

Product Datasheet - Technical Specifications



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SEFELEC 56-D

The EATON Dielectric Meter



SEFELEC 56-D: features and benefits:

Dielectric strength up to 5kVAC 50VA or 6kVDC

Insulation measurement up to 2TΩ at 1000 VDC
Adjustable voltage from 10 to 1000 VDC
by steps of 1V

Programmable test ramps
Up, Steady, Down
Multi-ramps mode (hipot test)

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

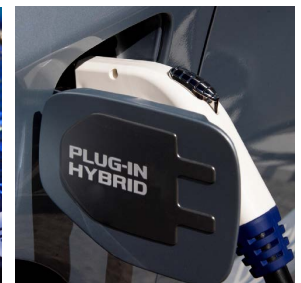
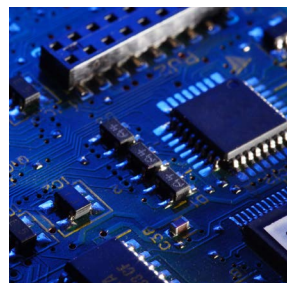
The **SEFELEC 56-D** is the new generation EATON dielectric meter (hipot and insulation test) based and controlled by ARM-Dual Core and DSP technologies providing the best stability and repeatability.

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

The sequence mode makes the **SEFELEC 56-D** 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.

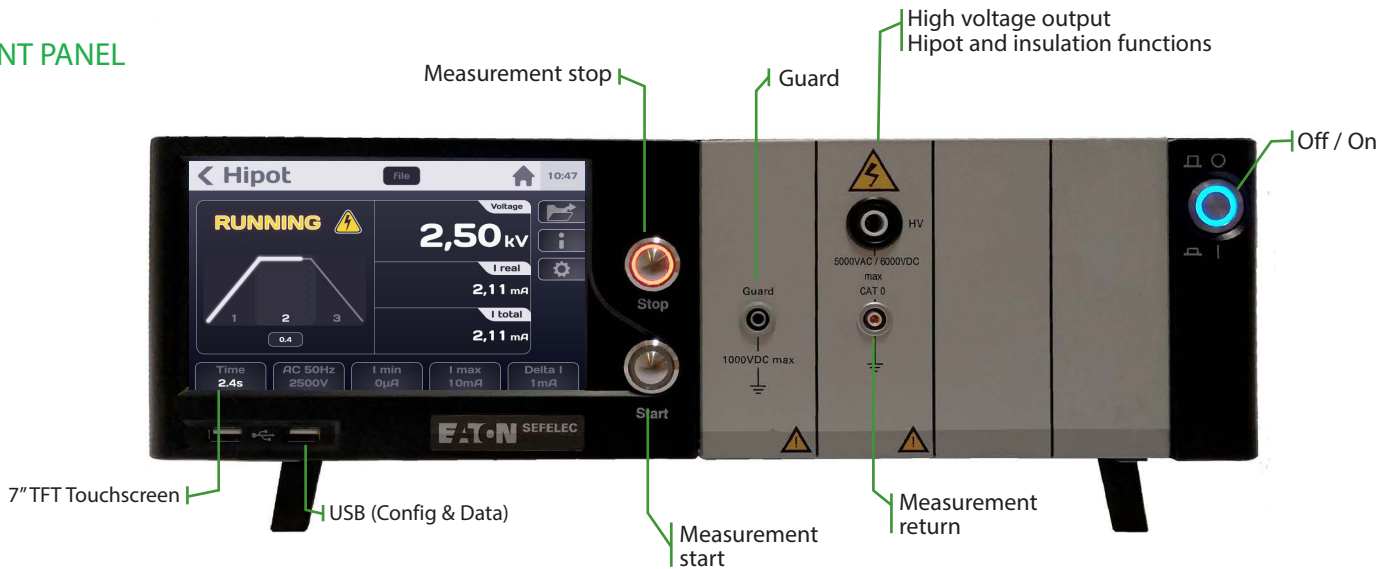
- Native Ethernet / RS232 / USB / PLC / 0-10 V
- IEEE488-2 interface as an option
- Bus CAN for external additional modules (Scanners)
- SIL2 double safety loop
- Automatic measurement range selection
- Sequence mode to combine several successive tests (i.e.: Insulation / Hipot / Insulation)



