set with 3 decimal point accuracy. If the instrument is not calibrated, the unit will read "N/A." To change the number of decimals shown, click on the field and the following window will appear. Fill in the number of decimal points desired (1).



The screen above shows a typical calibration setup. In this example, the HM-5125A has been set up for a standard Marshall test setup. Input One has been set up for the load cell with a value of 0.000 to 10,000.000 lbf. Input Two has been set up for the LSCT with a value of 0.000 to 1.000 inches.

Export Calibration via USB (4)

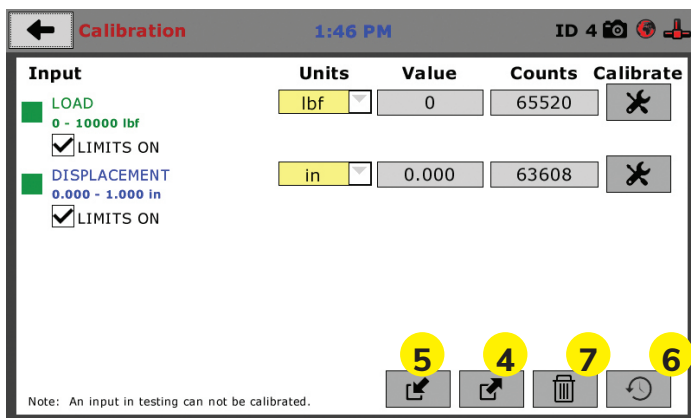
It is a good practice to export all your calibrations to a thumb drive. In case of a problem this practice allows you to recover your calibration data quickly.

To do this, on the screen below, press the Export Calibration Button (4) to select calibrations to export via USB Thumb Drive. This will store the current calibration information to the Thumb Drive. This information can then be reinstalled, if the need arises at a later date, by pressing the Install Calibration Button (5).

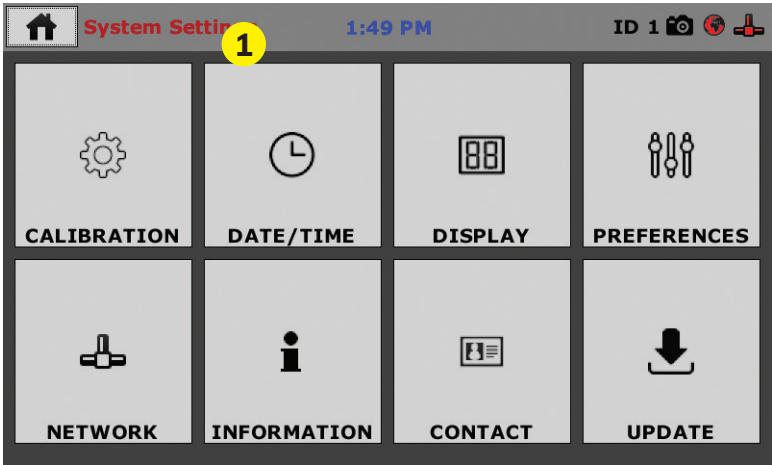
To reinstall the original factory calibrations for instrumentation provided by Humboldt, press the Reset Button (6). This will restore the original machine settings as provided by Humboldt.

And to just delete all calibration information click on the trash can icon (7).

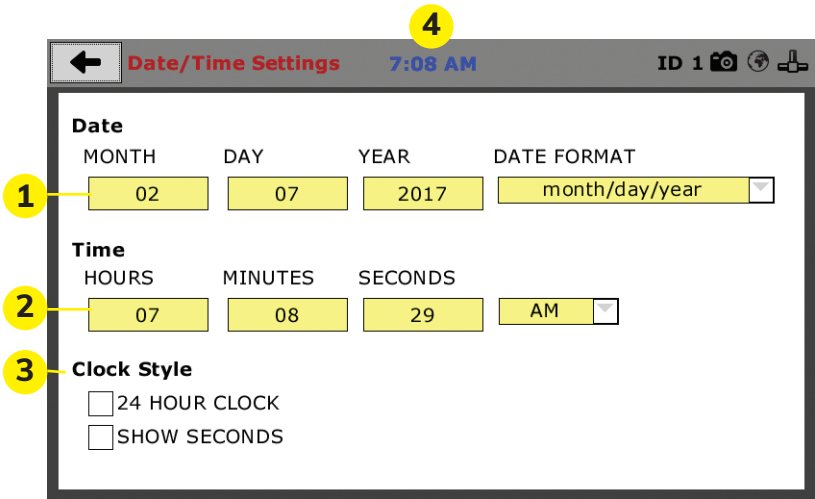
To set up Date and Time settings, return to the System Settings screen and click on the Date/Time Panel. (1)



Initial Set Up — Date and Time



Click on the Date/Time tab (1). You will see the following screen.



Date (1)

Set the month, day, year, and date display format.

Time (2)

Set the hours, minutes, seconds, and am/pm.

Clock Style (3)

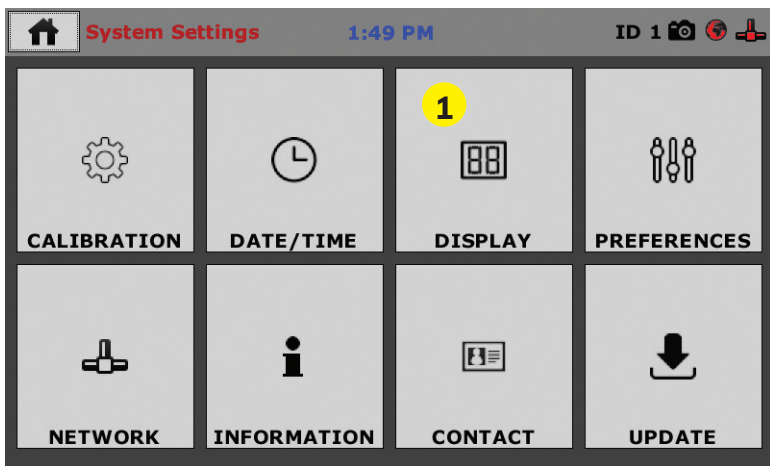
Select a clock view, either a 24-hour or 12-hour clock, as well as the option to show seconds or not.

Clock (4)

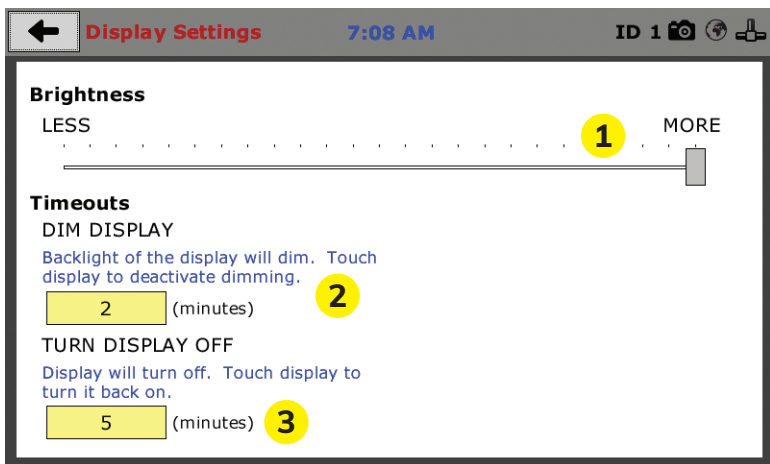
The current time is displayed is located on every controller screen. Clicking on the time from any screen, you will be taken to the Date/Time Settings Screen.

Initial Set Up — Display

To set up Date and Time settings, return to the System Settings screen and click on the Date/Time Panel. (1)



Click on the Display tab (1). You will see the following screen.



Brightness (1)

Slide the gray bar to the left or right to adjust brightness.

Dim Display (2)

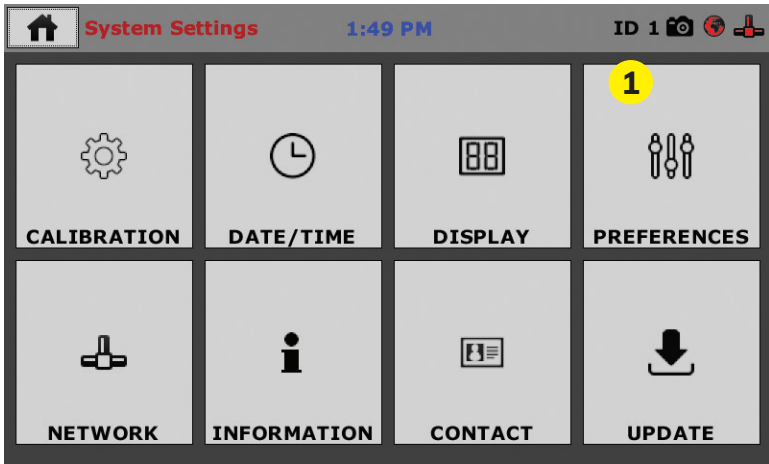
The backlit display will automatically dim to save power. Click the yellow box to change the number of minutes before the display goes dim. After the time has elapsed, touch the display to deactivate dimming.

Turn Display Off (3)

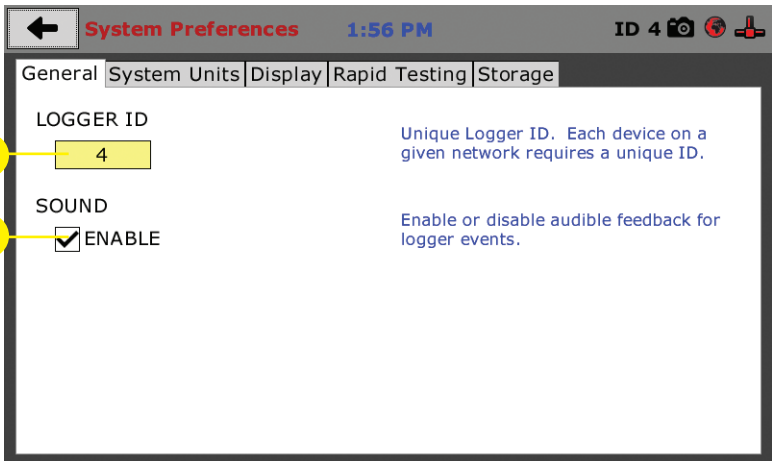
The display will automatically turn off to save power. Click the yellow box to change the number of minutes before the display powers off.

Initial Set Up — Preferences

This screen is accessed by clicking on the “Preferences” button. (1)



Click on the Preferences tab (1). You will see the following screen.



Preferences – General Tab

The Preferences panel is comprised of five (5) tabs and defaults to the General tab, see above.

