High Voltage, Inc.

Copake, NY

A World Leader in High Voltage Test Equipment

Superior Products for Testing

Substation Apparatus and Cable

DTS-60A OIL TESTER

60kV LIQUID DIELECTRIC TESTER
FULLY AUTOMATIC OPERATION

A 100 kV Model is also Available

MAIN FEATURES

User Interface

- Dot Matrix Liquid Crystal Display (128x64)
- Compact 5-key keyboard for operation
- User friendly, menu driven functionalities
- Large Output Voltage Digits (3.1 digits)

Functionalities

- Test-Result report
- Real-Time clock
- Ambient Temperature measurement
- International Standard Tests
- User defined Tests
- Test-Results storage
- Language selection

Measurements and Control

- High accuracy of High Voltage measurement (0.5%)
- Digitally selected Voltage rate of rise (0.1kV/s step)
- Arc detection with less than 5 milliseconds shutdown
- Digital Closed-Loop for voltage control

Equipment Case

- Rugged aluminum case
- Window for observation of oil test

FEATURES & SPECIFICATIONS

HIGH VOLTAGE™ INC.
VLF HIPOT INSTRUMENTS

Features

- Clear and easy to use controls
- 128 x 64 dot matrix crystal display
- Test voltage 0 – 60 kVac
- Variable voltage rate of rise in .1kV/s steps
- 10 preprogrammed standard test sequences
- Internal memory holds last 50 tests
- User definable test sequences
- Local or remote control
- RS232 interface
- Ambient temperature sensor
- English, German, Spanish, French, Greek
- Thermal printer included

Specifications

- Input: 120V, 50/60 Hz 7 amps
  230V, 50/60Hz, 3 amps
- Output: 0 – 60 kVac, 800 VA resistive
- Voltage Rise: 0 – 5kV/s in .1kV/s steps
- Shutdown time: 4.2 ms
- Voltage Accuracy: 0.5%
- Size: 15”w x 14”d x 11.5”h, 65 lbs
  381mm x 356mm x 292mm, 29 kg
- Operating temp: 14˚F to 104˚F,
  -10˚C to -40˚C

PREPROGRAMMED TEST SEQUENCES

The DTS-60A contains many specified tests sequences already programmed. Many others can be added

IEC 156/95	- International
IEC 156/63	- International
ASTM D1816/84	- USA
ASTM D877/87	- USA
UTE C27-221/74	- France
CEI 10-1/73	- Italy
VDE 370 – P5/92	- Germany
IRAM 2341/72	- Argentina
RVHP 1985	- Russia
PN-77/ED4408	- Poland

