



SEFELEC 1000-M

The EATON Insulation Resistance Meter



The **SEFELEC 1000-M** is the new generation EATON insulation resistance meter 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 1000-M** 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.

SEFELEC 1000-M features and benefits:

Insulation measurement up to 200GΩ under 1000 VDC
2 TΩ in option

Measurement voltage adjustable by steps of 1 V
from 20 to 1000 VDC

Programmable test ramps
Ramp up, dwell, fall

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

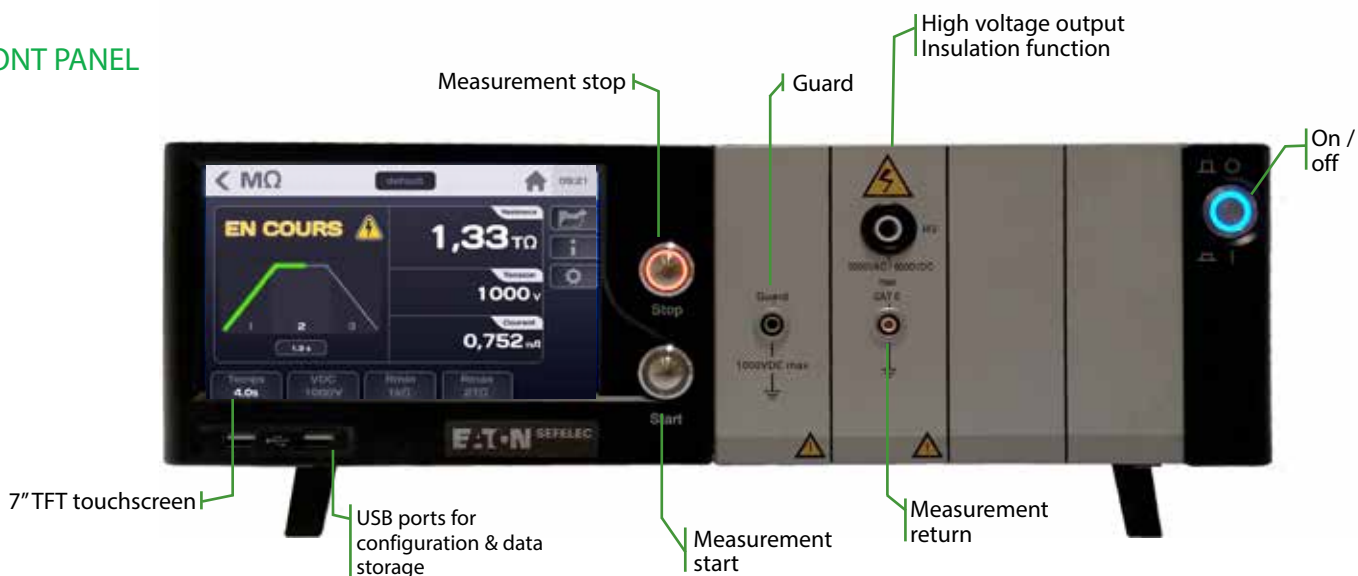
- Native Ethernet / RS232 / USB / PLC / 0-10 V
- IEEE488-2 interface as an option
- Bus CAN for external additional modules (Scanners)
- SIL2 double safety loop
- Automatic measurement range selection
- Sequence mode to combine several successive tests
- Multi-ramp mode for 3 dwells tests