Logger ID (1)

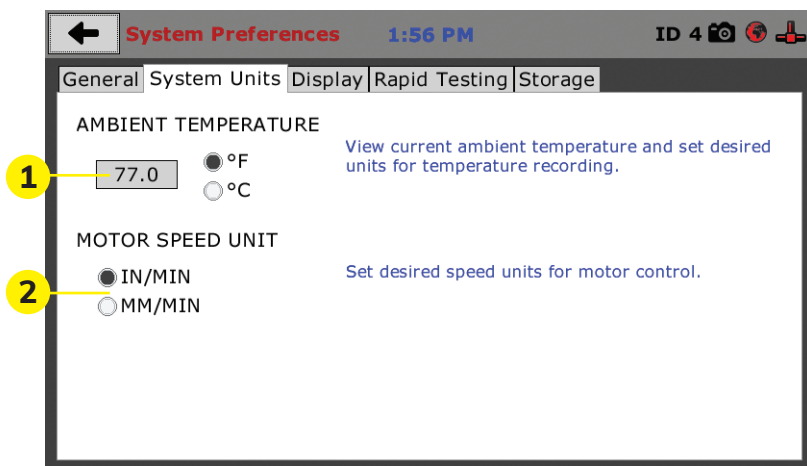
Each machine that is connected to your network requires a unique Logger ID. These numbers can be assigned any number between 1-245. In most cases, if you are setting up a new machine it has been given the Logger ID 1. This would show in the Logger ID field. (1). If this number conflicts with another machine's Logger ID, one of the machines will have to be changed to another Logger ID.

Sound (2)

Checking this box enables or disables audio feedback for logger events.

Preferences – System Units Tab

This screen is accessed by clicking on the "System Units" Tab under System Preferences.



Ambient Temperature (1)

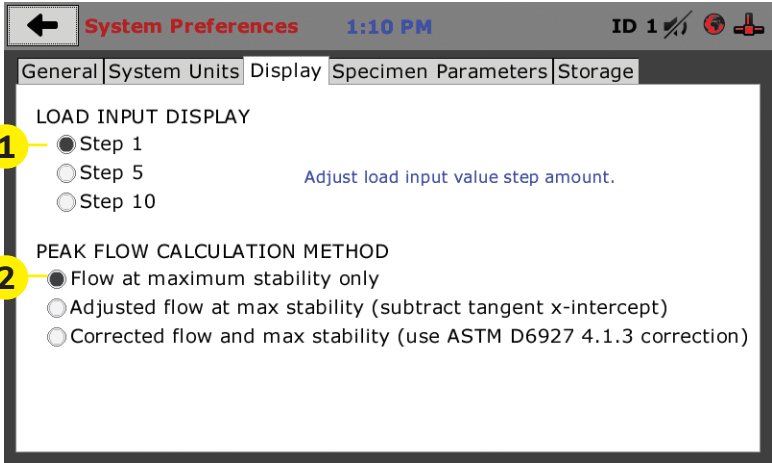
This field displays the current ambient temperature and allows you to select desired units (Fahrenheit or Celsius) for temperature recording.

Motor Speed Unit (2)

Click on the desired units you want to use for motor control (in/min or mm/min).

Preferences – Display Tab

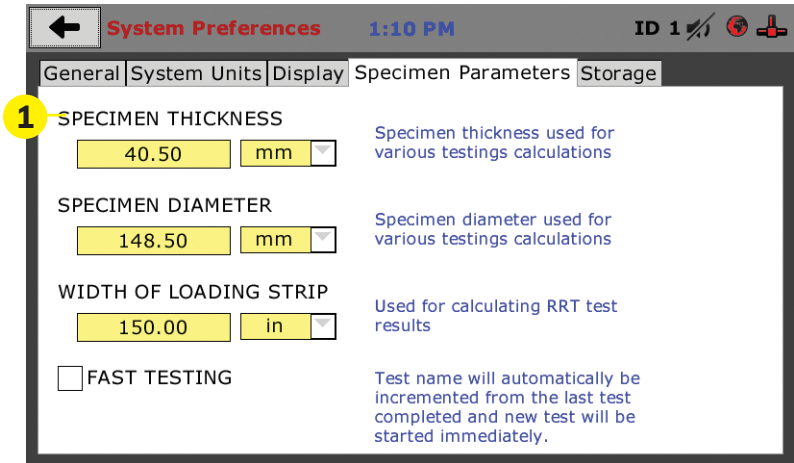
This screen is accessed by clicking on the Display Tab under System Preferences.



Load Input Display (1)

This field allows you to adjust the load input value step amount.

Peak Flow calculation Method: This field allows you to set how your peak load is calculated.



Preferences- Specimen Parameter Tab

This screen can be accessed by clicking on the Specimen Parameter tab under system preferences.

Specimen Thickness: This field allows you to set the specimen thickness used for various testing calculations.

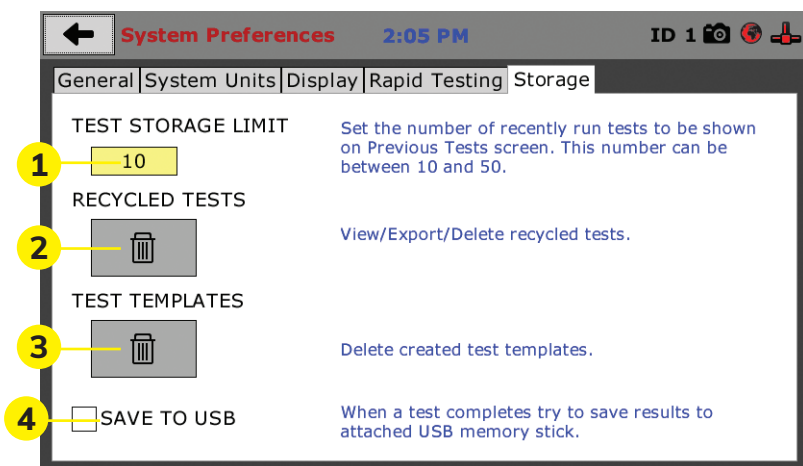
Specimen Diameter: This field allows you to set the specimen diameter used for various testing calculations.

Width of Loading Strip: This field allows you to set the width of the loading strip used to calculate Ideal-RT values.

Fast Testing: Clicking the box next to FAST TESTING will allow the controller to automatically create a new test name based on the last test and start a new test immediately.

Preferences – Storage Tab

This screen is accessed by clicking on the Storage Tab under System Preferences.



Test Storage Limit (1)

This field allows you to set the number of previously run tests to be available on the “Previous Tests” screen. This number can be between 10-50.

Recycled Tests (2)

This refers to previously run tests that are not displayed in the “Previous Tests” window. These tests are not deleted; they are recycled for later use. Select this button to view/export/delete recycled tests.

Test Templates (3)

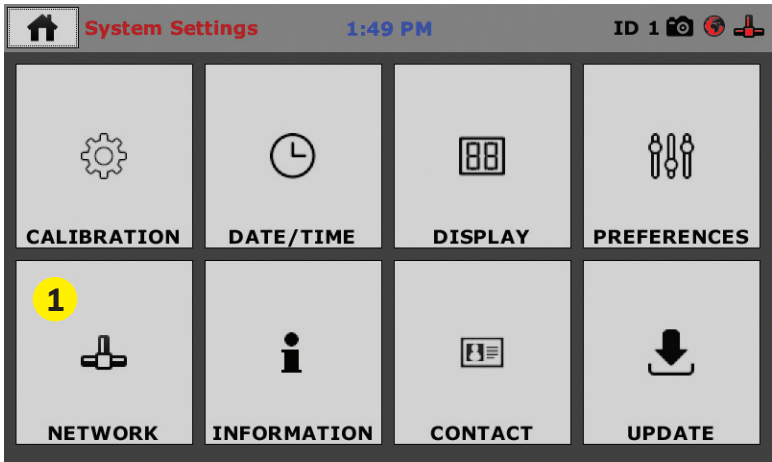
Select this button to delete test templates that have been created, but are no longer desired.

Save to USB Check Box

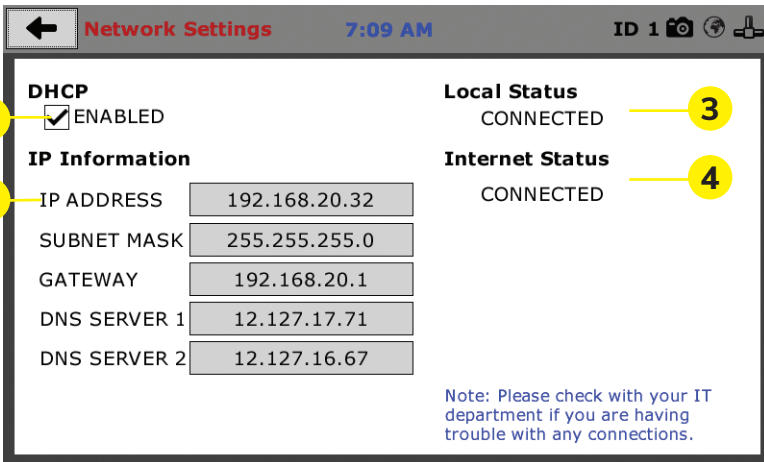
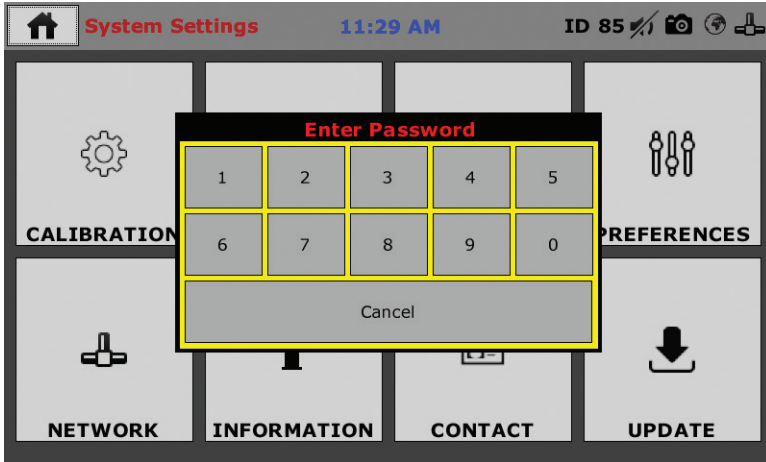
Checking this Box saves the results of a test to USB thumb drive inserted into the front USB slot on the machine. (4)

Initial Set Up — Network

on the Network panel. (1)



A password is required to access the Network Settings. That password is: **27604**.



Network Settings Screen

The screen above is the Network Settings screen, it provides information on your IP information and network status.

DHCP (1)

Check this box to enable/disable the Dynamic Host Configuration Protocol (DHCP). If enabled, your machine will pick up IP information from your router. If disabled, you will need to manually enter the network information for a static IP, please consult your network administrator for this.

IP Information (2)

This information will be filled in automatically if the DHCP is checked, otherwise you will have to manually supply this information. The IP address must be unique for each machine.

Local Status (3)

This indicates the status of the local network connection, Connected or Disconnected.

