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Data Sheet 5.85-61/2

Frequency Response Analyzer, Type FRANEO 800

Application

The frequency response analyzer detects mechanical and electrical changes of the core and winding assembly of power transformers by measuring their electrical transfer function in a frequency band.

A Frequency Response Analysis (FRA) can detect winding deformations, displacements between windings, partial winding collapses, shorted or opened turns, faulty earthing of core or screens, core movements, broken clamping structures and problematic internal connections.

Typical applications of FRA are before and after transport, after the occurrence of high transient fault currents, routine diagnostic measurements, after short-circuit testing, after significant changes of monitored values, after the observation of unusual routine test results.

Description

Power transformers can be seen as a complex electrical network of capacitances, inductances and resistors having its own unique frequency response. Geometrical changes within and between the elements of the network cause deviations of its frequency response. Therefore differences between an initial measurement and later measurements of the frequency response are an indication of positional or electrical variations of the internal components.

A frequency response analyzer sources a sinusoidal excitation voltage with a frequency sweep into one end of the transformer winding and measures the signal returning from the other end. The comparison of input and output signals generates the unique frequency response for assessment.

As each failure has its own characteristic different failures can usually be discerned from each other by comparison of different sections in the frequency range.

Advantages

The assurance of transformer integrity by frequency response analysis after faults, mechanical shocks or transportation significantly helps to improve the reliability of transformers and to reduce maintenance costs.

Frequency response analysis can help to avoid unnecessary and expensive demounting of the transformer's active part.

High reproducibility thanks to innovative connection technique, easy handling due to small size and weight and high convenience resulting from battery operation make FRAnalyzer the method of choice for high-quality measurements.

Table 1: Technical Data

Technical Data	unit	Type FRANEO 800
Output		
Measurement voltage	V _{pp}	10 (@50Ω load)
Output impedance	Ω	50
Performance		
Frequency Range (SFRA)	Hz	10 to 30M
Dynamic Range	dB	150 (@20Hz to 2MHz)
Accuracy	dB	0.1 (down to -50dB)
Features		
Intended Use		Mobile
Interface		USB
Internal printer		No
Battery		Yes
Dimension and weights		
Length	mm	265
Width	mm	252
Height	mm	53
Weight	kg	<2
Normal operating conditions		
Rated AC power supply voltage	V(AC)	100 to 240
Power supply frequency	Hz	50 to 60
Environmental conditions		
Temperature	°C	-10 to 55
Humidity	%r.H.	20 to 90, non condensing
Accessories		
Transport Case		Yes
Test lead and adapter set		Yes
Aluminium braids		Yes
Power supply and battery charger		Yes
User Manual		Yes
USB cable		Yes
Software „Primary Test Manager“ (CD ROM)		Yes
Optional Accessories		
Short Aluminium braids		
Connection Clamps		
Carry Bag		