

# SEFELEC 56-H

The EATON Dielectric Strength Tester



## SEFELEC 56-H features and benefits:

**Dielectric withstand** at 5kVAC 50VA and 6kVDC

**Detection modes** with Min/Max current thresholds or flashover detection ( $\Delta I$ )

**Burning function** without current detection

### Programmables test ramps

Rise, dwell, fall

Multi-ramp mode, up to 7 steps

**7" TFT Multi touchscreen** 16 million colors for programming, tests and results display

**ARM-Dual core control & Nand 3D** technologies inside for more accuracy, stability and repeatability

**DSPs** speeds up measurements and production tests

**Large internal memory** for configurations and test results storage

**IEC 61010-2-034 full compliance**, specific safety standard for insulation and dielectric strength meters

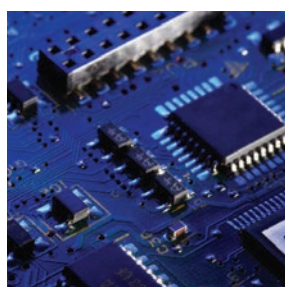
The **SEFELEC 56-H** is a new generation EATON dielectric strength tester (hipot tester) based and controlled by ARM-Dual Core and DSP technologies providing the best stability and repeatability.

The high accuracy and measurement speed are suitable for quality control or incoming inspection departments.

The sequence mode makes the **SEFELEC 56-H** easier to use and integrate in a control or a test-bench.

The new SEFELEC Series HMI, with its 7" dual-touch TFT screen, offers simple and intuitive operations.

- Native Ethernet / RS232 / USB / PLC / CAN IEEE488-2 interface in option
- CAN Bus to drive extension modules (Scanners)
- SIL2 double safety loop
- Automatic measurement range selection
- Sequence mode to combine several successive tests