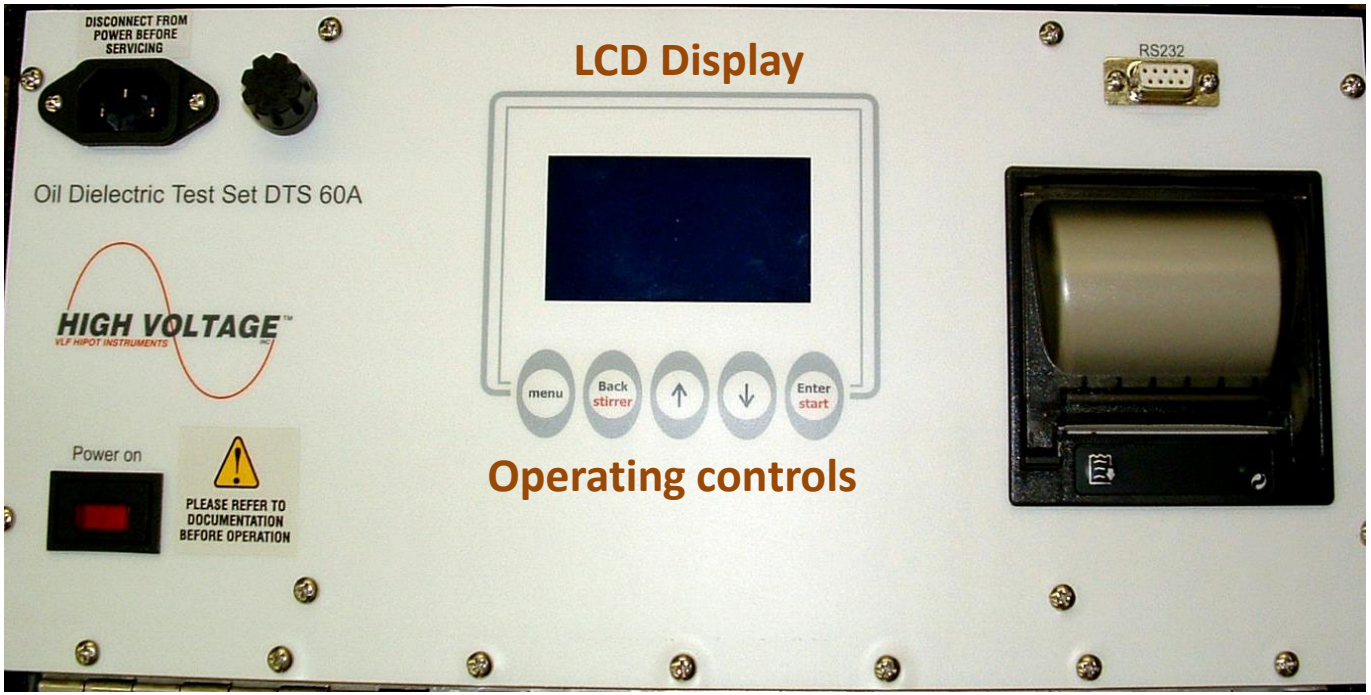
Sample Test Cells

Must specify test cell when ordering.
Test cells sold separately.

CONTROL PANEL

RS 232 interface to download stored tests

Input w/fuse



Printer

Main power

Operating controls

EASY AND QUICK OPERATION

Just A Few Steps To Begin Testing

Pour liquid sample into test cell, or cup

Insert the cup to rest between the two electrodes supplying +/- 30kV.

Close The lid

Turn on **MAIN POWER**

From the **MAIN MENU** screen, press the **PROGRAMS** option.

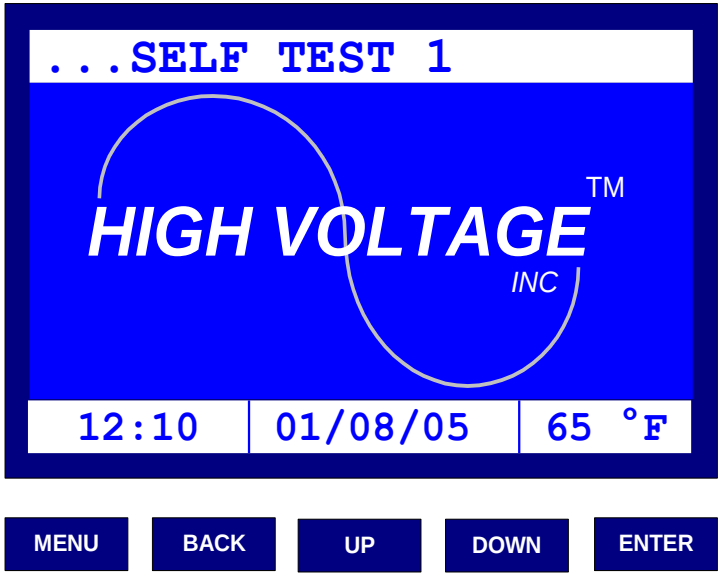
From there go to **TEST SUBMENU** and highlight **SELECT**

Highlight the desired preprogrammed test to run and press **ENTER**

This test is now programmed to run and will be the default test until changed.

Test runs and concludes. Prompts ask about storage and printout of results.