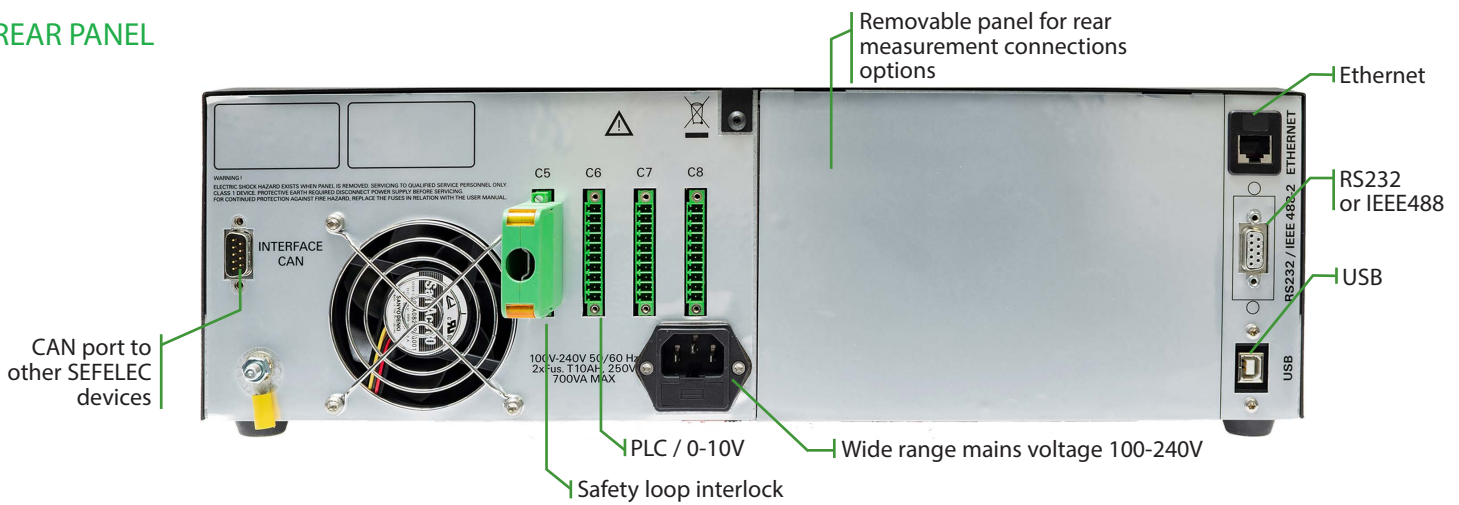
Powering Business Worldwide

SEFELEC 56-D : Dielectric Meter - overview

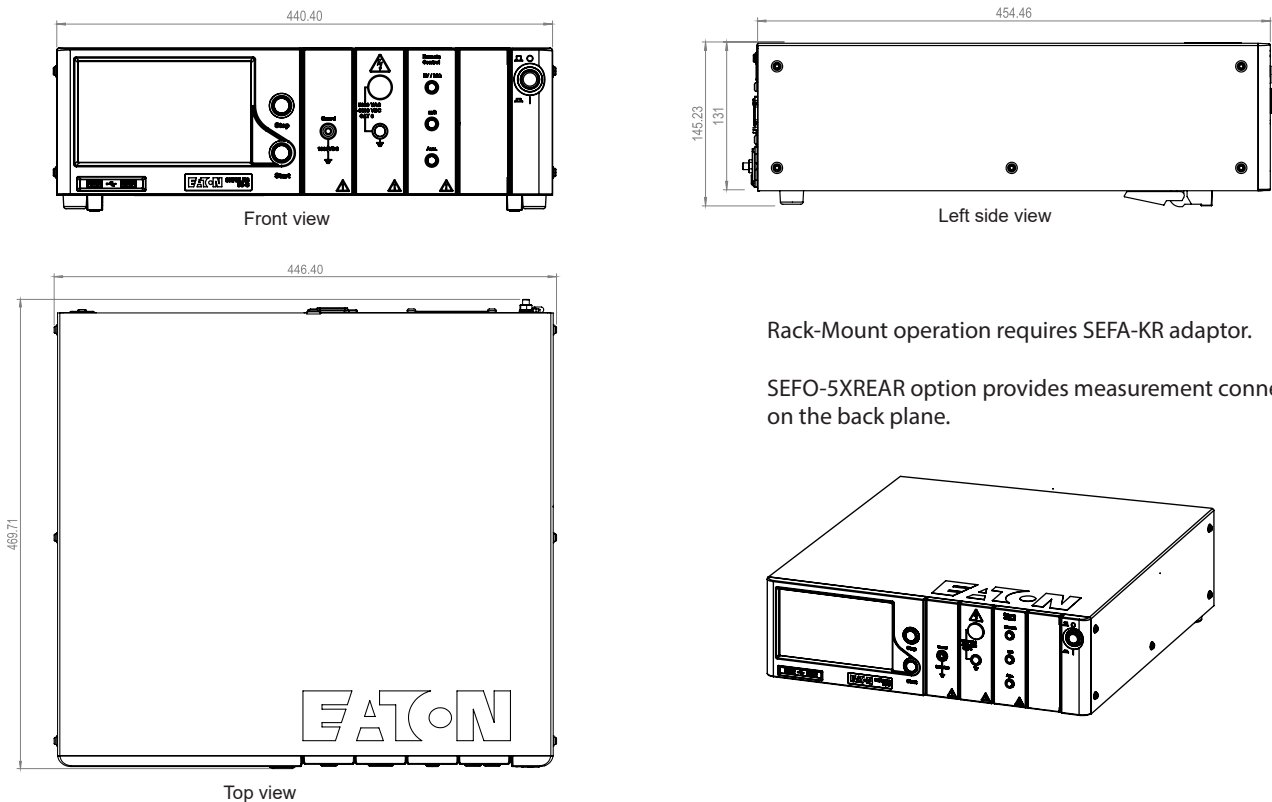
FRONT PANEL



REAR PANEL

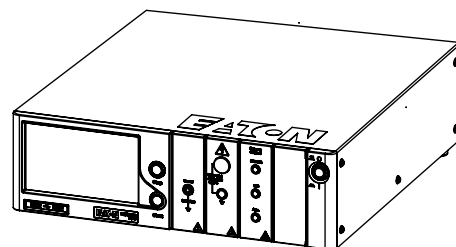


DIMENSIONAL DIAGRAMS

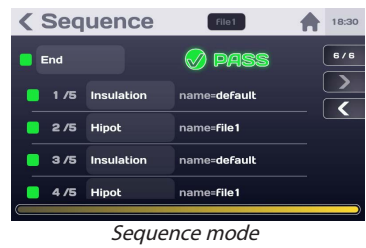
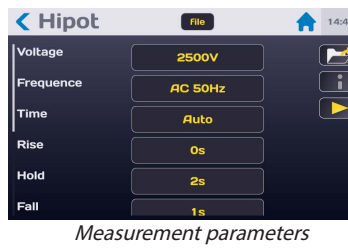
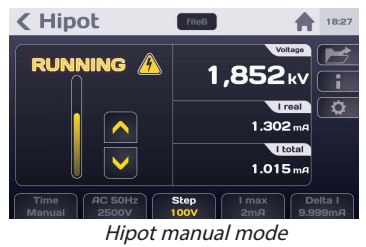
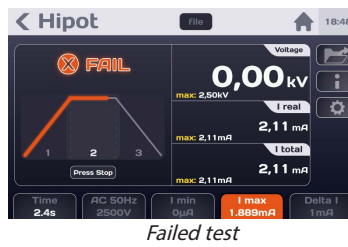
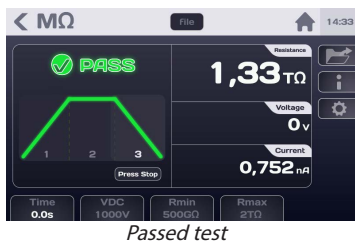
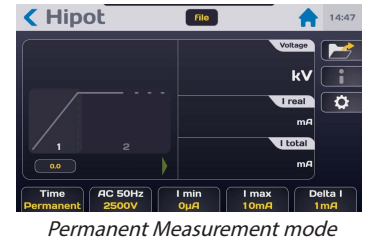
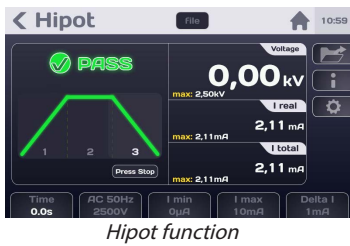