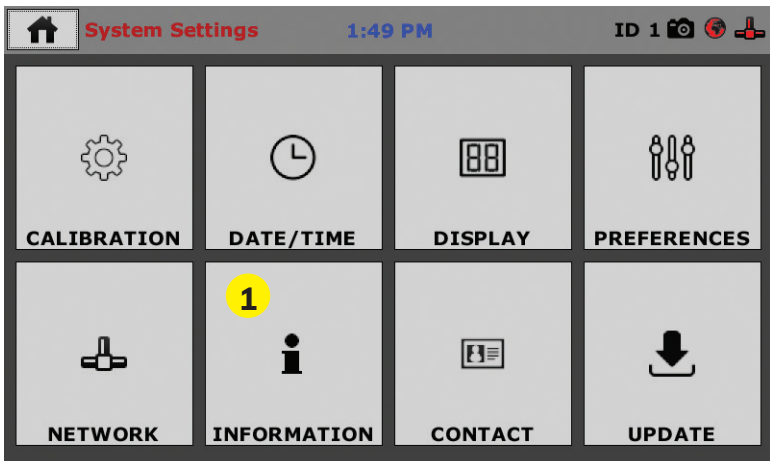
Internet Status (4)

This indicates the status of your Internet connection, Connected or Disconnected.

Note: If you are experiencing issues with any connections, please contact your IT department for assistance.

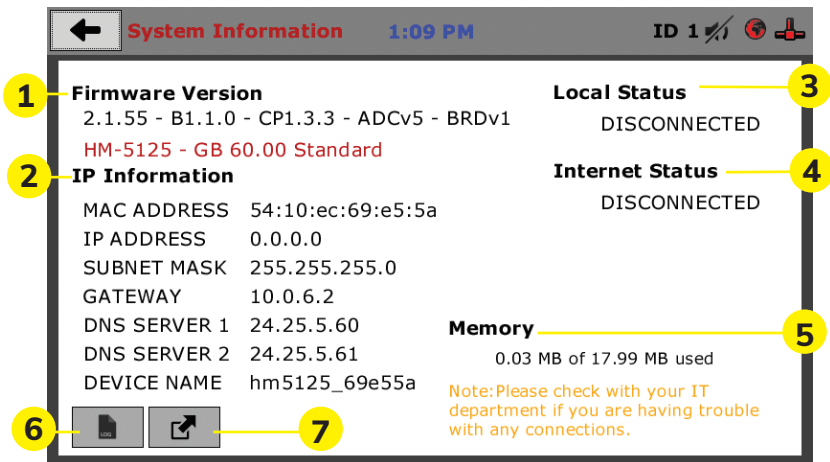
Initial Set Up — Information

Clicking on this panel provides a view of the current status of the machine. (1)



System Information

Below is a view of the System Information screen. It provides a current status of the machine.



Firmware Version (1)

The current version of the machine firmware is shown here. If you contact product support, you will need to supply this information.

IP Information (2)

This information will be filled in automatically if DHCP is checked, otherwise you will have to manually supply this information. The IP address must be unique for each machine.

Local Status (3)

This indicates the status of the local network connection, Connected or Disconnected.

Internet Status (4)

This indicates the status of your Internet connection, Connected or Disconnected.

Memory (5)

This indicates the current status of how much available memory is being used by the machine

Factory Screen (6)

This is for Humboldt use only.

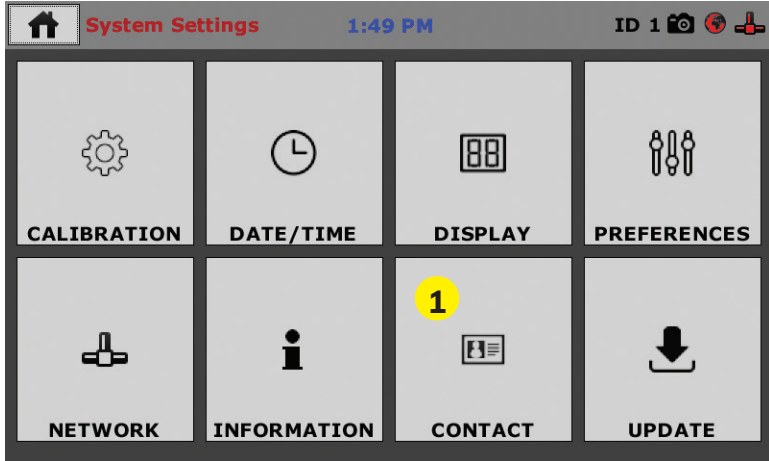
Export Log File (7)

This button exports a log file from the machine to a USB thumb drive. Be sure to insert a thumb drive before exporting the file or you will receive an error. This file can be helpful in trouble shooting by Humboldt Support.

Clicking on this panel provides contact information for

Initial Set Up —Contact

Humboldt Support and Service(1)



Contact Information

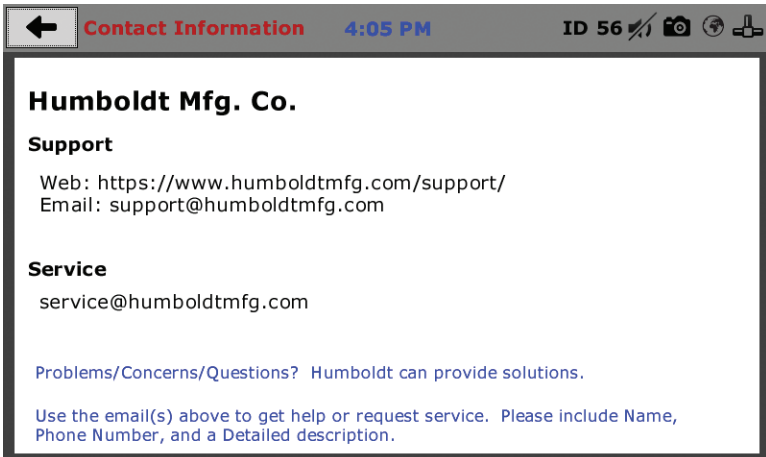
Below is a view of the Contact Information screen showing contact information for Humboldt Support and Service.

For quickest response go to this link on our website:

<https://www.humboldtmgf.com/support> and fill in the support form.

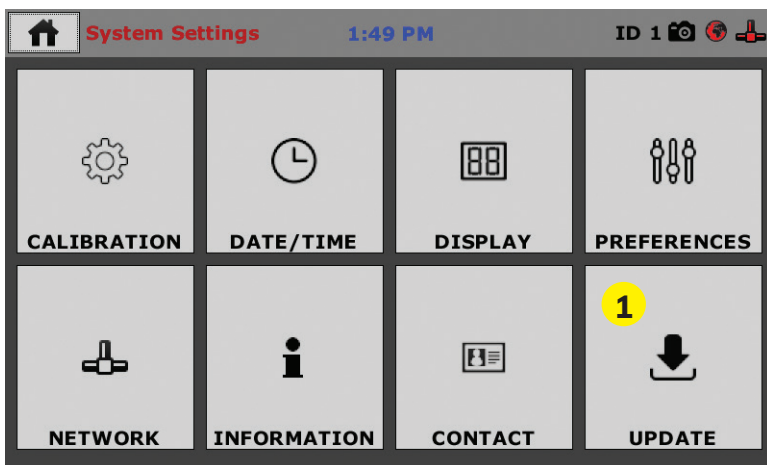
This will provide us with the necessary information to assist you and you will be added to the next position in the support cue.

You can also email Humboldt Support at support@humboldtmgf.com or Humboldt Service at service@humboldtmgf.com. Please include contact information and a detailed description of your reason for contact.



Initial Set Up — Update

Clicking on this panel provides information on checking for Updates, performing updates and an update history for the machine. **(1)**



Clicking on the Update Panel brings up the following screen.



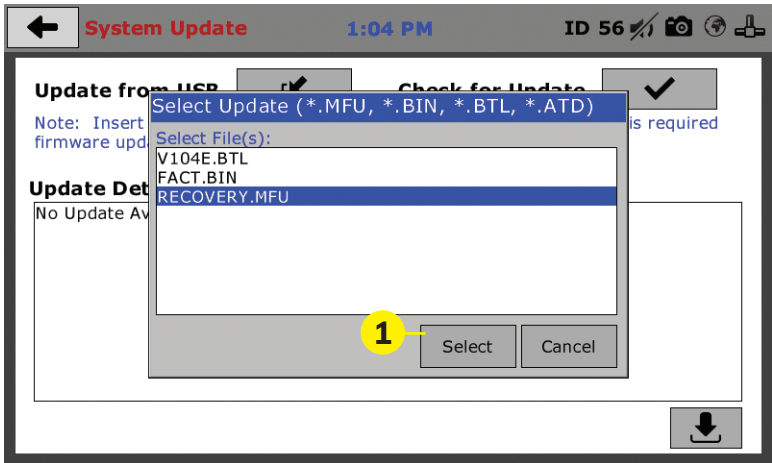
Update from USB (1)

Software updates for your machine can be downloaded from the Humboldt website Support Area using a computer. To access the Software Update area, go to: <https://www.humboldtmg.com/support/software.php>.

Once on this page, click on the Elite Series Firmware tab. You will see a

list of Humboldt Elite Series machines. Click on the HM-5125A Current Version link and the firmware update will begin to download to your computer. Once the download is complete, load the file onto a USB thumb drive and insert the thumb drive into the USB port on the front of the HM-5125A. With the USB thumb drive inserted into the USB port, click on Update from USB **(1)**.

A window will open and you will see a list of Updates. Select a file to use for your update and click the Select button. Typically, this will be a .MFU file selected unless specifically advised by Humboldt Support to install a .BIN or .BTL type file.



The update process will begin. This may take several minutes. Your HM-5125A may reboot several times during the update, do not turn off or reset machine during this process.

Operation from a Computer and NEXT Software

This manual covers the setup and operation of the HM-5125A.3F Load Frame in Stand-alone Mode only. For information on operating your load frame with Humboldt's NEXT Software and a computer, please refer to the Humboldt NEXT software manual.



Equipment Setup

Installation and Equipment Setup

Electrical Connections

The HM-5125A is equipped with an internal digital switching power supply, which allows it to be used with most power configurations throughout the world. The unit is supplied with an IEC electrical cord with a standard 110V plug.

The HM-5125A arrives ready for operation. Attach the supplied IEC electrical cord to the machine and plug into a standard wall receptacle for use in the United States. For locations other than the U.S., replace the supplied electrical cord with an IEC cord that has the correct plug for your application. The supplied cord can also be used by cutting the standard plug from the cord and attaching the correct plug.

Power Switch

The Power Switch is located on the left side of the back of the machine, above the electrical cord inlet. The Fuse Compartment is located between the electrical cord inlet and the Power Switch. The HM-5125A uses a 10 amp fuse. To begin operation, attach the supplied electrical cord, plug it in and press the Power Switch.

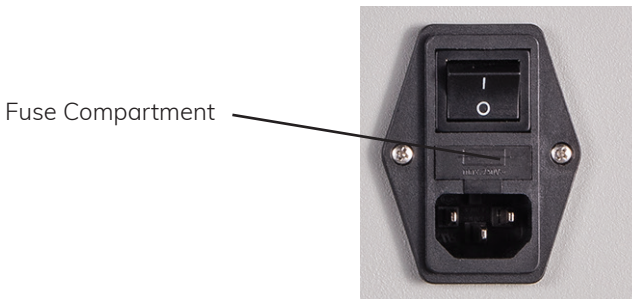
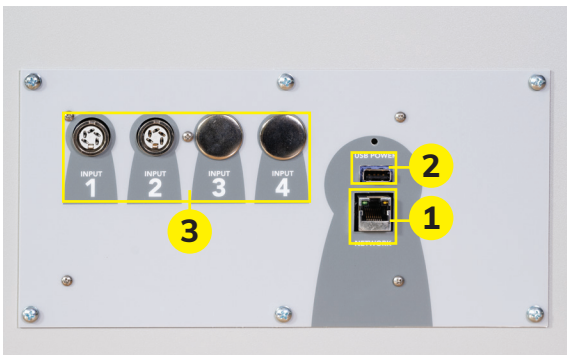


Fig. 1 Power Switch

Instrumentation Connections and Setup

HM-5125A Rear Instrumentation Panel



Above is a photo of the rear instrumentation panel of the HM-5125A.