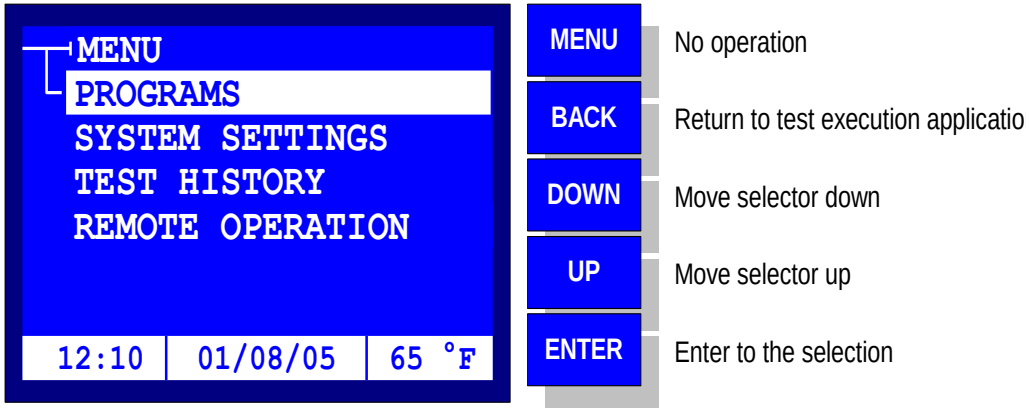
USER INTERFACE SCREEN



The equipment User Interface is based on a dot-matrix Liquid Crystal display (LCD) and a compact 5-key keyboard. The user-friendly graphical interface makes the equipment's operation simple and attractive.

The following slides show examples of the ease in understanding and using the commands. There is much more capability to the instrument than shown.

MAIN MENU SCREEN



The Main Menu is displayed by pressing the **'MENU'** key. The possible selections follow:

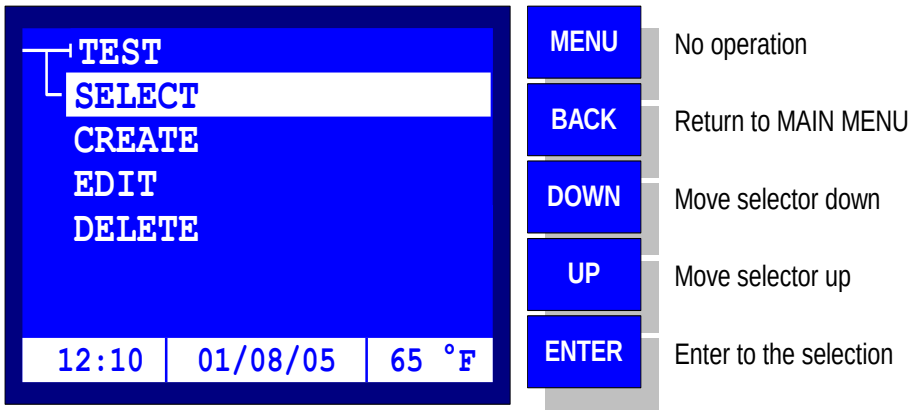
Programs
Go to the **Test Submenu**. The latter includes all the test functionalities, such as select a test for execution, edit a test, etc.

Settings
Go to the **System Settings Submenu**. The latter includes the basic system settings, which are the Time/Date setup, Printout setup, LCD Contrast setup and the Language setup.

Test History
Run the **Results History** Application this can be used for browsing the results of previously executed test programs.

Remote Operation
Run the **Remote Operation** Application. This can be used as an alternative operation mode, via a common terminal software running on a Personal Computer.

TEST SUBMENU



The Test Submenu is displayed upon the TEST Selection from the Main Menu, The possible selections are the following:

Select
Application used for the selection of a test for execution. The system displays a list of the available tests, where the user can simply select one and further execute it.

Create
Application used for the creation of a new test. The system uses a simplified interactive method for entering the details of a test scenario.

Edit
Application used for updating an existing test

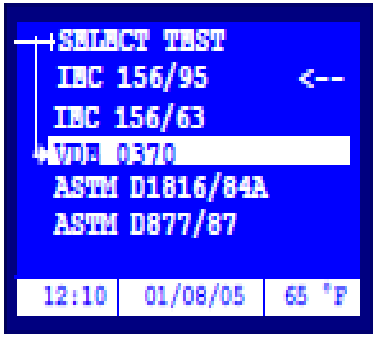
Delete
Application used for deleting an existing user defined test. The system displays a list of the available user defined test programs, where the user can simply select one and delete it.

