

## 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)

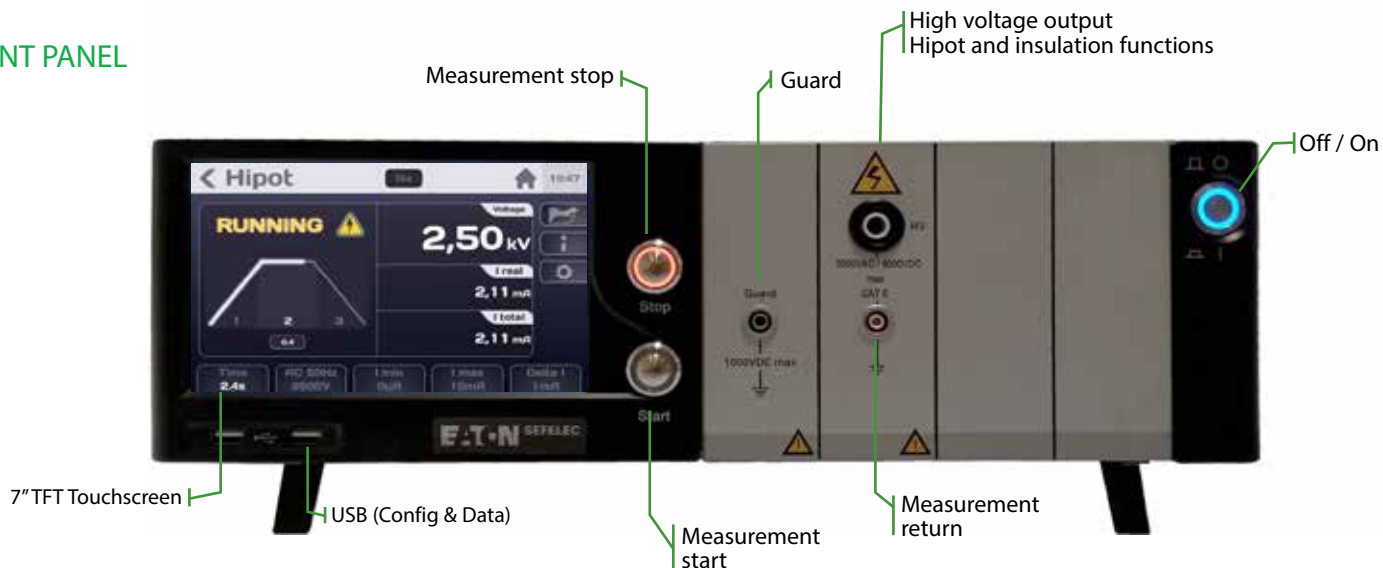


# EATON

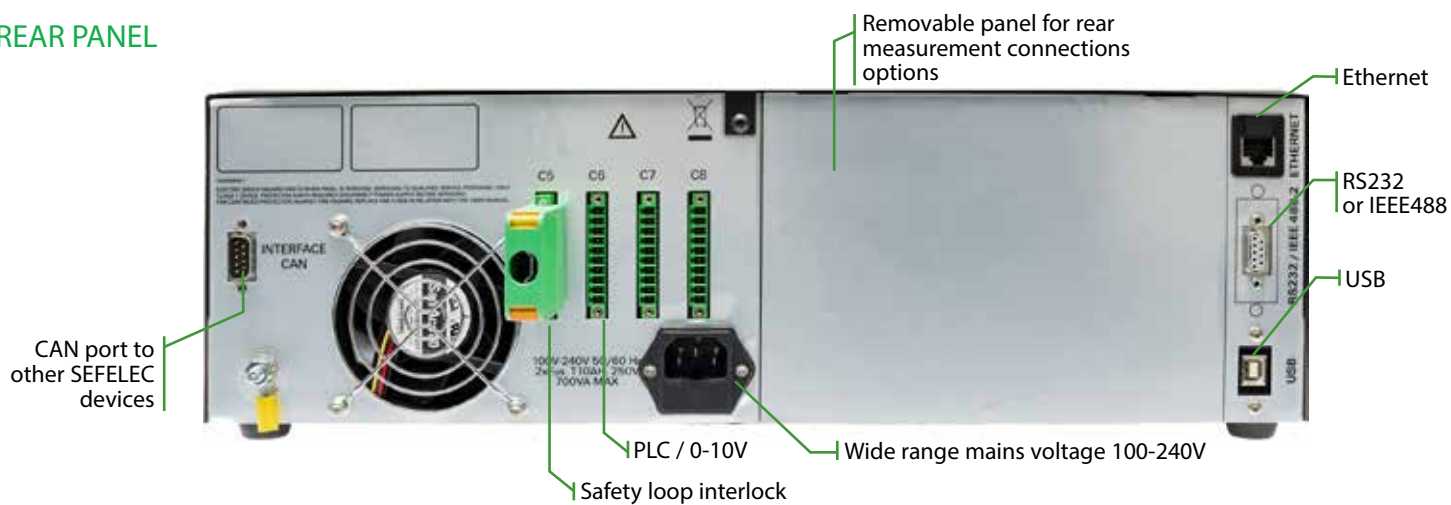
Powering Business Worldwide

# SEFELEC 56-D : Dielectric Meter - overview

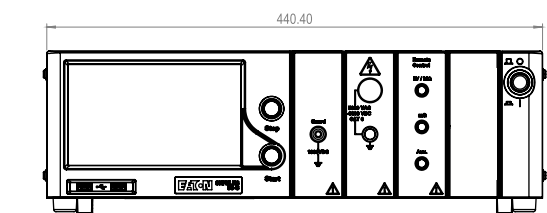