Network (1)

Ethernet input for connecting machine to a local area network (LAN) and/or the internet.

USB Power (2)

The USB Power port is used for powering a wireless access appliance for those who want to use a wireless LAN setup.

Instrument Inputs (3)

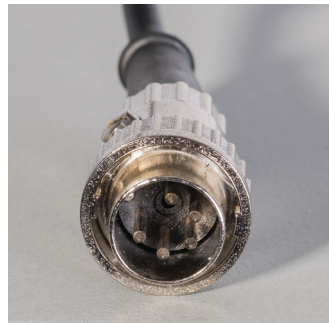
The panel features four (4) inputs for connecting instrumentation to the machine. Each input represents a separate channel. If you have purchased instrumentation from Humboldt with your HM-5125A, it has been assigned to a specific channel and calibrated. Instrumentation will have a numbered tag attached to it and should be plugged into the corresponding input on the machine.

Below are photos of an instrumentation input and the instrumentation plug. Install the plugs into the inputs by lining up the guide at the bottom of the plug with the slot at the bottom of the input.

Below are photos of an instrumentation input and the instrumentation plug. Install the plugs into the inputs by lining up the guide at the bottom of the plug with the slot at the bottom of the input.



Instrumentation Input



Instrumentation Plug

Once you have installed the instrumentation into the correct inputs, your rear panel should look like this if you are using all four inputs.



If you purchased multiple load cells and/or transducers with your machine, they will either be mounted and calibrated, or calibrated and assigned to a specific input, but not mounted.

Additional load cells/transducers will be marked to indicate what input channel was used in their calibration. These load cells/transducers should be connected to the indicated channels when desired for use, however you will have to import the correct calibration information to that input for correct operation. Calibration information for additional instrumentation can be found on a USB thumbdrive that was shipped with your HM-5125A.

For information on calibration, see Page 30 of this manual.

Instrumentation Setup

Below are examples of typical instrumentation setups for different tests the HM-5125A is capable of running. When you receive your unit, if you purchased instrumentation from Humboldt, your instrumentation will be attached to the machine for shipping. Please use the photographs on the following page as a guide for setting up the instrumentation for testing.

Typical Setups



Marshall ASTM D6927, AASHTO T245

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
Marshall Breaking Head, 6" (150mm)	1	H-1362
Marshall Breaking Head, 4" (100mm)	1	H-1342 H-1342M



IDEAL-CT (TTI Method) ASTM D8225

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
Lottman head, 150mm	1	H-1369M



IDEAL-RT (TTI Method) ASTM D8360-22

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
IDEAL-RT Test Head	1	H-1354



ISS (Interlayer Shear) AASHTO TP114

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
Asphalt Tack Bond Shear Strength Apparatus	1	H-1343 H-1343M



SCB (LSU Method) ASTM D8044

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
SCB head, 150mm	1	H-1351



SCB (I-Fit, IL Method) AASHTO TP124

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Linear Potentiometer 1" (25mm)	1	HM-2305.10
Potentiometer Bracket	1	HM-5000BR
SCB head, 150mm	1	H-1351

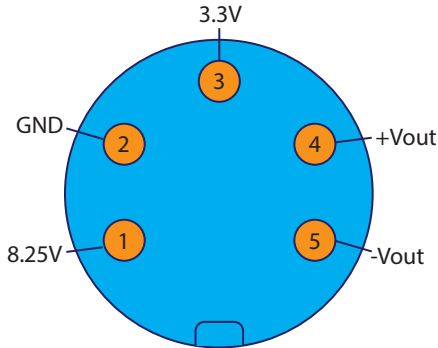


TSR AASHTO T283

Description	Qty	Part #
Load frame	1	HM-5125A.3F
Load Cell, Pancake 11,000 lbf (50kN)	1	HM-2300.100CP
Lottman head, 6" (150mm)	1	H-1369 H-1369M
Lottman head, 4" (100mm)	1	H-1349 H-1349M

Third-Party Instrumentation

Third-party load cells/transducers, which are compatible, can also be used with the HM-5125A. Compatible units must work with an excitation voltage of 8.25 volts and produce an output of 0-5 volts. Prior to use, all third-party instrumentation must be configured and calibrated. If you are using third-party cables for load cells/transducers connections, make sure they are wired to be compatible with the HM-5125A, see illustration below. Plugs to connect third-party instrumentation to the Humboldt HM-5125A are available; order part HS-000474.



Calibration of Instrumentation

All instrumentation included with your HM-5125A has been calibrated and assigned to specific channels for use. These channels are marked on the corresponding instrumentation and the correct calibration information will appear in the channel calibration parameters, once you have installed the instrumentation to the correct inputs.

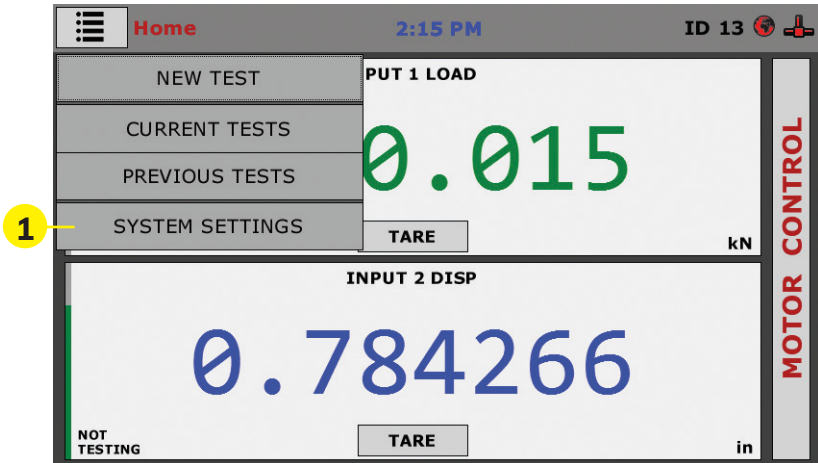
DO NOT RECALIBRATE!

How to Perform a Calibration

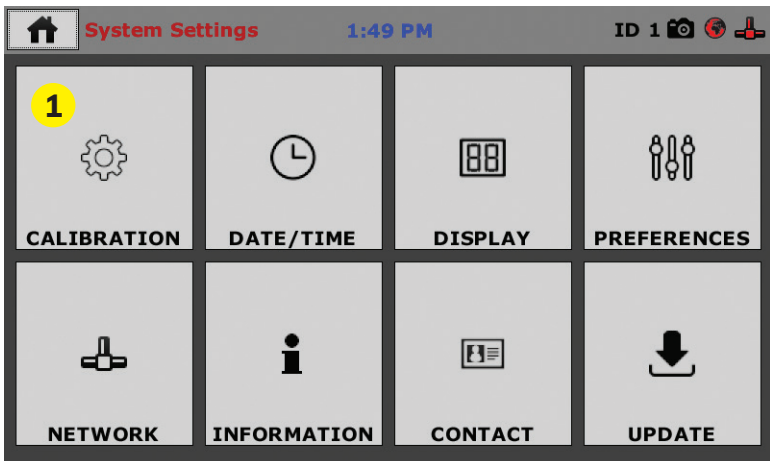
All instrumentation included with this unit has been calibrated and assigned to specific channels for use. Humboldt recommends and standard lab practice dictates that your HM-5125A should be calibrated periodically. For most, this period is usually a year, though other rules may apply to the frequency of calibration.

To perform a calibration, it will be necessary to either hire a calibration service to come in to calibrate your machine or have the necessary calibration equipment to perform this service.

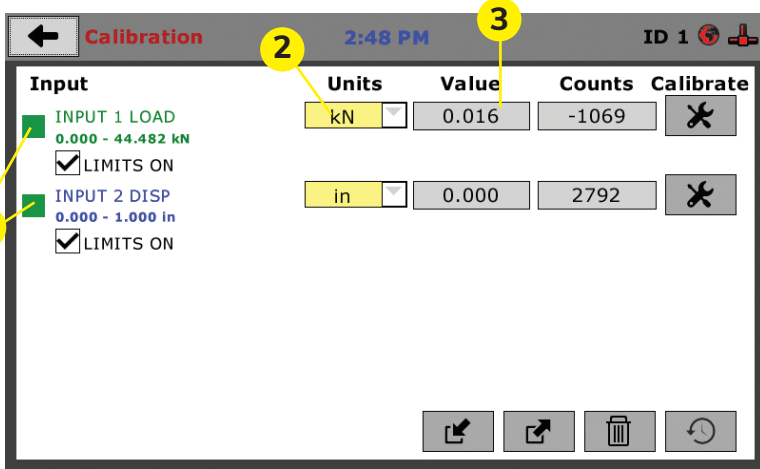
To begin a calibration, navigate to the Calibration section by clicking the Menu icon in the top left corner of the screen (1). When you click on this button, you will see a drop-down menu appear, see below.



Navigate to the bottom of this drop-down menu and click on System Settings (1). You will see the following screen.



Click on the Calibration tab in the top left corner (1). You will see the following screen.



Calibration Input Screen

The Calibration Input Screen (above) is used to monitor and calibrate instrumentation and assign them to specific channels of the HM-5125A. The Calibration Input Screen provides a summary of the calibration status of each channel. At this time, verify the calibration information.

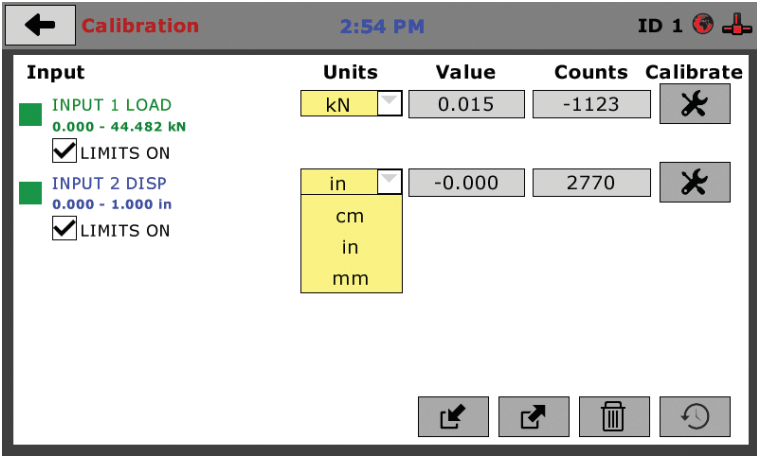
A green box at the left of a channel indicates that the channel has instrumentation assigned to it and that it is calibrated and ready for use **(1)**.