SELECT TEST SPECIFICATION

Select one of the ten preprogrammed test specs or create your own by selecting the CREATE prompt.

ENTER

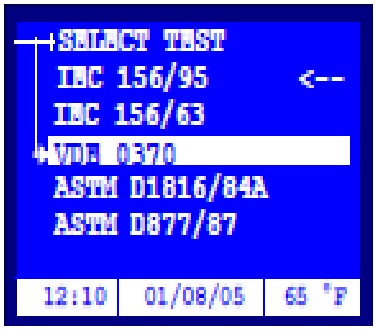
From the TEST menu point to SELECT.
Then press the ENTER key.



UP

DOWN

The system displays all the available tests. The default test is indicated with an arrow at the left side.
Use the UP and DOWN keys to select a test for execution.

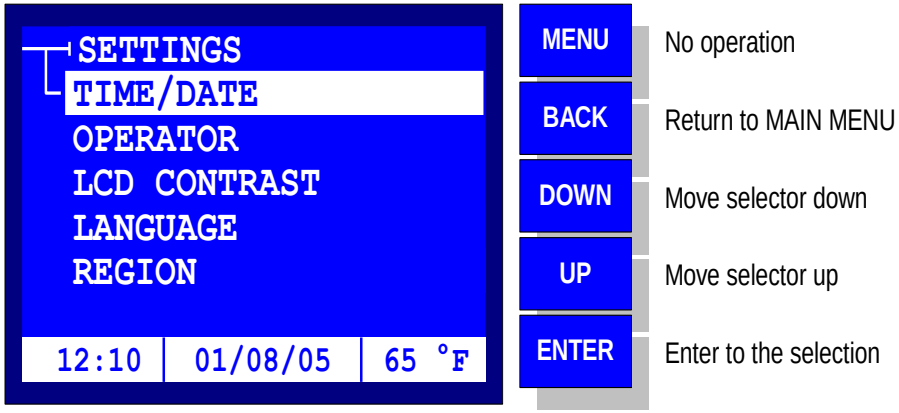


ENTER

Press the ENTER key to execute the selected test.
From now on this test will be the default test.

SETTINGS SUBMENU

To customize the **SETTINGS** of the instrument for your time and place, select the **SETTINGS** submenu and follow prompts.



The Settings Submenu is displayed upon the Settings Selection from the Main Menu. The possible selections are the following:

Time/Date
Application for System's Time and Date Setup

Operator
Application for setup the equipment's Operator Information

Contrast
Application for setting the Display Contrast

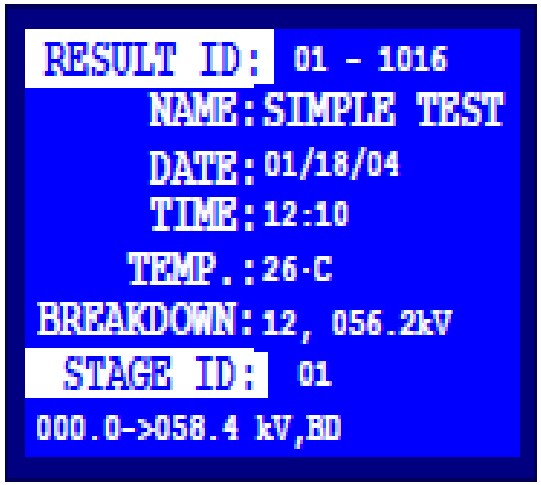
Language
Application for selecting a Language

Region
Application for selecting the region (European/American)

HISTORY RESULTS

Select **TEST HISTORY** from **MAIN MENU**

After test, results can be stored and others retrieved.