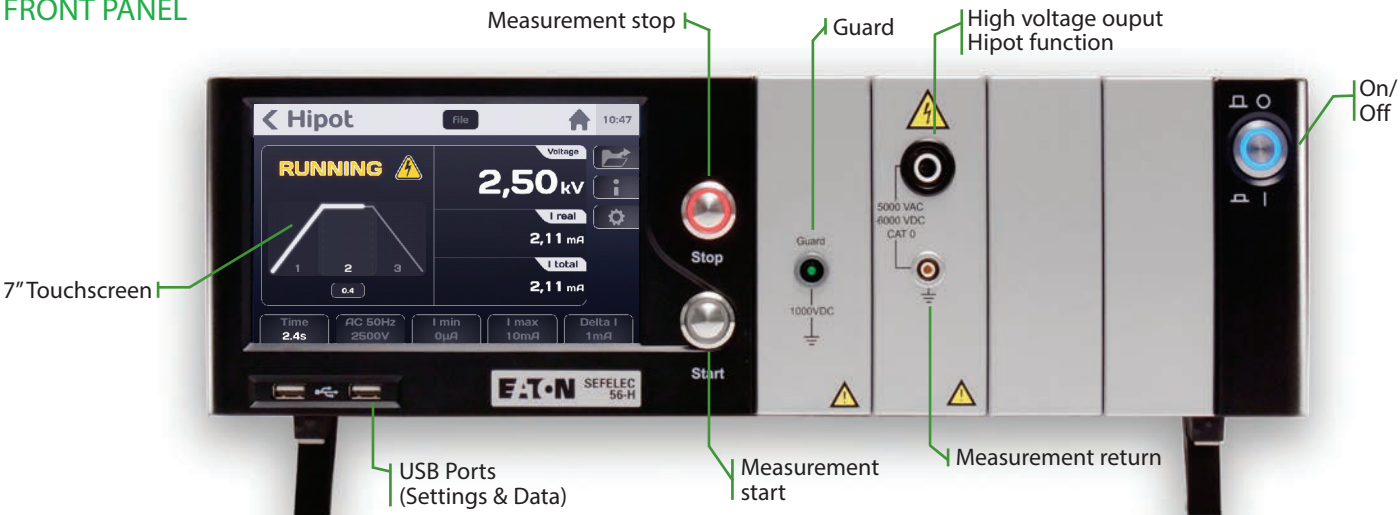


**EATON**

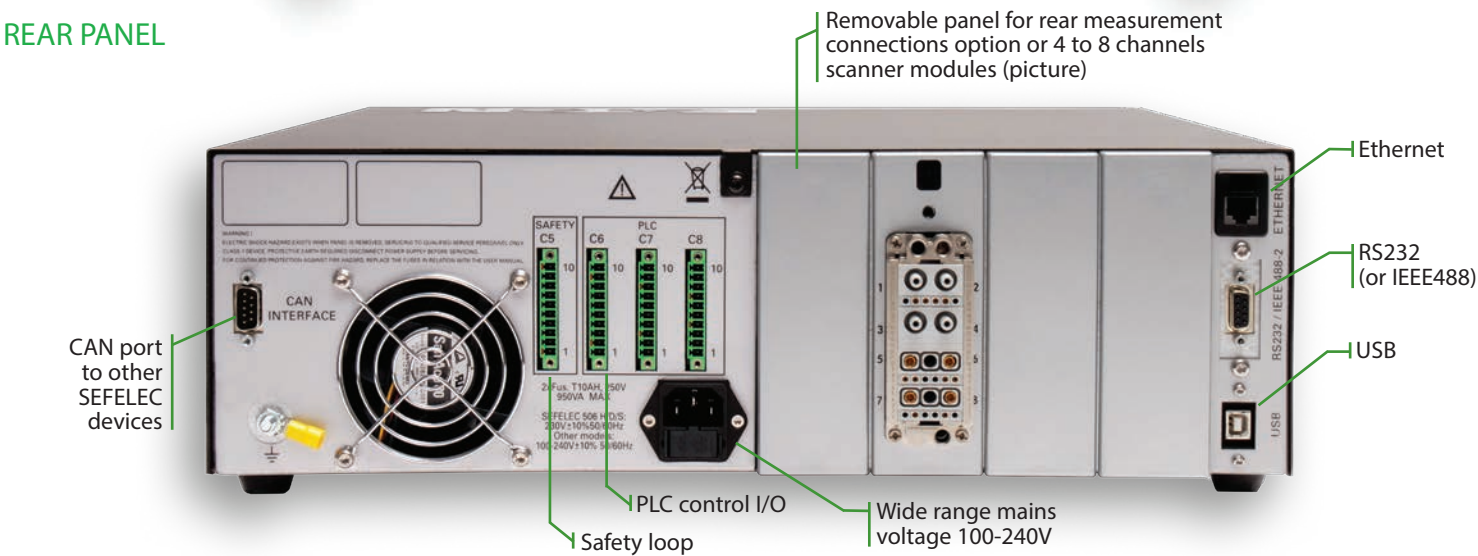
Powering Business Worldwide

SEFELEC 56-H : Dielectric Withstand Tester - General Overview

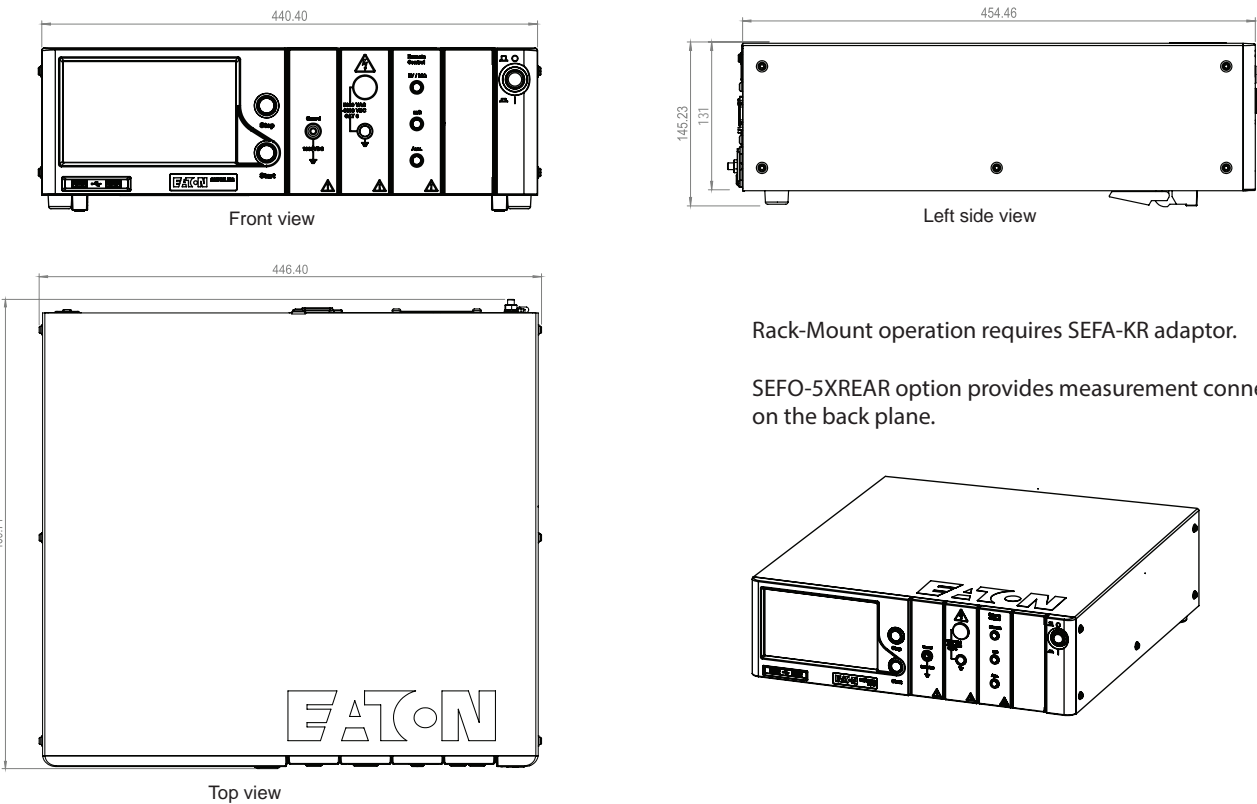
FRONT PANEL



