

## HİRA TESTING EQUIPMENT

### CBR & MARSHALL & UNIAXIAL TESTING MACHINE WITH H-TOUCH PRO MAX CBR & MARSHALL & UNIAXIAL CONTROL UNIT (TOUCH SCREEN)

CBR & Marshall & Uniaxial Testing Machine is used to make CBR, Marshall and Uniaxial Unconfined Compressive Tests.

The device is composed of a robust and compact two column frame with adjustable upper cross beam driven by an electromechanical ram.

Two models are available as 50 kN and 100 kN capacity.

The testing speed can be set between 0,001 mm/min to 51mm/min.

The speed setting of the loading plate is controlled from the digital readout unit. For safety, the up and down travel of the lower platen is limited the use of limit switches.

The measuring system consists of a 50 kN or 100 kN capacity load cell according to capacity of frame fitted to the upper cross beam to read stability values and the 25 mm Displacement Sensor fitted to the column.

Supplied complete with HİRATEST H-Touch Pro Max CBR & Marshall & Uniaxial Control Unit, 50 kN or 100 kN capacity Load Cell according to capacity of frame, 25 x 0.01 mm Linear potentiometric displacement transducer with holder, HİRATEST H-GUI CBR & Marshall & Uniaxial Software and LAN Connection Cable.

The other Test Accessories should be ordered separately according to the test. Compression Platens with ball seating assembly for Uniaxial Tests, Penetration Piston for CBR Tests and Breaking Head for Marshall Tests should be ordered separately.



#### H-TOUCH PRO MAX CBR & MARSHALL & UNIAXIAL CONTROL UNIT

HİRATEST H-Touch Pro Max CBR & Marshall & Uniaxial Control Unit is designed to control of data from displacement transducers which are fitted to the machine.

All the operations of H-Touch Pro Max CBR & Marshall & Uniaxial Control Unit are controlled from the front panel color resistive of TFT-LCD Touchscreen display and function keys.

The Unit can perform CBR & Marshall & Uniaxial tests as a stand-alone without the use of a PC or with the HİRATEST H-GUI CBR & Marshall & Uniaxial Software and a PC. Control of machine, acquisition of load and displacement data in real time are provided by the unit.

The unit has easy to use menu options.

It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless manner to activate the option or enter a numeric value to set the test parameters and see all the data while the test running.

#### Main Features of H-Touch Pro Max CBR & Marshall & Uniaxial Control Unit

- Calculates corrected CBR value at 2.5 and 5 mm in CBR Tests.
- The digital unit saves the load value at user defined displacement values such as 0.625, 1.25, 1.875, 2.5, 3.75, 5, 7.5, 10, 13 mm in CBR Tests.
- The % CBR at 2.5 mm and % CBR at 5 mm is also automatically calculated and saved in CBR Tests.
- Flow and stability values are automatically calculated and saved in Marshall Tests,
- The unconfined compressive strength (qu) value and the undrained shear strength (cu) value of cohesive soils are obtained.
- Ability to perform displacement-controlled tests
- Real time display of test graph
- 2 analog channels for load cell and displacement sensors
- Multi-language support (English, French, Spanish, Turkish)
- Real-time date/time
- Test results display and memory management interface
- Calibration function for channels
- Programmable digital gain adjustment for load-cell and potentiometric sensors, voltage and current transmitters
- Closed loop PID for steady pace rate
- Connection and control feature via Ethernet
- Free computer software for test control and enhanced report output



HR-E9000/TS

## Hardware

- Permanent storage capacity up to 10 0000 test results
- 1/256000 dot resolution for each channel
- 10 data acquisition per second (at sample rate) on each channel
- 2 fully customizable analog channels with 24-bit ADC and PGA-FPGA circuit
- Ethernet port for computer connection
- 800x480 pixel and 65535 color resolution TFT-LCD touchscreen
- 33 Hz control loop
- 32 Bit, 120 MHz ARM CORTEX M3 micro-PROcessor (CPU) for data acquisition
- 32 Bit, 400 MHz ARM CORTEX M3 micro-PROcessor (CPU) for data display
- Choice of three unit systems: kN, ton or lb
- Additional memory support up to 32 GB via external USB flash drive
- Support for -optionally supplied- integrated thermal printer
- LAN connection for instantaneous transfer of test data to PC.
- USB port support for transfer of test data to a flash drive

## Software

HİRATEST H-GUI CBR & Marshall & Uniaxial Software has been designed for CBR & Marshall & Uniaxial Tests.