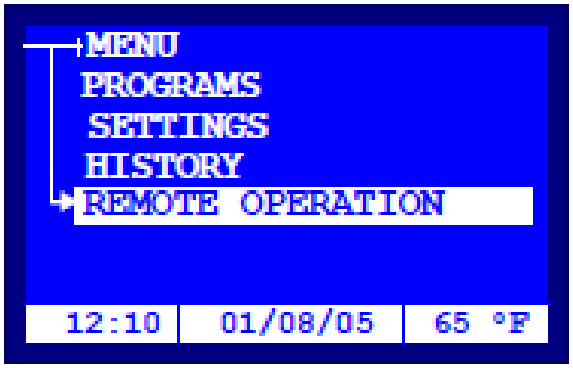


MENU	Print Current Result
BACK	Return to the Main Menu
DOWN	Decrease ID for Result or Stage
UP	Increase ID for Result or Stage
ENTER	Toggle Betwen Result ID and Stage ID

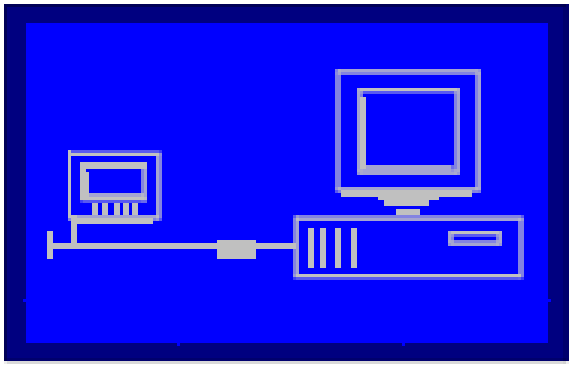
1.	Result	Id of the test - Global ID	5.	Temperature	Environmental Temperature
2.	Name	Name of the test	6.	Breakdown	Number of Breakdowns and Mean Value
3.	Date	Date of the test	7.	Stage	Stage indicator
4.	Time	Time of the test	8.	Stage Info	Information about the selected stage

REMOTE OPERATION

If the tester is to be operated from a PC, select **REMOTE OPERATION** from the **MAIN MENU** and follow the commands



MENU	No operation
BACK	Return to test execution application
DOWN	Move selector down
UP	Move selector up
ENTER	Enter to the selection



MENU	No operation
BACK	Return to MENU
DOWN	No operation
UP	No Operation
ENTER	No operation

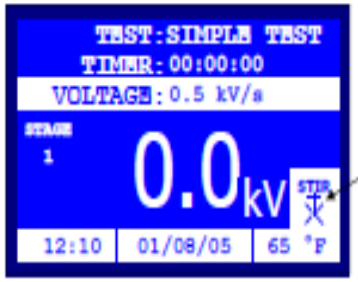
The Terminal Software Settings must be as follows:

- Baud Rate : 115200
- Data : 8 bit
- Parity : none
- Stop : 1 bit
- Flow control : none
- Transmit Delay : 20ms/char and 100 ms/line
- Terminal size : 100x50
- Terminal mode : vt100

SAMPLE TEST

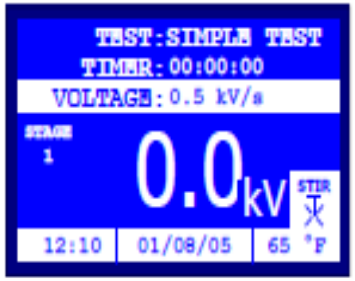
Screens are very easy to read and understand. Custom programming and other operations not illustrated here, and data reporting and storage capabilities, are all possible. Consult the Operator Manual for more detail.

STEP 5



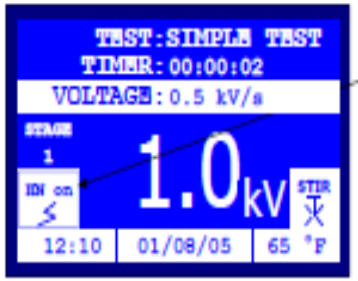
BACK By pressing the BACK key the STIRRER is enabled or disabled. While enabled the system displays the STIRRER ICON.