Each channel has a “Limits On” check box (1). Use the Limits On to keep the machine from exceeding the sensor limits of the instrumentation. By selecting this option, before the test can exceed the limits of the sensors, all tests will stop running and the motor will stop to avoid damaging connected instrumentation.

Note: An input cannot be calibrated during testing.

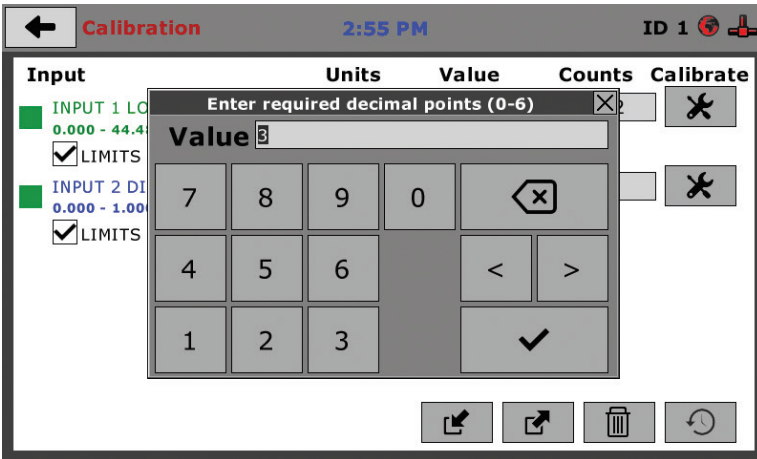
Units (2)

In this field, a calibrated instrument will display the units that were chosen for use at the time of calibration. This field can also be used to automatically toggle conversion of units between lb.-in. and SI units if the need arises. To view choices for types of Units, click on the Units field and the Unit choices will be displayed, see on next page.



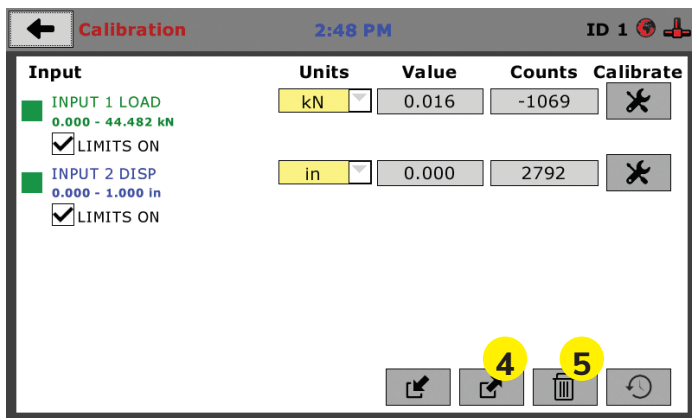
Value (3)

This field displays the current calibration value. This value should already be set with 3 decimal point accuracy. If the instrument is not calibrated, the unit will read "N/A". Clicking on this field will bring up a window where you can enter the required decimal points required for the value.



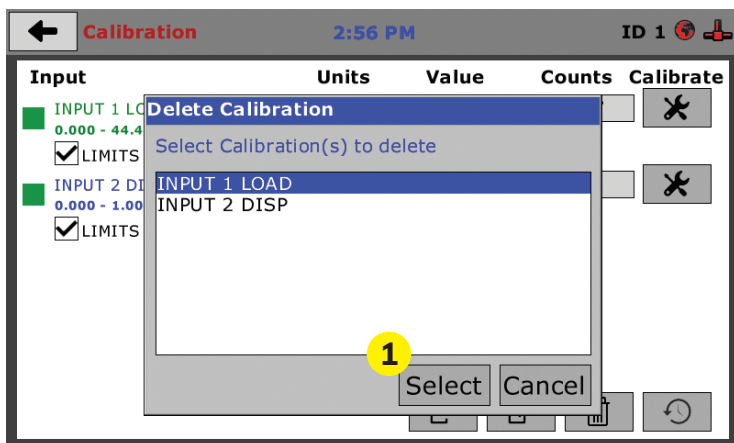
Performing a New Calibration

The first step in calibrating instrumentation to an input is to remove any calibration that is already being used for that input. To do this, Press the Export Calibration Button (4) (see next page) to select calibrations to export via USB. It is a good practice to export all your calibrations to a thumb drive. In case of a problem this practice allows you to recover your calibration data quickly.



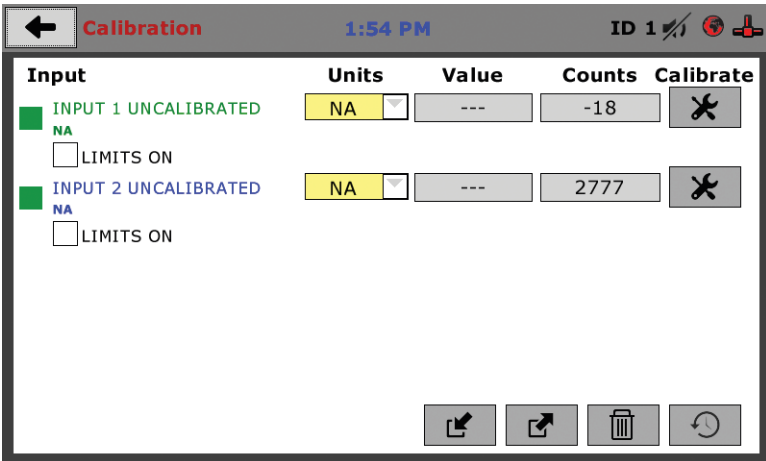
Once your calibrations have been saved, you will see a pop up screen that says: Calibration Export Successful.

To begin to remove existing calibrations, click on the trash can icon **(5)** to begin to erase the Input calibrations you wish to recalibrate. When you press the trash can icon, this screen will appear.



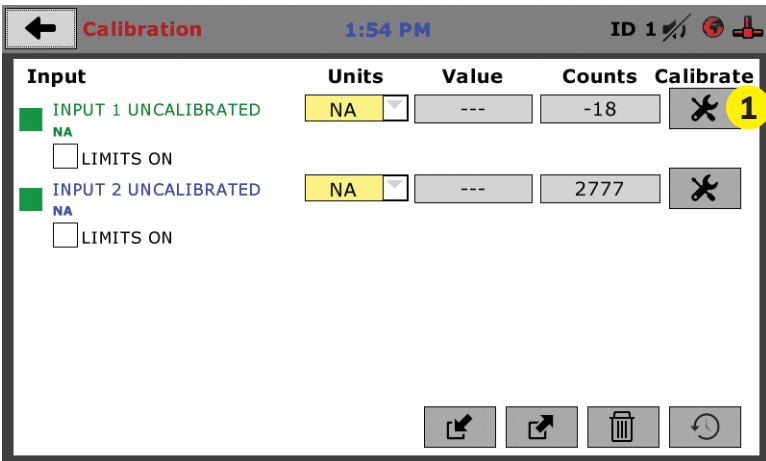
On this screen select an Input calibration to delete, one at a time, and then press the Select button **(1)**. The calibration will be deleted. You can do this for all Inputs you wish to calibrate.

Once all Input calibrations have been cleared, your Calibration window should look like the one below with no Inputs calibrated.

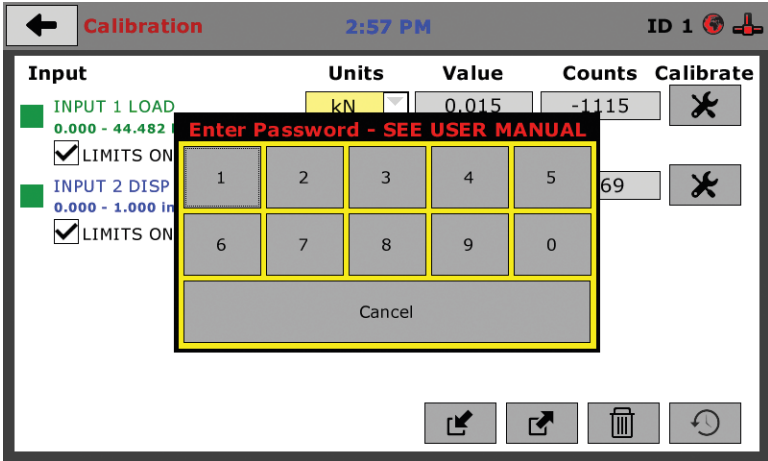


Calibrating your instrumentation to the appropriate Input requires a separate device, which can provide precise and specific loads or displacement, and which has been certified to be accurate. The calibration process involves plugging the instrumentation into the HM-5125A while placing the instrumentation into the certified calibration device, which provides a specific set load or displacement.

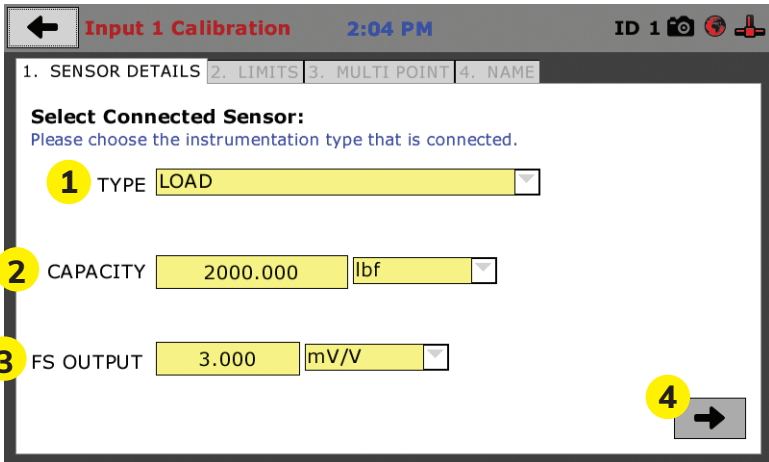
Once this has been done, click the Calibrate button next to the appropriate Input **(1)**.



A pop-up window will appear requiring you to enter the password, which is **22234**.



Upon filling in the password, you will see this screen, Tab 1 Sensor Details of the Calibration settings.



On Tab 1, the Sensor Type **(1)** will default to Load. For Capacity **(2)**, fill in the maximum capacity of the sensor and choose either lbf or kN. For FS output **(3)**, refer to the calibration sheet, which came with the instrument your are using and enter it here and then choose mV/V. The next page shows typical calibration sheets with the FS Output information highlighted in orange.



Humboldt Calibration Certificate

Model	HM-2300 020
Full Scale Output	3.0002mV/V
NIST#	06-090
Serial#	216907
Capacity	2,000 lb
Date	01/20/2017

Zero Balance	1.00% FS
Rated Excitation	10 Vdc
Compensated Temp. Range	14 to 104 °F (-10°C to 40°C)
Insulation Res.	>1,000 Megohms at 50V DC
Barometric Effect	Nil
Input Resistance	385 ± 15Ω
Output Resistance	250 ± 5Ω
Minimum Dead Load	40Lb
Vmin	0.080Lb
Safe overload (150%)	150% of capacity
Ultimate Overload (300%)	

Wiring Code			
Red	+ Excitation	Black	- Excitation
Green	+ Output	White	- Output

Caution: Cutting cable will affect the Full Scale Output calibration and Voids warranty!