REAR PANEL

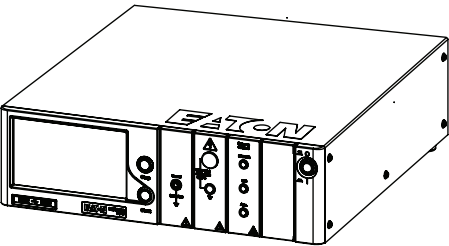


DIMENSIONAL DIAGRAMS



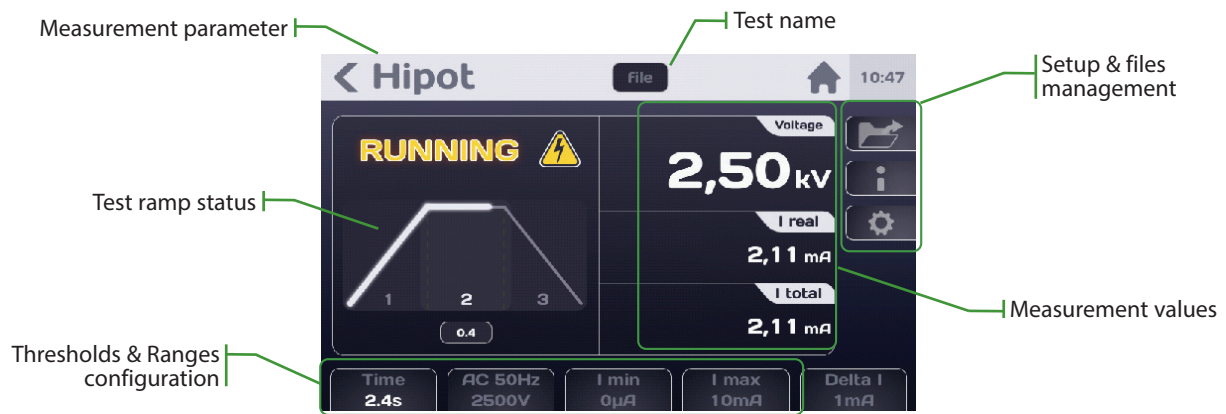
Rack-Mount operation requires SEFA-KR adaptor.

SEFO-5XREAR option provides measurement connectors on the back plane.