STEP 6



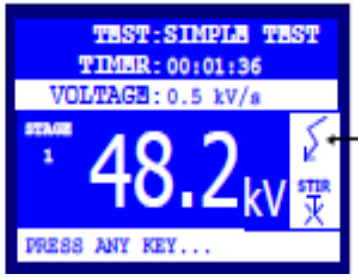
ENTER Press the ENTER key to start the test.

STEP 7



The High Voltage On indicator is depickted. The system increases the output voltage. The voltage measurement is updated continuously. The test duration is also updated every 1 sec.

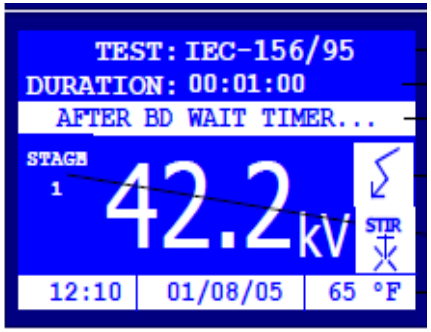
STEP 8



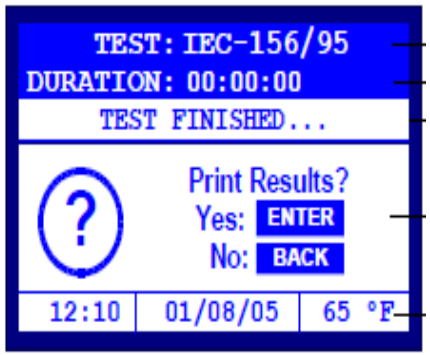
The High Voltage On indicator is vanished.
Breakdown occured!
The system stop updating the voltage and the duration and
displays the BREAKDOWN ICON.

FINAL TEST SCREENS

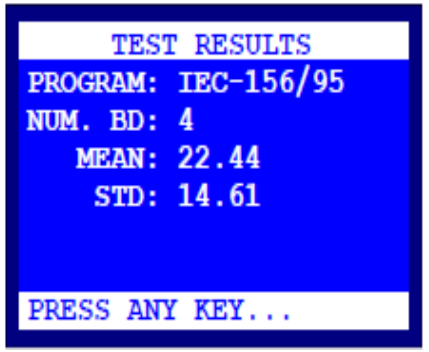
Shows test spec, duration, breakdown voltage. Time, date, temperature



Tells test is finished and Print Results Yes/No



Test results displayed



Sample Print Out From Panel Printer

Five test are performed (ANSI standards). If the standard deviation is acceptable, that is if all the results are within a maximum allowed range of each other, then the test is over. If the SD is out of range, indicating the results are too far apart for the five tests, the tester will perform five more tests and use the results of all 10 in the final analysis.

High Voltage, Inc.
DTS-60A Test Report

Operator
Company : High Voltage, Inc.
Name : John Smith
Contact : +30-210-9319505
Info : smith@hvinc.com

Report ID : 1018

Time : 14:41:14
Date : 24/01/2005
Temperature : 19 ·C
Test Name : SIMPLE TEST
Electrodes : Unknown
Num. Breakdown : 5
Mean Breakdown : 50.61
Std Breakdown : 6.24
Stage 1: 0.5kV/s, 0.0> 48.1kV, Breakdown
Stage 2: 0.5kV/s, 0.0> 40.7kV, Breakdown
Stage 3: 0.5kV/s, 0.0> 54.9kV, Breakdown
Stage 4: 0.5kV/s, 0.0> 54.3kV, Breakdown
Stage 5: 0.5kV/s, 0.0> 55.1kV, Breakdown

CONCLUSION

The DTS-60A is produced with the same high quality shared by all HVI products. It is a well designed, rugged, reliable instrument that will provide years of trouble free service. It contains all the necessary programming and automatic operation that is required and expected of an automatic oil tester.

In addition to this model, HVI also has two other models of oil testers: the DTS-60D (60kV) and the DTS-100D (100kV), both of which provide manual operation.

HVI also provides many of the top substation and cable testing products: **AC & DC Hipots, VLF Cable Testers, Tan Delta & Partial Discharge Instruments, Cable Fault Locators, Aerial Lift Testers, and HV Dividers.**