Data obtained utilizing standards traceable to the National Institute of Standards & Technology.

Humboldt Mfg. Co.
Test Report & Data

Linear Displacement Sensor 350Ω Full Bridge balance output

Model **HM-2310.10** Serial No **15869**

Test Results			
Test Volts	5.00	Volts Sensitivity @ 25mm	6.880 mV/V
Displacement	25.69 mm	Non Linearity	0.04% Full Scale
<small>Test data is based on best fit line (worst case for error)</small>			

Input volts 2-10 AC or DC

Wiring Connections

Excitation +	Red	1	Signal +	Green	4
Excitation -	Blue	2	Signal -	Yellow	5

Pin No. - Only when factory fitted with DIN plug

Operational Notes

- The outer case must not be distorted when clamping the sensor, a full diameter clamp is strongly recommended.
- The sensor is not recommended for use in hostile or extreme environments without protection.
- Special tools are required to remove the plunger lip (anvil). This Anvil forms the mechanical stop for the extent of the plunger travel and must only be removed under controlled conditions that prevent the spindle being depressed into the body of the sensor.

Notes

Humboldt Mfg. Co
 875 Tollgate Road, Elgin, IL 60123, USA
 Fax +1 708-456-0137, Email hmc@humboldtmgf.com Web www.humboldtmgf.com

C:\Users\hmc\Documents\New Readings\Fuelbox-216907-0388-25-4

Once this is complete, click on the Right Arrow (4), in the bottom right-hand corner of the screen to save these settings. You will be taken to Tab 2, Limits.

Input 1 Calibration 10:17 AM ID 1

1. SENSOR DETAILS 2. LIMITS 3. MULTI POINT 4. NAME

Select Calibration Limit:
 This is the maximum calibrated limit of the sensor. This value should also contain the number of significant digits.

1 CALIBRATION LIMIT 0 kN

2 LIMITS ON

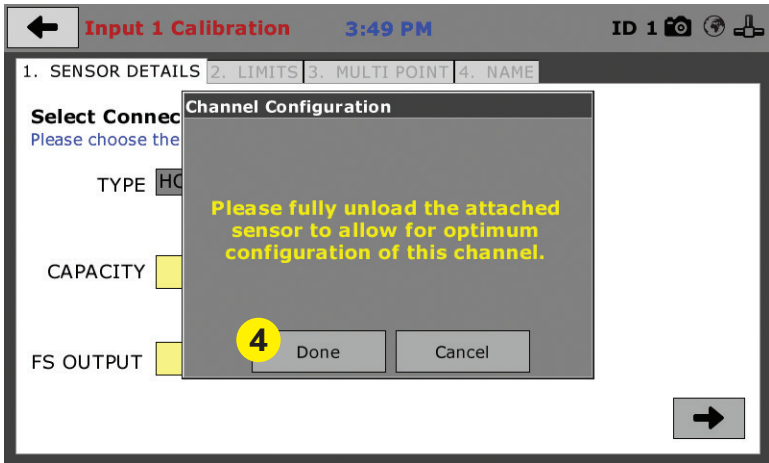
CALIBRATION METHOD
 Please select to calibrate based on full scale output or multi-point curve.

3 Per FS Output
 Multi-Point Curve

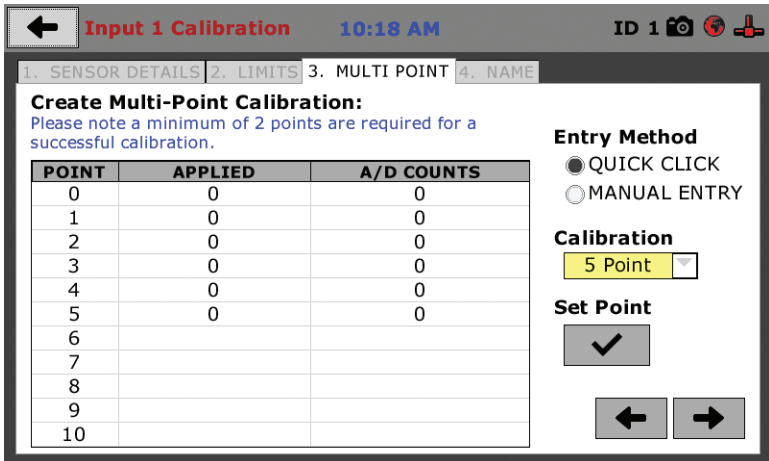
← →

On Tab 2, in the Calibration Limit field **(1)**, enter the maximum calibrated limit of the sensor. This value should contain the number of decimal points you require for degree of accuracy, up to 5 points. Limits On **(2)**, should be checked if you don't want the machine to apply a load greater than the Calibration Limit **(1)**. Calibration Method **(3)** determines whether this calibration will be based only on the maximum load capacity of the sensor or upon a multi-point curve of up to a maximum of 10 points.

If you choose Per FS Output (not a recommended calibration method) it will base your calibration on the maximum load capacity of the sensor vs. zero load capacity of the sensor. If you choose this method and click on the Right Arrow in the bottom right-hand corner of the screen. You will be prompted to remove any load on the sensor and click on Done **(4)** when you have done so.

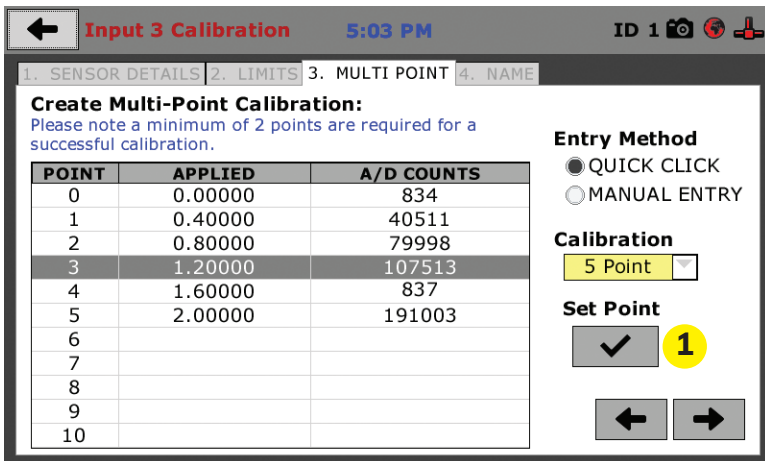


If you choose Multi-Point (Recommended calibration method) Curve and click on the Right Arrow in the bottom right-hand corner of the screen, you will be taken to Tab 3.



On Tab 3 you will be able to set the number of points you want to use for your calibration. You can choose 1-point, 5-point, 10-point or Custom, which allows you to use any number of points up to a total of 10. In the example on the previous screen shot above, a 5-point calibration has been chosen.

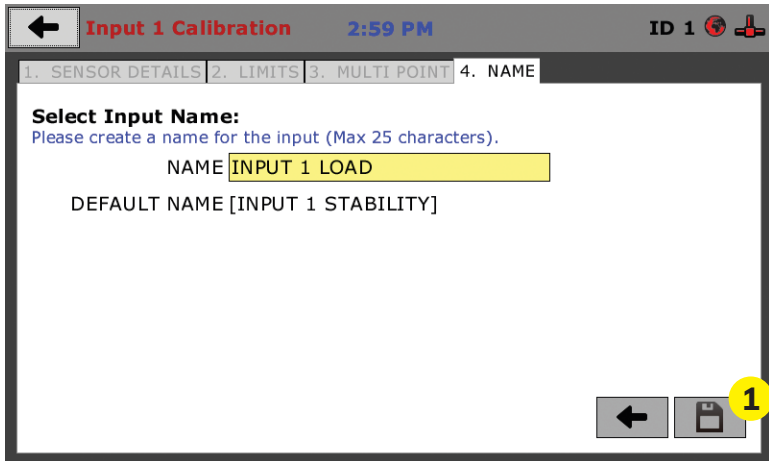
With your instrumentation sensor placed in a calibration frame and the sensor plugged into an Input on the HM-5125A. You will set the “0” point at 0 with no load applied to the sensor. The “5” point will be set with the maximum load capacity of the sensor applied. Points “1” through “4” are usually determined by spacing them out evenly between the no load reading and the maximum load reading. As an example, if you have a sensor with a 1,000 lb maximum force capability, set the “0” point at “0” and the “5” point at 1,000. Points “1” through “4” would typically be set at: “1” 200; “2” 400; “3” 600; “4” 800 and “5” 1000. Or, divide the maximum load number by the number of points, in this case 5, which works out to 200 point increments between points. See below.



Each point would be chosen by clicking on the corresponding point row above. The load would be applied to the sensor and an A/D Counts reading would appear. To set the point, click on the Set Point button (1). This would be repeated until all points have been set. In the example above, Point 3 is being calibrated and is ready to have the Set Point button (1) clicked. Point 4 still needs to be calibrated.

Once all Points have been calibrated, click on the Right Arrow in the bottom right-hand corner of the screen. You will be taken to Tab 4.

On Tab 4, you will be asked to name the calibrated Input.



The screen will provide a default name, but you can name the Input anything you'd like. Once you've named the Input, click on the disk icon in the lower, right-hand corner **(1)**. This will save it. Use this method for calibrating any additional Inputs necessary.



Test Setup

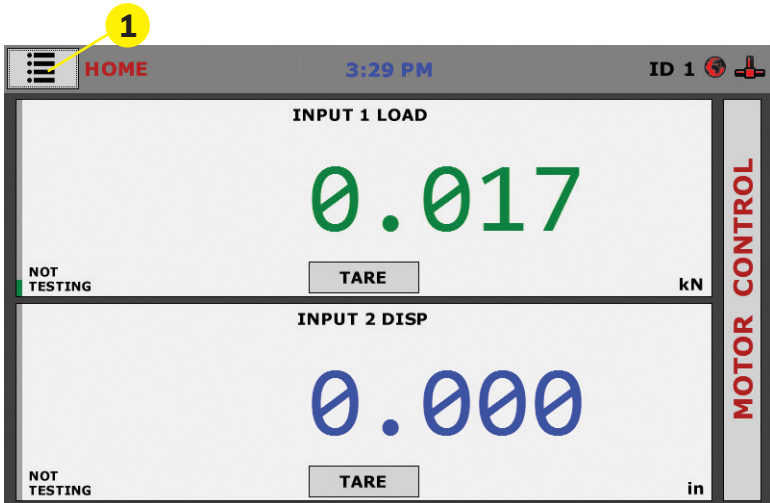
Note:

For all HM-5125 with firmware versions 3.0.12 and newer, the system requires the following setup:

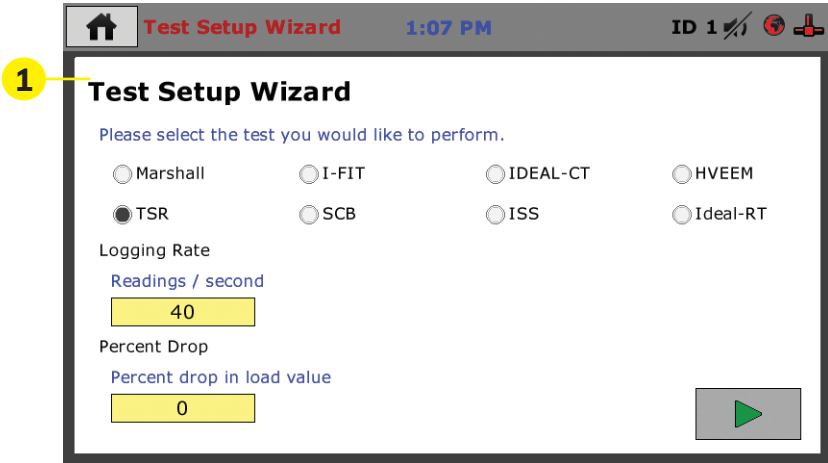
1. The displacement sensor must be in contact with the Lottman breaking head before starting the test. It is recommended that the plunger on the LVDT is compressed by at least 0.125" against the Lottman head before starting the test. This will allow the motor to appropriately apply the strain rate feedback as the test initializes. Failure to do this can result in incorrect strain rates during the test.
2. Allow for a 0.125"- 0.25" gap between the load bearing surface on the Lottman head and the load cell column. This will ensure that the system is reading a strain rate before any load is applied during the test.