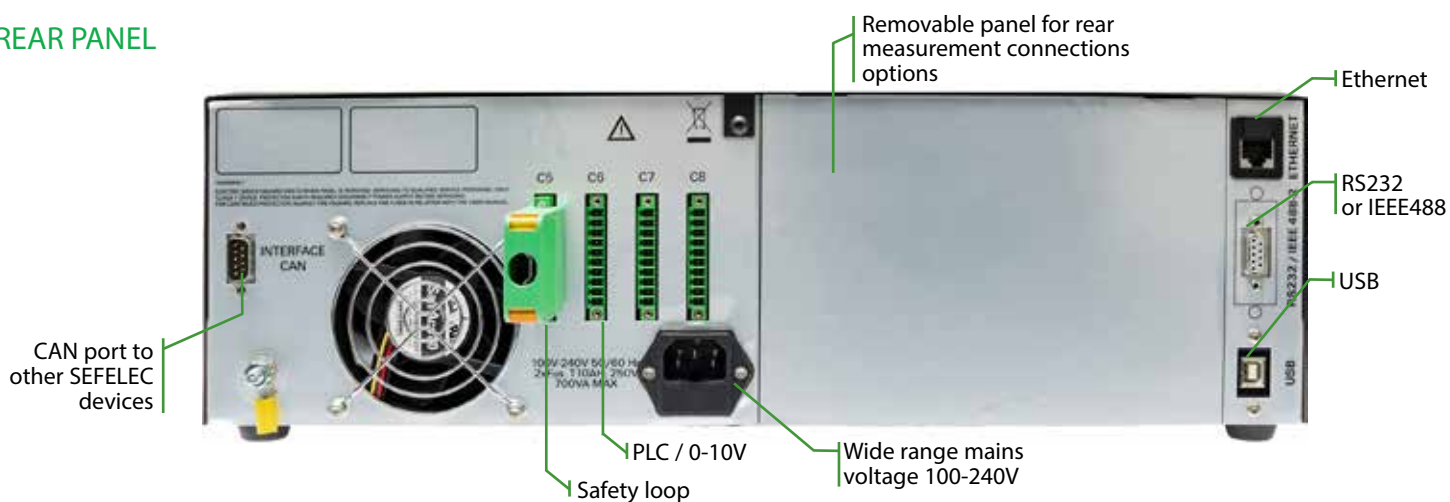
Powering Business Worldwide

SEFELEC 1000-M : Megohmmeter - Overview

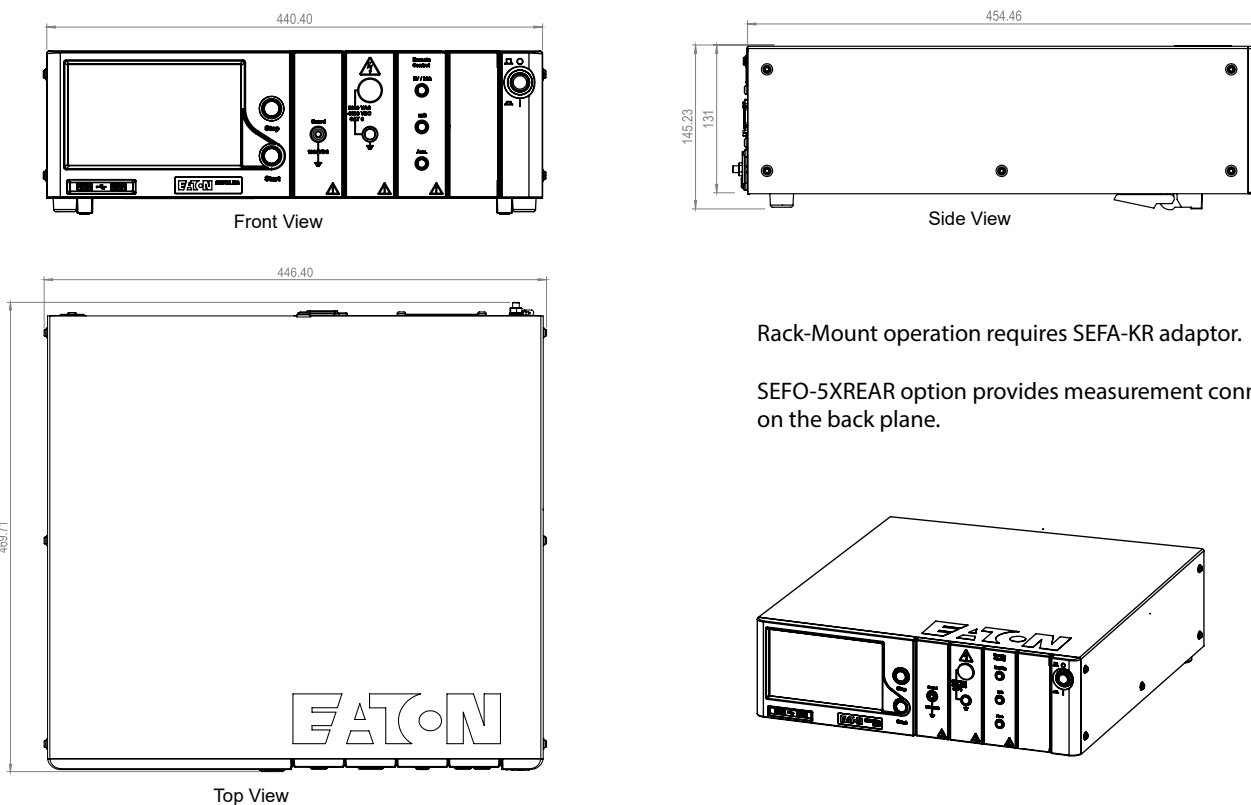
FRONT PANEL



REAR PANEL



DIMENSIONAL DIAGRAMS



SEFELEC 1000-M : Touchscreen - Overview



Passed test



Failed test



Permanent mode



Communication configuration



Measurement parameters configuration



Parameters and results storage

SEFELEC 1000-M : Accessories & Options

SEFA-SE15-02

SEFO-IEEE488



Accessories

- SEFA-SE15-02** ⁽¹⁾ Measurement probe and test lead length 2 meters
- SEFA-CO175-02** ⁽¹⁾ Return lead with 4mm termination length 2 metres.
- SEFA-FTHV10-02** ⁽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-SE15-05 / SEFA-SE15-10 / SEFA-CO175-5 / SEFA-CO175-10 /
SEFA-FTHV10-05 / SEFA-FTHV10-10

Options

- SEFO-5XRC** Module raccordement télécommandes
- SEFO-5X2T0** Gamme de mesure 2T Ω
- SEFO-IEEE488** Carte de communication IEEE488-2
- SEFO-5XREAR** Raccordement par le panneau arrière

General Specifications					
Mains	100-240 VAC $\pm 10\%$ 50 to 60 Hz / single phase				
Mains protection	Temporized double fuse T10AH 250V				
Input power	100 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. 15 kg	
Measurement Voltage					
Programming	20 ... 1000 V DC by steps of 1 V				
Voltage generator accuracy	$\pm(1\% + 1V)$ full range and with a current below 100 μ A				
Polarity	positive pole grounded				
Ripple voltage	< 1% with a current < 100 μ A				
Dynamic stability	For $\Delta V_{\text{mains}} = \pm 10\%$ measurement voltage variation < $\pm 1\%$				