## FRONT PANEL



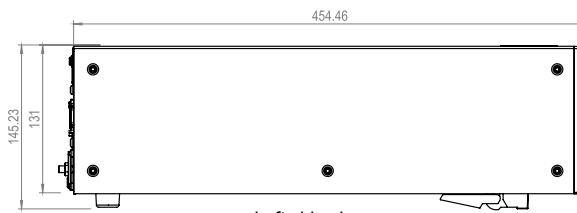
## REAR PANEL



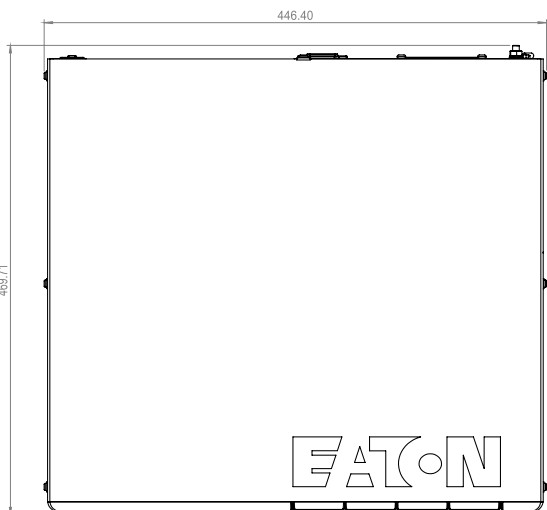
## DIMENSIONAL DIAGRAMS



Front view



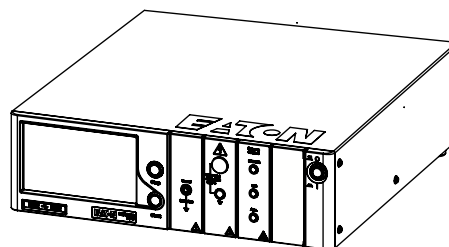
Left side view



Top view

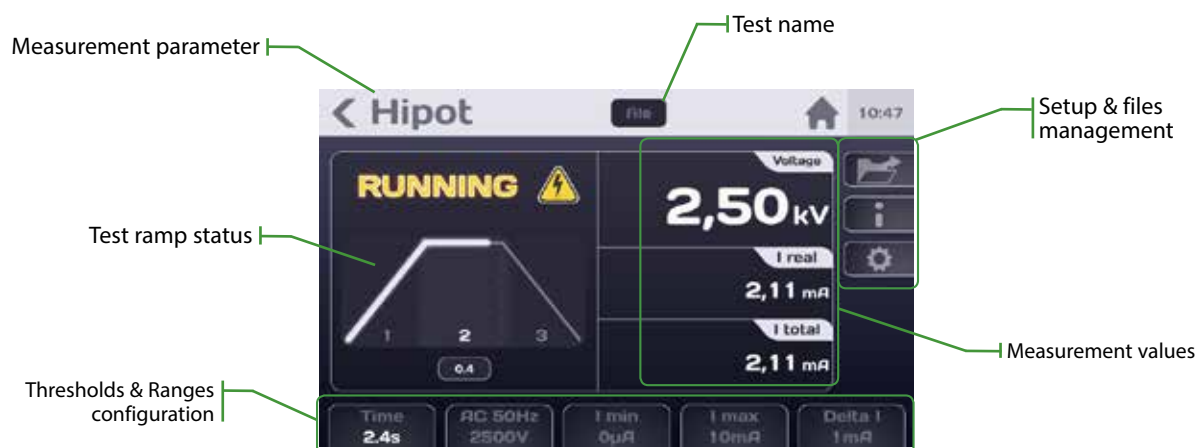
Rack-Mount operation requires SEFA-KR adaptor.