Test Setup

To begin a new test, Click on the Menu icon in the top left corner of the screen **(1)**.

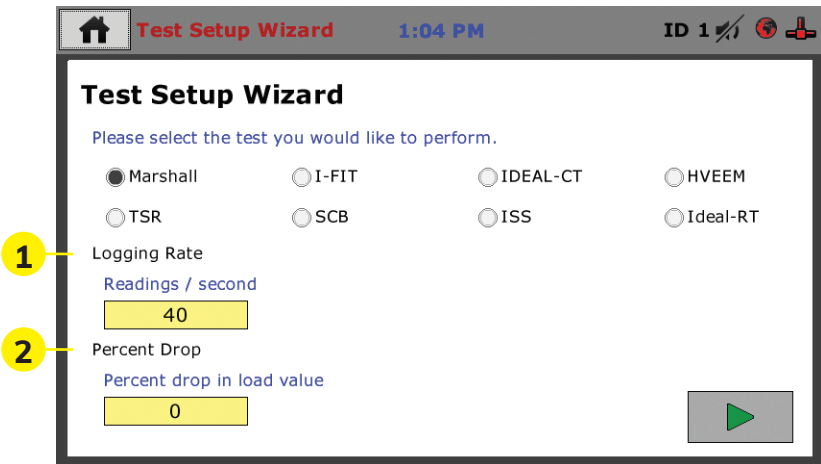


When you click on this button, you will see a drop-down menu appear, see below. Click on NEW TEST **(1)**.



Test Setup Wizard – Select Test Type

Clicking on NEW TEST **(1)** above brings up the Test Setup Wizard (see next page). On the first screen of the Wizard, you can select the type of test you want to perform — MARSHALL, TSR, I-FIT, SCB, Ideal-CT, ISS, Hveem, Ideal-RT.



1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Percent Drop: This field allows you to input the load drop required to stop the test.

1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Percent Drop: This field allows you to input the load drop required to stop the test.

1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Load Test Limit: This field allows you to input the load drop required to stop the test.

3. Specimen Diameter: This field allows you to set the specimen diameter used for testing calculations.

4. Specimen Thickness: This field allows you to set the specimen thickness used for testing calculations.

Test Setup Wizard

Please select the test you would like to perform.

Marshall I-FIT IDEAL-CT HVEEM
 TSR SCB ISS Ideal-RT

1 Logging Rate
 Readings / second

2 Percent Drop
 Percent drop in load value

Specimen Diameter
3

Specimen Thickness
4

1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Load Test Limit: This field allows you to input the load drop required to stop the test.

3. Specimen Diameter: This field allows you to set the specimen diameter used for testing calculations.

4. Specimen Thickness: This field allows you to set the specimen thickness used for testing calculations.

Test Setup Wizard

Please select the test you would like to perform.

Marshall I-FIT IDEAL-CT HVEEM
 TSR SCB ISS Ideal-RT

1 Logging Rate
Readings / second
40

2 Load Test Limit
Load to terminate test (less than) 0.1 (kN)

3 Specimen Diameter
148.50 mm

4 Specimen Thickness
40.50 mm

▶

1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Load Test Limit: This field allows you to input the load drop required to stop the test.

3. Specimen Diameter: This field allows you to set the specimen diameter used for testing calculations.

4. Specimen Thickness: This field allows you to set the specimen thickness used for testing calculations.



1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Load Test Limit: This field allows you to input the load drop required to stop the test.



1. Vertical Load: This field allows you to Input the vertical loads to be read from the stabilometer.

Test Setup Wizard

Please select the test you would like to perform.

Marshall
 I-FIT
 IDEAL-CT
 HVEEM
 TSR
 SCB
 ISS
 Ideal-RT

1 Logging Rate
 Readings / second

2 Load Test Limit
 Load to terminate test (less than)
 (kN)

Specimen Diameter

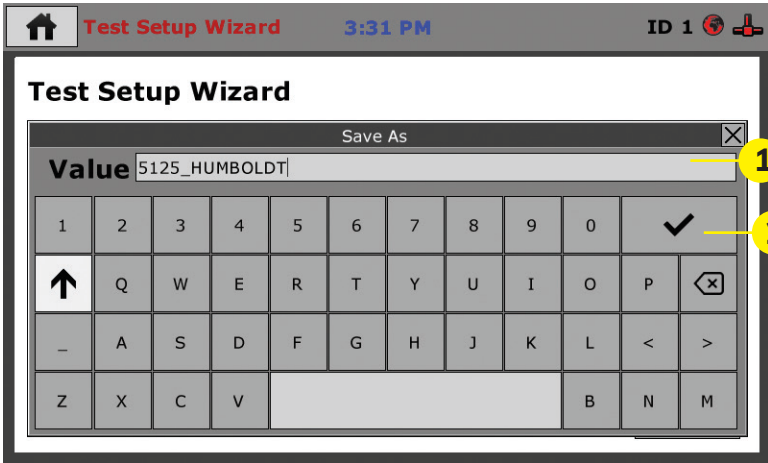
Specimen Thickness

1. Logging Rate: This field allows you to Input the rate that load will be logged into the test.

2. Load Test Limit: This field allows you to input the load drop required to stop the test.

3. Specimen Diameter: This field allows you to set the specimen diameter used for testing calculations.

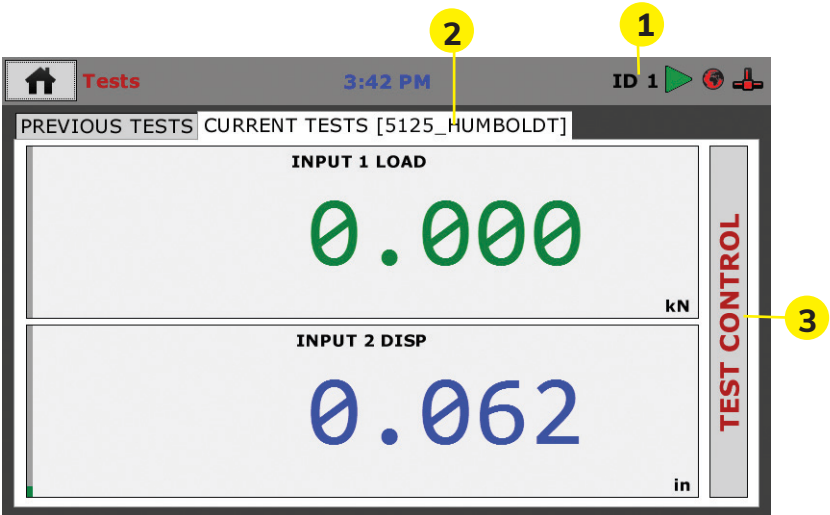
4. Specimen Thickness: This field allows you to set the specimen thickness used for testing calculations.

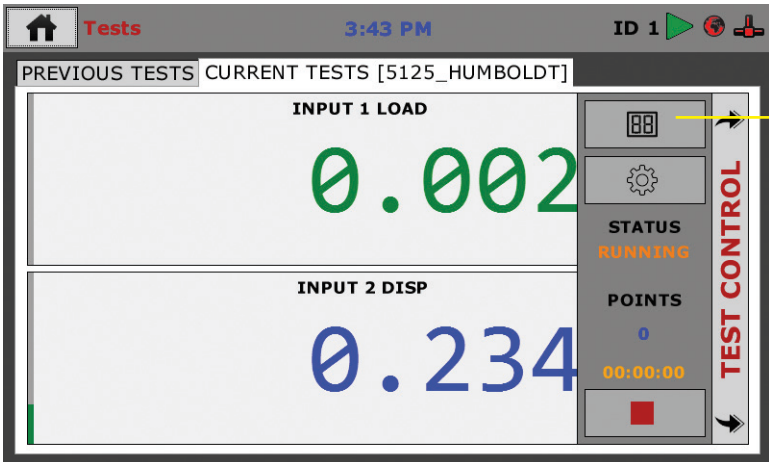


In the Value Field **(1)** give your test a name. When finished, click on the check mark key **(2)** to save. Once saved, you will see the following screen, showing the test you just saved. The test will begin to run automatically, depending upon what you set your Start Parameters to.

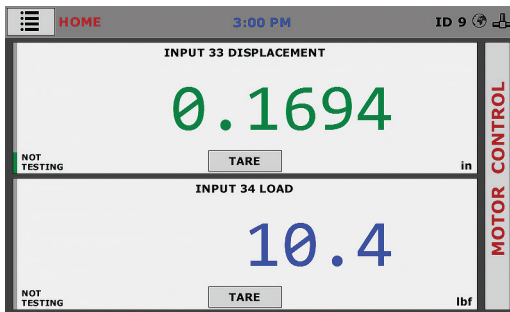
Tests — Current Tests Tab

On the screen below, the Green Arrow **(1)** in the screen header indicates that a test is currently running. The name of the test **(2)** is shown in the current tab. To access different views, control or stop the current test, click on the Test Control tab **(3)** at the right of the screen. Clicking on this tab opens the Test Control panel, see screen below.

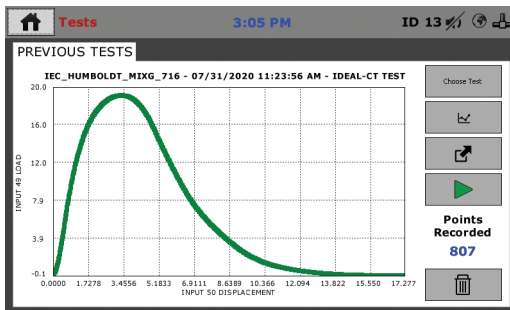




To Toggle through the different available views of your active test, click on the Switch Views button (1). The views that are available are: Live Readouts, Graph or Tabulation. Examples of these screens are below.