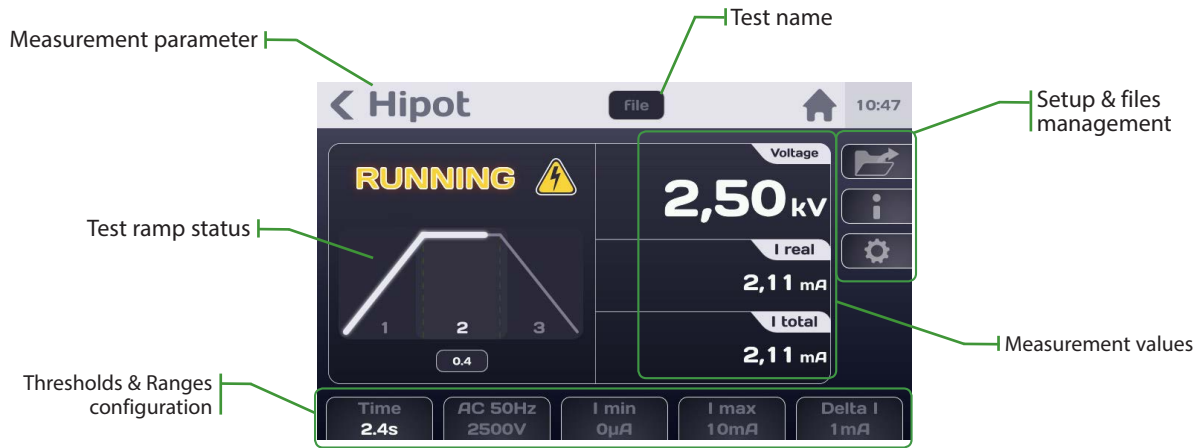


Rack-Mount operation requires SEFA-KR adaptor.

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



SEFELEC 56-D : Touchscreen overview



SEFELEC 56-D : Accessories & Options

SEFA-TE65-02

SEFO-IEEE488



Accessories

- SEFA-TE65-02 ⁽¹⁾ High voltage probe and test lead length. 2 meters
- SEFA-CO175-02 ⁽¹⁾ Return lead with 4mm termination - length 2 metres.
- SEFA-CO180-02 ⁽¹⁾ High voltage lead without probe for hardwire connection, length 2 meters
- SEFA-KR 19" rackmount adaptors for SEFELEC 5x series
- SEFA-CO160 Green / red safety lamp

⁽¹⁾ Models also available with leads 5m and 10m long. Part numbers as follows : SEFA-TE65-05 / SEFA-TE65-10 / SEFA-CO180-05 / SEFA-CO180-10 / SEFA-CO175-05 / SEFA-CO175-10

Options

- SEFO-5XRC Remote controls connection module
- SEFO-5X2TO 2TΩ insulation measurement range
- SEFO-IEEE488 IEEE488-2 communication
- SEFO-5XREAR Rear panel measurement connection
- SEFO-5X3MA 3mA max. output current limitation (Hipot function)

