IDAS 2823-REF

Highest Precision Tan δ / Power factor Measuring Instrument

Datasheet

HAEFELY

Current and voltage – our passion

Designed by Tettex

General Description

The IDAS 2823 Highest Precision tan δ / power factor measuring instrument is designed for measurement of very low dielectric losses of high-voltage apparatus at reference level accuracies.

The IDAS 2823-REF is the most accurate dielectric losses analysing system available. It is used by reference laboratories and for those applications where accuracy is the key (ex. shunt reactor losses measurement).

The use of an optically decoupled connection allows complete galvanic isolation between control room and test field and guarantees highest safety level of test personnel.

It is capable of analyzing capacitive and inductive loads with outstanding accuracy and stability certified by a leading metrology institute.

Features	Advantages
▪ Capacitance 0.02 % and tan δ 1 x 10^{-5}.	☑ The highest accuracy measurements on the market.
▪ Compact, reliable and EMC hardened design, IP50	☑ The galvanic isolation ensures fully safety of the personnel. With the 2823, there is no electrical connection between the control room and the high voltage test room.
▪ Optically decoupled from computer	☑ Simple connection to test objects without external shunts or hardware reconnection due to the high input current range.
▪ Up to 15A input current with auto-range	☑ Increased linearity and extended frequency measuring range up to 1 kHz.
▪ Extremely low input impedance	☑ Backward compatible with older instruments and cabling, same connectors used for over 40 years.
▪ Industrial measuring and fiber optic connectors	☑ Turnkey solution from one supplier possible (including power supplies, standard capacitors, current comparators, test cells, certified calibration).
▪ Mains Powered	☑ Connect and forget, no battery pack or recharge needed.

Applications

Routine and type tests of:

- Power cables and Accessories
- Shunt Reactor losses
- Capacitors
- Generators and generator bars
- Bushing and isolators
- Instrument Transformers and Others
- Research & Development

Technical Data

Measurement	Range	Max. Resolution	Accuracy
Dissipation Factor (tan δ)[1]	0 … 100	1 x 10^{-6}	± 0.1 % RD ± 1 x 10^{-5}
Power Factor (cos φ)[1]	0 … 1	1 x 10^{-6}	± 0.1 % RD ± 1 x 10^{-5}
Capacitance[2]	≥ 0.1 pF	0.001 pF	± 0.02 % RD ± 0.01 pF
Inductance[2]	≤ 1000 kH	0.1 mH	± 0.1 % RD ± 0.3 mH
Test voltage	> 5 V	1 V	± 0.2 % RD ± 1 V
Test Current @ Input Cn[2]	10 µA … 300 mA	0.1 nA	± 0.05% RD ± 0.05 nA
Test Current @ Input Cx[2]	10 µA … 15 A	0.1 nA	± 0.05% RD ± 0.05 nA
Test Frequency	15 … 1000 Hz	0.01 Hz	± 0.1% RD ± 0.02 Hz
Apparent Power S[2]	≥ 1 mVA	0.1 mVA	± 0.3% RD ± 1 mVA
Real Power P[2]	≥ 1 mW	0.1 mW	± 0.3% RD ± 1 mW
Reactive Power Q[2]	≥ 1 mVAr	0.1 mVAr	± 0.3% RD ± 1 mvar

[1] valid for temperature 5 .. 45 °C [2] valid for reference conditions 23 °C ±5 °C

Hardware	
Measuring channels	2 (C_N & C_x)
Link 2823 to Media Box	Fiber optic cable with rugged HARTING connectors, Han3A-gw-M20, SC type, IP44
Link Media Box to Controller	USB 2.0
Controller	External computer (not included)

Software	
Controller requirements	Intel Core i3® / AMD Athlon II X2® or better. 1 GB RAM, Microsoft Windows 7 or 10 1 x USB 2.0 port free
Measuring time	0.3 s / measurement
Data format	XML & CSV
Recorded values	DF (tan δ), DF (tan δ)@ 20 °C, DF(tan δ)[%], DF (tan δ)[%] @ 20 °C, PF (cos φ), PF (cos φ)@ 20 °C, PF (cos φ)[%], PF (cos φ)[%] @ 20 °C, QF (quality factor), QF (quality factor) @ 20 °C, C_P (Z_X= C_P || R_P), R_P (Z_X= C_P || R_P), C_S (Z_X= C_S + R_S), R_S (Z_X= C_S + R_S), Cn (Standard Capacitor Value), L_S (Z_X= L_S + R_S), R_S (Z_X= L_S + R_S), L_P (Z_X= L_P || R_P), R_P (Z_X= L_P || R_P), U_{RMS}, U_{RMS}/ √3,U_{peak}/ √2 , $I_{x\ RMS}$, $I_{n\ RMS}$, I_m, I_{fe}, Impedance Zx, Phase-angle φ (Zx), Admittance Yx, $Frequency_{Test}$, Apparent Power S, Real Power P, Reactive Power Q, $Real\ Power_{@2.5\ kV}$, $Real\ Power_{@10\ kV}$

Environmental Mechanical and Power Supply	
Operating temperature	0 °C … +55 °C
Storage temperature	-20 °C …+70 °C
Humidity	5 ... 90 % r.h., non-condensing
Dimensions (W x D x H)	345 x 360 x 130 mm (13.6 x 14.2 x 5.2 in)
Weight	7.2 kg (15.9 lb)
Power supply Spec.	90 … 264 V AC, 50/60 Hz, 50VA

PC, Screen Resolution and Operation System Requirements	
PC min. configuration	Intel Core i3® / AMD Athlon II X2® or better, 1 GB RAM, Ethernet / USB 2.0
Screen resolution	1280 x 800 (WXGA)
Operation system	Windows 7™, or Windows 10™

Applicable Standards	
Protection Class	IP 50
CE conformity	EMC Directive 2014/30/EU and RoHS Directive 2011/65/EU
Vibration Tests	IEC 60068-2-64 Spec A1 Transportation a1

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