Live Readouts



Graph

ROW	TIME	INPUT 1	INPUT 2	INPUT 3	INPUT 4
0	00:00:00	0.0	-	-	-
1	00:00:05	26.4	-	-	-
2	00:00:10	57.6	-	-	-
3	00:00:15	85.6	-	-	-
4	00:00:20	114.4	-	-	-
5	00:00:25	140.1	-	-	-
6	00:00:30	177.6	-	-	-
7	00:00:35	212.0	-	-	-
8	00:00:40	233.0	-	-	-
9	00:00:45	255.6	-	-	-
10	00:00:50	267.5	-	-	-
11	00:00:55	297.8	-	-	-
12	00:01:00	321.3	-	-	-
13	00:01:05	336.9	-	-	-
14	00:01:10	348.7	-	-	-
15	00:01:15	375.7	-	-	-

Tabulation

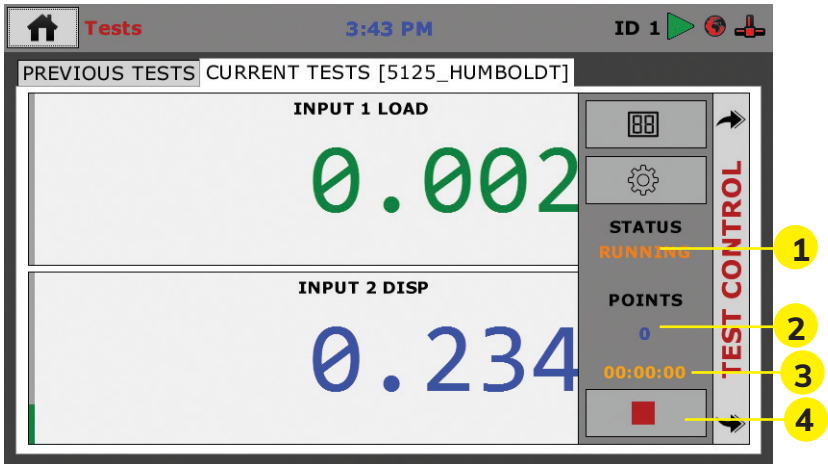
Also available on the Test Control Panel are the:

Status Monitor (1), which indicates whether a test is running or not running.

Points (2) indicates how many total test points have been recorded.

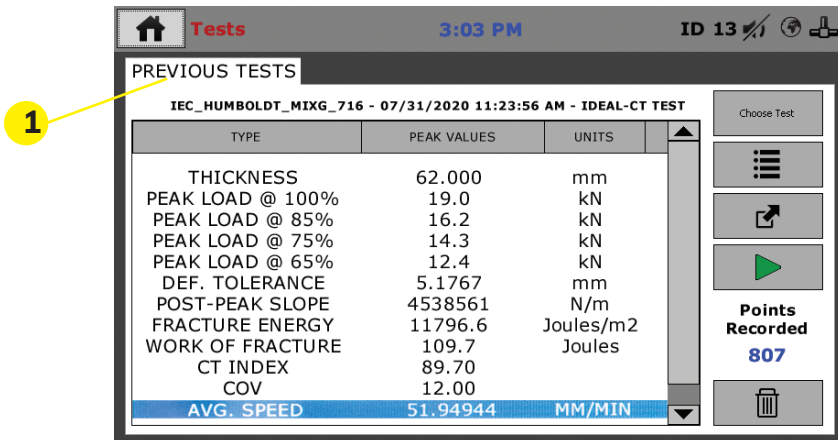
Start Time (3) indicates the starting time the current test was triggered. And, the

Stop Test button (4), which will stop the test when clicked.



Tests — Previous Tests Tab

Once a test is completed or stopped by the operator, the results of that test immediately appear on the Previous Tests Tab (1).



To Toggle through different views of your completed test, click on the Switch Views button **(2)**. The views that are available are: Peak Values, Graph or Tabulation.

PREVIOUS TESTS

IEC_HUMBOLDT_MIXG_716 - 07/31/2020 11:23:56 AM - IDEAL-CT TEST

TYPE	PEAK VALUES	UNITS
THICKNESS	62.000	mm
PEAK LOAD @ 100%	19.0	kN
PEAK LOAD @ 85%	16.2	kN
PEAK LOAD @ 75%	14.3	kN
PEAK LOAD @ 65%	12.4	kN
DEF. TOLERANCE	5.1767	mm
POST-PEAK SLOPE	4538561	N/m
FRACTURE ENERGY	11796.6	Joules/m ²
WORK OF FRACTURE	109.7	Joules
CT INDEX	89.70	
COV	12.00	
AVG. SPEED	51.94944	MM/MIN

Choose Test

Points Recorded
807

To export the test data to a connected USB flash drive, click on the Test Action button **(3)** and the following screen will appear.

PREVIOUS TESTS

LOAD
Tempera
Tempera

Choose a Previous Test Action

Choose 'Export Test(s)' to copy this test to a connected USB flash drive.

Choose 'Create Template' to generate a setup template from this test.

Export Test(s) Create Template Cancel

Points Recorded
31

To export the test data to a USB Flash Drive, insert a Flash Drive into the USB slot on the machine's front panel. Click on the Export Tests button **(1)**. The machine will transfer your file to the USB Flash Drive and you can take the drive with you.

To begin a new Test, click on the Green Arrow key **(2)** and you will be taken to the Test Setup Wizard to create a new Test or to choose a Test Template.

Also on the Previous Tests Tab, on each previous test page you will see how many points were recorded during the test **(3)**.

You can also delete Previous Tests by clicking on the Trash button **(4)**.

The screenshot shows the 'PREVIOUS TESTS' interface. At the top, it displays 'IEC_HUMBOLDT_MIXG_716 - 07/31/2020 11:23:56 AM - IDEAL-CT TEST'. Below this is a table with columns for TYPE, PEAK VALUES, and UNITS. The table lists various test parameters and their values. On the right side, there are several control buttons: 'Choose Test' (labeled 4), a list icon, a share icon, a green play button (labeled 2), 'Points Recorded' (labeled 2) showing '807', and a trash icon (labeled 3).

TYPE	PEAK VALUES	UNITS
THICKNESS	62.000	mm
PEAK LOAD @ 100%	19.0	kN
PEAK LOAD @ 85%	16.2	kN
PEAK LOAD @ 75%	14.3	kN
PEAK LOAD @ 65%	12.4	kN
DEF. TOLERANCE	5.1767	mm
POST-PEAK SLOPE	4538561	N/m
FRACTURE ENERGY	11796.6	Joules/m2
WORK OF FRACTURE	109.7	Joules
CT INDEX	89.70	
COV	12.00	
AVG. SPEED	51.94944	MM/MIN

On the Previous Tests tab you can also select any of your previous tests by clicking on the Choose Test button, above **(4)**.

When this button is clicked, a pop-up screen will show a number of your previous tests, based on the number you specified in the preferences panel for this feature, see below. By clicking on a test in the list and clicking on the Select Button **(1)** you can see the current status of that test.

The screenshot shows a 'Previous Test Select' pop-up window. It has a title bar 'Previous Test Select' and a subtitle 'Choose Test:'. Below the subtitle is a list of test names: EX_TEST3, EX_TEST2, EX_TEST1, and 44EEDWW. At the bottom of the pop-up, there are two buttons: 'Select' (labeled 1) and 'Cancel'. The background shows the 'PREVIOUS TESTS' interface with the 'Points Recorded' value '15'.

Operation from a Computer and NEXT Software

This manual covers the setup and operation of the HM-5125A.3F Load Frame in Stand-alone Mode only. For information on operating your load frame with Humboldt's NEXT Software and a computer, please refer to the Humboldt NEXT software manual.

HM-5125A.3F Specifications

Designed for applications requiring multi-purpose loading systems, such as road construction projects in either mobile or fixed labs, educational institutions and consulting firms, the HM-5125A Master Loader is ideal for just about any application from road construction to high-volume commercial and educational laboratories.

While the HM-5125A has been specifically designed for soil testing labs conducting multiple testing operations including: UU, CU and CD triaxial, UC, CBR and LBR, it is also perfect for running Marshall, Hveem, TSR and SCB asphalt tests as well. Its heavy-duty design and precise stepper-motor control provide a stable platform for years of reliable service allowing the HM-5125A to perform any tests required up to its load capacity of 11000 lbf (50kN).

Like all Elite Series load frames, the HM-5125A is built around Humboldt's integral, 4-channel data logger with touch-screen control, which allows the load frame to be used as a standalone device capable of full test control and data logging. It can also be controlled by a networked computer at any location with access to the network.

HM-5125.3F Specifications	
Load capacity	11000 lbf (50kN)
Speed Range Testing:	As Defined by Test 2.25 in/min (57.1 mm/min)
Data channels	2
Platen Size / Travel	10" (254mm) / 4" (100mm)
Data storage	1000 tests and up to 3000 readings per test
Clearance, vertical	40" (1000mm)
Clearance, horiz.	15" (380mm)
Voltage	110/220V 50/60Hz. 5.0 amps

General Warnings

Use appropriate PPE while operating device. Keep body parts clear of moving surfaces when operating machine. Ensure all motion has stopped prior to adding or removing testing samples or support equipment.

Safety Warnings

Operators should take care to operate this machine under maximum load restrictions. The machine is programmed at the factory to provide safety shutdown if the upper or lower maximum travel is exceeded, as well as if the upper instrument calibration is exceeded.

Electrical Warnings

Typically, there is no reason for the operator to open the machine. However, if the customer's engineers attempt to change settings to the circuit board connected to the back panel, the machine must first be unplugged. Unplugging the internal connection to the back panel circuit board while the machine is under power will result in permanent damage to the circuit board.

Important Notice

The information contained herein is supplied without representation or warranty of any kind. Humboldt Mfg. Co. therefore assumes no responsibility and shall have no liability, consequential or otherwise, of any kind arising from the use of the described equipment contained in this manual.

Updated Products

The manufacturer reserves the right to change or modify product design or construction without prior notice and without incurring any obligation to make such changes and modifications on products previously or subsequently sold.

Fitness for Application

The manufacturer makes no recommendations or claims regarding fitness for applications other than the specific tests as defined in this User Guide.

Unpacking

Initial inspection should include checking for physical damage during shipping and obvious external damage to the product.

Package contents are defined by your packing list. Each Loader is configured according to customer specifications. In your inspection, make certain that the contents of your shipment match the documentation provided by your packing list.

Place unit on a flat, smooth surface and use leveling feet (supplied) and a bubble level to ensure that the unit is level side-to-side and back-to-front.

Warranty

Humboldt Mfg. Co. warrants its products to be free from defects in material or workmanship. The exclusive remedy for this warranty is Humboldt Mfg. Co., factory replacement of any part or parts of such product, for the warranty of this product please refer to Humboldt Mfg. Co. catalog on Terms and Conditions of Sale. The purchaser is responsible for the transportation charges. Humboldt Mfg. Co. shall not be responsible under this warranty if the goods have been improperly maintained, installed, operated or the goods have been altered or modified so as to adversely affect the operation, use performance or durability or so as to change their intended use. The Humboldt Mfg. Co. liability under the warranty contained in this clause is limited to the repair or replacement of defective goods and making good, defective workmanship.

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