The software includes control of machine, acquisition of load and displacement data, generating and saving reports.

### • For CBR Tests;

The software prepares a summary result for the user that will only need some specific loads such as at 0.625, 1.25, 1.875, 2.5, 3.125, 3.75, 4.375, 5, 7.5, 10 and 13 mm.

The software continuously updates load, stress and displacement till the end of test. Software can automatically draw the best tangent line and perform the upward concave correction as suggested by ASTM D 1883. The corrected stress values are then calculated respect to this offset.

The CBR value at 2.5mm and 5.0mm are calculated by using the standard load values at those penetrations.

### • For Marshall Tests;

Test type is selected in the software and then the sample height is entered as the test parameter. It automatically calculates correction factor coming from the standards with respect to specimen thickness. The stability value is calculated regarding this factor.

The software continuously updates load and displacement until the end of test. When the test is completed, the sharpest slope of the graph is calculated. The sharpest slope is shifted 1.5 mm to the right side of the graph and the intersection between 2nd slope and original test data is recorded as the stability value for the test. The horizontal distance between the intersection of first slope and X axis and intersection of test data with 2nd slope is recorded as "flow" value.

The report includes all results for 4 samples. The user can see 4 of the results on the same screen for easy comparison.

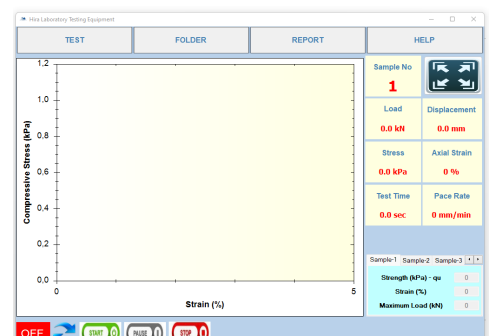
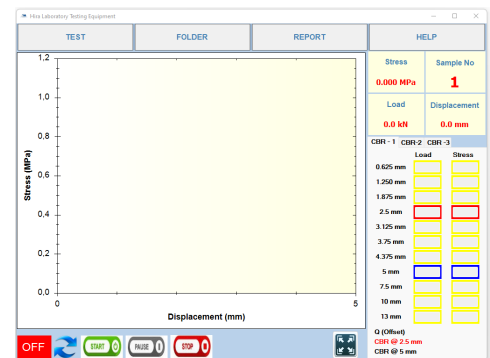
### • For Uniaxial Unconfined Compressive Tests;

The software continuously updates load, stress, strain and displacement till the end of test.

The unconfined compressive strength ( $q_u$ ) value and the undrained shear strength ( $c_u$ ) value of cohesive soils are obtained.

## Main Features of H-GUI CBR & Marshall & Uniaxial Software

- Multi-language support and user interface
- Refreshing Experiment Graphic Displays on the Screen in Real Time
- Able to save frequently used texts in memory and recall them when necessary
- Modification of test machine parameters using the software



# HİRA TESTING EQUIPMENT



## Technical Specifications:

Product Code	HR-AS0500/TS	HR-AS0501/TS
Product Name	CBR & Marshall & Uniaxial Testing Machine	
Test Speed	0,001 - 51 mm/min	
Capacity (kN)	50	100
Dimensions (cm)	47x70x110	52X72X110
Weight (kg)	100	110
Power Supply	220 V, 50-60 Hz, 1 ph	

## Spare Parts & Accessories:

Product Code	Product Name
HR-AS0500/1	CBR & Marshall & Uniaxial Frame, 50 kN
HR-AS0501/1	CBR & Marshall & Uniaxial Frame, 100 kN
HR-G0981	Load Cell, 50 kN capacity
HR-G0982	Load Cell, 100 kN capacity
HR-G0995	Displacement Sensor, 25 x 0,01 mm
HR-E9000/TS	H-Touch Pro Max CBR & Marshall & Uniaxial Control Unit
HR-E9000/1	H-GUI CBR & Marshall & Uniaxial Software

## UNIAXIAL TEST SYSTEMS

STANDARDS: ASTM D2166, AASHTO T208

Compression Platens, used to perform uniaxial and unconfined compression tests.