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





## SEFELEC 56-D : Touchscreen overview



Hipot function



Insulation function



Permanent Measurement mode



Passed test



Failed test



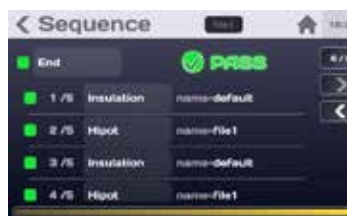
Hipot manual mode



Communication configuration



Measurement parameters configuration



Sequence mode

SEFA-TE65-02

SEFO-IEEE488

## SEFELEC 56-D : Accessories & Options

### Accessories

- SEFA-TE65-02** <sup>(1)</sup> High voltage probe and test lead length. 2 meters
- SEFA-CO175-02** <sup>(1)</sup> Return lead with 4mm termination - length 2 metres.
- SEFA-CO180-02** <sup>(1)</sup> 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

<sup>(1)</sup> 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 ±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 mmm	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	± (2 % + 5 V) over full voltage range and with a current below 100 µA			
DC voltage ripple	< 1% with a current < 100 µA			
Max D.U.T. capacitance	< 1 µF (discharge time < 10 sec.) Discharge resistor in DC = 1,5 MΩ			
Voltage measurement accuracy	Through a kilovoltmeter directly connected to output. ± (1,5% + 5 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 ±10 % to 10 mA ± 10% by 1 mA steps, pulse 10 µS ±20 %.			
Min/Max detection mode current range	adjustable from 0,001 mA to 9,999 mA by 0,001mA 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	± (2 % + 3 µA)	accuracy in DC with a load > 1 MΩ	
	10,00 mA à 20,00 mA	± (2 % + 0,05 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 ±(1% + 1V), positive pole grounded			
Maximum current in measurement circuit	2 mA - 20% / +0%			
Max D.U.T. capacitance	< 100µF (discharge time < 10 sec.), Discharge resistor 2,2 kΩ			
Display resolution	1 999 points - Displayed units: kΩ, MΩ, GΩ, TΩ			
Measurement range	100V	250V	500 V	1000V
	100 kΩ à 20 GΩ	250 kΩ à 50 GΩ	500 kΩ à 100 GΩ	100 kΩ à 200 GΩ
Measurement range with 2 TΩ option	100 kΩ à 200 GΩ	250 kΩ à 500 GΩ	500 kΩ à 1 TΩ	100 kΩ à 2 TΩ
Normal mode accuracy	Standard version 200 GΩ : ± (1,5% +1 digit)			
	Option 2 TΩ and U <sub>test</sub> ≤ 200 V DC : ± (2% +1 digit)			
	Option 2 TΩ avec U <sub>test</sub> > 200 V DC : ± (1% x U <sub>test</sub> / 100 +1 digit)			
Capacitance mode accuracy	(normal mode accuracy) ±100kΩ			
Ramp Up - Dwell - Fall duration	0,1 à 9999,0 sec. by steps of 0,1sec, accuracy +/- 20 msec.			
Thresholds range	50 kΩ to 200 GΩ (or 2 TΩ )			
Thersholds types	1 high and 1 low			
Test results with thresholds (examples)	Low Limit (LL)	R <sub>measured</sub>	High Limit (HL)	
PASS : R <sub>measured</sub> ≥ LL and HL disabled	10 MΩ	26,1 MΩ	- - -	
PASS : R <sub>measured</sub> ≤ HL and LL disabled	- - -	98,0 MΩ	100 MΩ	
PASS : LL ≤ R <sub>measured</sub> ≤ HL	25 MΩ	63,2 MΩ	70 MΩ	
FAIL : R <sub>measured</sub> ≥ HL	45 MΩ	110 MΩ	80 MΩ	