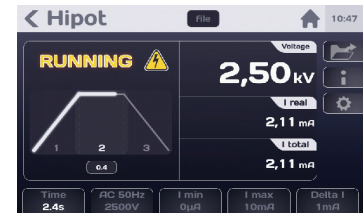
## SEFELEC 56-H : Touchscreen Overview



Passed test



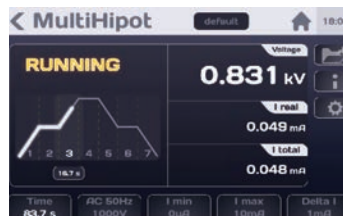
Failed test



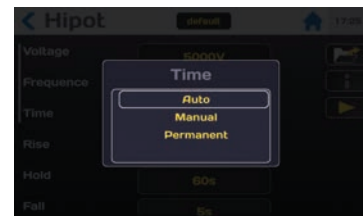
Permanent measurement mode



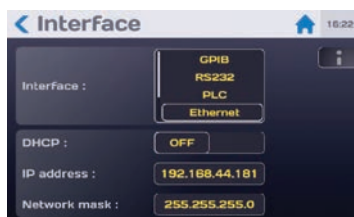
Manual mode



Multi-steps mode



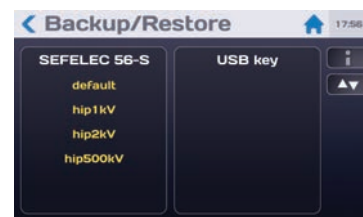
Measurement mode selection



Communication settings



Measurement parameters settings



Sequence mode

## SEFELEC 56-H : Accessories & Options



SEFA-TE65



SEFA-TE58



SEFA-CO180



SEFA-CO200



SEFA-5XLIGHT

### Accessories

|                                |   |
|--------------------------------|---|
| SEFA-TE65-02 <sup>(*)</sup>    | High voltage probe with lead - L. 2m                      |
| SEFA-TE58-02 <sup>(*)</sup>    | High voltage probe with lead with remote control - L. 2m  |
| SEFA-CO175-02 <sup>(*)</sup>   | Return lead with 4mm connector - L. 2m                    |
| SEFA-CO180-02 <sup>(*)</sup>   | Free terminal high voltage lead - L. 2m                   |
| SEFA-P5X-HRC-02 <sup>(*)</sup> | High voltage test gun with lead with remote control L. 2m |
| SEFA-P5X-RT-02 <sup>(*)</sup>  | Return test gun with lead - L. 2m                         |
| SEFA-KR                        | 19" rackmount kit   |
| SEFA-CO160                     | Red/Green safety lamp                                     |
| SEFA-5XLIGHT                   | Red/Green safety lamp - magnetic                          |
| SEFA-CO200                     | Test mains socket Schuko/FR 1500V max.                    |
| SEFA-CO200HV                   | Test mains socket Schuko/FR 5000V max.                    |
| SEFA-AO10                      | Dual palm remote switch for test start                    |

<sup>(\*)</sup> These accessories are also available with 5 or 10m leads. Please use model numbers -05 and -10



Internal scanner module



SEFO-5XRC



SEFO-IEEE488

### Options

|              |   |
|--------------|---|
| SEFO-5XRC    | Remote controls module                          |
| SEFO-IEEE488 | IEEE488-2 communication board                   |
| SEFO-5XREAR  | Measurement connections rear installation       |
| SEFO-5X3MA   | Output current limitation to 3mA                |
| SEFO-4WHV    | Test device 4 wires detection                   |
| SEFM-4IHV    | Internal scanner module 4 channels high voltage |
| SEFM-8IHV    | Internal scanner module 8 channels high voltage |