Supplied complete with ball seating assembly.

## Spare Parts & Accessories:

Product Code	Product Name
HR-S1010	Compression Platens with ball seating assembly



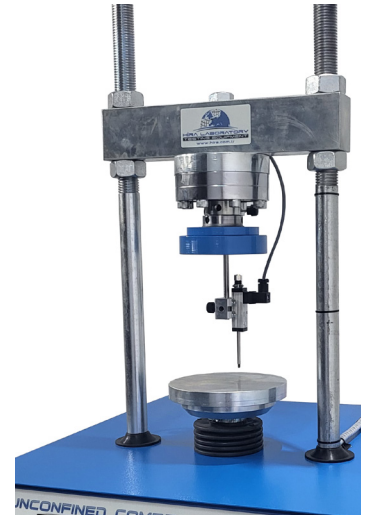
**California Bearing Ratio Test Report**

Company Name: \_\_\_\_\_  
 Project Name: \_\_\_\_\_  
 Location: \_\_\_\_\_

Depth: \_\_\_\_\_  
 Material Description: \_\_\_\_\_  
 Test ID: \_\_\_\_\_  
 Test Date: \_\_\_\_\_

	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	7.5	10	CBR
Sample 1	Stress										
	Load										
Sample 2	Stress										
	Load										
Sample 3	Stress										
	Load										

Tested By: \_\_\_\_\_ Approved By: \_\_\_\_\_



**HR-AS0500/1 & HR-G0981  
HR-G0995 & HR-S1010**

## CBR TEST SYSTEMS

STANDARDS: EN 13286-47, BS 1377:4, ASTM D1883, AASHTO T193, NF P94-078, UNI CNR 10009

Should be used with CBR Penetration Piston to perform CBR Tests.

**California Bearing Ratio Test Report**

Company Name: \_\_\_\_\_  
 Project Name: \_\_\_\_\_  
 Location: \_\_\_\_\_

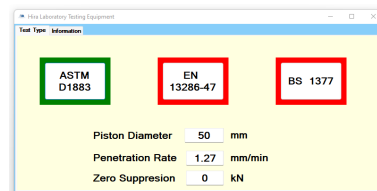
Depth: \_\_\_\_\_  
 Material Description: \_\_\_\_\_  
 Test ID: \_\_\_\_\_  
 Test Date: \_\_\_\_\_

	0.625	1.25	1.875	2.5	3.125	3.75	4.375	5	7.5	10	CBR
Sample 1	Stress										
	Load										
Sample 2	Stress										
	Load										
Sample 3	Stress										
	Load										

Tested By: \_\_\_\_\_ Approved By: \_\_\_\_\_

## Spare Parts & Accessories:

Product Code	Product Name
HR-S5000/1	CBR Penetration piston, used to perform CBR Tests

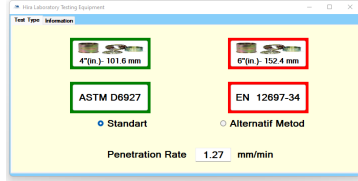


**HR-AS0500/1 & HR-G0981  
HR-G0995 & HR-S5000/1  
HR-S5100**

## MARSHALL TEST SYSTEMS

STANDARDS: EN 12697-34, 12697-23, 12697-12, 13108, ASTM D1559, AASHTO T245

Should be used with Breaking Head Stability Mould for 4" (101,6 mm) or 6" (152,4 mm) Marshall Samples and Adaptor for Breaking Head to perform Marshall Tests.



Marshall Stability and Flow of Asphalt Mixtures						
Company						
Project						
Address						
Bitumen Content						
Material Description						
Mark Size - Test Temperature						
Test Date						
Average Bulk Density						
Sample	Thickness (mm)	Correction Factor	Maximum L. (kN)	Stability (kN)	Flow (mm)	Marshall Q (kN/mm)
Sample 1						
Sample 2						
Sample 3						
Sample 4						
Average						
Tested By			Approved By			



**HR-AS0500/1 & HR-G0981  
HR-G0995 & HR-AS5000/1**

### Spare Parts & Accessories:

Product Code	Product Name
HR-AS5000/1	Breaking Head Stability Mould for 4" (101,6 mm) Marshall Samples
HR-AS5000/2	Breaking Head Stability Mould for 6" (152,4 mm) Marshall Samples