General Specifications				
Mains	100-240 VAC $\pm 10\%$ 50 to 60 Hz / single phase			
Mains protection	Temporized double fuse T10AH 250V			
Input Power	700 VA max.			
Temperature range	Storage		Operation	
	-10°C à +60°C		0°C à +45°C	
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. 18 kg
Dielectric Strength Function (hipot)				
Voltage range	100 ... 5 000 VAC / 100 ... 6 000 VDC - Positive pole connected to bond in DC			
Voltage generator accuracy	$\pm (2\% + 5V)$ over full voltage range and with a current below 100 μ A			
DC voltage ripple	< 1% with a current < 100 μ A			
Max D.U.T. capacitance	< 1 μ F (discharge time < 10 sec.) Discharge resistor in DC = 1,5 M Ω			
Voltage measurement accuracy	Through a kilovoltmeter directly connected to output. $\pm (1,5\% + 5\text{ Volts})$ resolution: 600 pts			
Short-circuit max. current	< 20 mA AC / < 20 mA DC			
Default detection modes	Current variation ΔI / Max-Min current / without detection			
ΔI detection mode current range	Adjustable from 1 mA $\pm 10\%$ to 10 mA $\pm 10\%$ by 1 mA steps, pulse 10 μ s $\pm 20\%$.			
Min/Max detection mode current range	adjustable from 0,001 mA to 9,999 mA by 0,001 mA steps			
Permanent total current measurement	Resolution 9 999 pts with a shunt installed in the test circuit			
Total current accuracy (in AC and DC)	0,001 mA à 9,999 mA	$\pm (2\% + 3\ \mu\text{A})$		accuracy in DC with a load > 1 M Ω
	10,00 mA à 20,00 mA	$\pm (2\% + 0,05\ \text{mA})$		
PERMANENT mode	The rise 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.			
Insulation Resistance Function				
Measurement voltage	20 - 1000 VDC, accuracy $\pm(1\% + 1V)$, positive pole grounded			
Maximum current in measurement circuit :	2 mA - 20% / +0%			
Max D.U.T. capacitance	< 100 μ F (discharge time < 10 sec.), Discharge resistor 2,2 k Ω			
Display resolution	1 999 points - Displayed units: k Ω , M Ω , G Ω , T Ω			
Measurement range	100V	250V	500 V	1000V
	100 k Ω à 20 G Ω	250 k Ω à 50 G Ω	500 k Ω à 100 G Ω	100 k Ω à 200 G Ω
Measurement range with 2 T Ω option	100 k Ω à 200 G Ω	250 k Ω à 500 G Ω	500 k Ω à 1 T Ω	100 k Ω à 2 T Ω
Normal mode accuracy	Standard version 200 G Ω : $\pm (1,5\% + 1\text{ digit})$			
	Option 2 T Ω and $U_{\text{test}} \leq 200\text{ V DC}$: $\pm (2\% + 1\text{ digit})$			
	Option 2 T Ω avec $U_{\text{test}} > 200\text{ V DC}$: $\pm (1\% \times U_{\text{test}} / 100 + 1\text{ digit})$			
Capacitance mode accuracy	(normal mode accuracy) $\pm 100\text{k}\Omega$			
Ramp Up - Dwell - Fall duration	0,1 à 9999,0 sec. by steps of 0,1sec, accuracy +/- 20 msec.			
Thresholds range	50 k Ω to 200 G Ω (or 2 T Ω)			
Thersholds types	1 high and 1 low			
Test results with thresholds (examples)	Low Limit (LL)	R_{measured}	High Limit (HL)	
	PASS: $R_{\text{measured}} \geq \text{LL}$ and HL disabled	10 M Ω	26,1 M Ω	---
PASS: $R_{\text{measured}} \leq \text{HL}$ and LL disabled	---	98,0 M Ω	100 M Ω	
PASS: $\text{LL} \leq R_{\text{measured}} \leq \text{HL}$	25 M Ω	63,2 M Ω	70 M Ω	
FAIL: $R_{\text{measured}} \geq \text{HL}$	45 M Ω	110 M Ω	80 M Ω	