Maximum current in measurement circuit	2 mA - 20% / +0%				
Max D.U.T. capacitance	< 100 μ F (discharge time < 10 s)				
Discharge resistor	2,2 k Ω				
Resistance Measurement Range					
$(U_{\text{test}} / U_{\text{max generator}}) \times 200\text{G}\Omega$ standard version and $(U_{\text{test}} / U_{\text{max generator}}) \times 2\text{T}\Omega$ with 2 T Ω option					
	Test voltage	100V	250V	500 V	1000V
	Standard measurement range	100 k Ω to 20 G Ω	250 k Ω to 50 G Ω	500 k Ω to 100 G Ω	1 M Ω to 200 G Ω
	Measurement range with 2 T Ω option	100 k Ω to 200 G Ω	250 k Ω to 500 G Ω	500 k Ω to 1 T Ω	1 M Ω to 2 T Ω
Measurement Accuracy					
Display Resolution	1 999 digits, units in k Ω , M Ω , G Ω et T Ω				
Accuracy	Standard version 200 G Ω	% of reading, 1U = 1 digit			
	With 2 T Ω option and $U_{\text{test}} \leq 200\text{ V DC}$	$\pm(1,5\% + 1U)$			
	With 2 T Ω option and $U_{\text{test}} > 200\text{ V DC}$	$\pm(2\% + 1U)$			
Capacitance mode	from 1,00 M Ω to 200 G Ω Accuracy : normal mode $\pm 100\text{ k}\Omega$ Input Impedance : 10 M Ω $\pm 1\%$				
Measurement Threshold					
Range	50 k Ω to 200 G Ω (or 2 T Ω)				
Thresholds types	1 high and 1 low				
Tests results depending on 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		
Temporisation					
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.				
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 s by steps of 0,1 s				
Accuracy	+/- 20 msec				

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Please learn more about SEFELEC 5x series
on : Sefelec.com