| General Specifications   |   |   |   |               |
|--|---|---|---|---------------|
| Mains voltage  | 100-240 VAC ±10 % 50 to 60 Hz / single phase  |   |   |               |
| Mains protection   | Temporized double fuse T10AH 250V   |   |   |               |
| Input power  | 700 VA max.   |   |   |               |
| Temperature range  | Storage : -10°C to +60°C      Operation : 0°C to +45°C<br>Specified accuracy after 1/2 hour warm-up and RH<50 %   |   |   |               |
| Altitude   | Up to 2 000 m   |   |   |               |
| Relative humidity  | 80 % max. @ 31°C  |   |   |               |
| Dimensions & weight  | Height  | Width   | Depth                                   | Weight        |
|  | 131 mm  | 440 mm  | 455 mm                                  | approx. 16 kg |
| Output Withstand Voltage   |   |   |   |               |
| Signal   | 50 Hz or 60 Hz sinus  |   |   |               |
| Range  | 100 V to 5 000 V AC<br>100 V to 6 000 V DC  |   |   |               |
| DC polarity  | Positive pole connected to the bond   |   |   |               |
| Dynamic stability  | for $\Delta V_{\text{mains}} = \pm 10\%$ measurement voltage variation < ±3%  |   |   |               |
| DC voltage ripple  | < 3% with a current <3 mA @ 6000 VAC  |   |   |               |
| Generetor accuracy   | ± ( 2 % + 5 V) with a current < 3 mA over full range in AC or DC  |   |   |               |
| Max D.U.T. capacitance   | < 1 µF (discharge time < 10 s)  |   |   |               |
| Discharge resistor   | 1,5 MΩ in DC - D.U.T. and internal capacitor discharge  |   |   |               |
| Voltage Measurement  |   |   |   |               |
| Through a kilovoltmeter directly connected to output   |   |   |   |               |
| Accuracy   | ± (1,5% + 5 V)  |   |   |               |
| Resolution   | 6000 digits   |   |   |               |
| Short-Circuit Current  |   |   |   |               |
|  | Nominal   |   | in short-circuit                        |               |
| at 5 000V AC   | < 10 mA or <1,5 mA with option SEFA-5X3MA   |   | < 20 mA or <3 mA with option SEFA-5X3MA |               |
| at 6 000V DC   | < 8 mA or <1,5 mA with option SEFA-5X3MA  |   | < 20 mA or <5 mA with option SEFA-5X3MA |               |
| Default Detection  |   |   |   |               |
| Fault indication with a message on the LCD display, LEDs and audible signal. Default voltage and I <sub>MAX</sub> fault current stored in the display and memory.  |   |   |   |               |
| <b>Flashover Current Mode ΔI</b> : The ΔI detection (delta I) makes the substraction between the normal current through the D.U.T. (I = U/Z) and the current that appears rapidly when there is a default : I' = I + I <sub>default</sub>  |   |   |   |               |
| Ajustement range   | from 1 mA to 10 mA ±(10%+0,5mA) by steps of 100 µA (AC & DC)<br>from 100 µA to 900 µA ±10% by steps of 100 µA (AC only, from 100 VAC to 2500 VAC)                                   |   |   |               |
| Pulse width  | >10 µs ± 20%  |   |   |               |
| <b>Current Threshold Mode I<sub>MAX</sub></b> : Range can be set from 0,001 mA to 10,000 mA by steps of 0,001 mA   |   |   |   |               |
| High limit > 0,000 mA & Low limit set at 0,000mA   | If the measured current is greater than or equal to the threshold, the test is declared FAIL : DIS-JUNCTION. If the current is lower than the High Limit, the test is declared PASS |   |   |               |
| Low limit > 0,000 mA et High limit > Low limit   | The measured current is within the range defined by the thresholds, the test result is PASS, outside the test is declared FAIL.   |   |   |               |
| <b>Current Threshold Mode I<sub>MIN</sub></b> : It is possible to specify a minimum value of current flowing through the D.U.T. . The I <sub>MIN</sub> value can be set from 0,000 mA to 9,999 mA. I <sub>MIN</sub> mode use ensures that the D.U.T. is correctly connected to the tester. |   |   |   |               |
| <b>Without Detection Mode</b> : There is no current control in this mode (burning mode). Generator is protected against overheat.  |   |   |   |               |
| Permanent Current Measurement  |   |   |   |               |
| The current measurement is done by a shunt installed in the test circuit.  |   |   |   |               |
| Resolution   | 9 999 points  |   |   |               |
| Current accuracy   | total / real (in AC)  | 0,001 mA to 9,999 mA AC ± (1,5 % + 3 µA) / ± (3 % + 3 µA) |   |               |
|  | total (in DC)   | 0,001 mA to 9,999 mA DC ± (1,5 % + 2 µA)                  |   |               |
| Accuracy in DC current for a load > 1 MΩ   |   |   |   |               |
| Ramp mode  |   |   |   |               |
| PERMANENT mode   | The rise time duration set is active. The output voltage rises to the setpoint. Test stops if there is a fault or if pressing the red button on the front panel.                    |   |   |               |
| MANUAL mode  | No rise time is set. Manual control pressing up and down arrows on the touch-screen. Test stops if there is a fault or if pressing the red button on the front panel.               |   |   |               |
| AUTO mode  | Test runs in 3 sequences : linear raise up to set voltage (Ramp Up), set output voltage remains applied (Dwell), progressive descent to 0V (Fall)                                   |   |   |               |
| Ramp Up - Dwell - Fall duration  | 0,1 à 9999,0 sec. by steps of 0,1sec  |   |   |               |
| Accuracy   | +/- 20 msec   |   |   |               |