DFA100

for GIS

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APPLICATION NOTE

DFA100 FOR NON-INTRUSIVE DIAGNOSIS OF GAS INSULATED SUBSTATIONS (GIS)

The DFA100, Dielectric Fault Analyzer, is a handheld instrument for acoustic diagnosis of GIS. It is a battery powered instrument for detection and location of defects in the insulation of GIS systems. The DFA100 includes an acoustic emission (AE) sensor to detect acoustic signals from a range of defects such as bouncing particles, protrusions and mechanical loose parts. DFA100 is a further development of its predecessor AIA, a widely known and accepted tool for diagnosis of GIS.

DFA100 Benefits

- Non-intrusive in-service test of GIS
- Detection, location, and identification of PD, particles, protrusions and mechanical defects
- Reliable condition assessment of GIS

DFA100 Application

- Portable and handheld tool for inspection and monitoring of GIS
- Condition based monitoring of GIS during commissioning and in-service
- Design and factory testing during manufacturing
- The DFA100 can be directly applied to any earthed component that is associated with apparatus under test

DFA100 Technical Specifications

AE channels:	1 Channel (30 kHz sensor incl.)
ADC Resolution:	18 bit
Sample rate:	20 Msps
DC Power Adaptor:	90-253 VAC 12 VDC@1.5 A
Internal Battery charger:	12 VDC
Battery Life:	Up to 4 hours intermittent use
Recording length:	5000 points
Internal storage:	128 Mbytes
External Storage:	Compact Flash
AE Frequency Response:	1.0 kHz to 1.0 MHz +/- 1.5 dB
Display:	3.52" Color LCD
Computer interface:	USB 2.0
Weight:	2.5 lbs (1.1 kg)
Operating Temperature:	- 5° to 45° C
Storage Temperature:	-20° to 60° C
Dimensions:	9.5" x 3.5" x 1.4" 240 x 90 x 40 mm

Delivered complete with sensor, synch box, transport case, AC adaptor, software

DFA100 Viewer Software

The DFA100 instrument is provided with DFA100 Viewer Software. The DFA100 Viewer Software enables the user to:

- Manage DFA100 results
- Plot and overlay results
- Upload and download data to the DFA100 instrument
- Generate detailed reports

DFA100 Additional Applications

The DFA100 can optionally be equipped with insulated wave guides to detect internal PD on live equipment up to 145 KV, see separate pamphlet for DFA100 cable application brochure.

DFA100 Features

- Rapid results – the DFA100 is quick and easy to configure, giving results in seconds
- Reliability and ease of use – the DFA100 produces high quality results with high repeatability, allowing rapid and reliable decision making
- Battery operated – the DFA100 is a stand-alone handheld instrument, which can operate up to 4 hours on one charge
- Wireless synchronization – the DFA100 is utilizing a wireless synchronization module for timing PD and mechanical activity against the power system frequency
- Selectable settings – the DFA100 provides recommended settings for testing both SF6 filled and oil filled equipment
- Rugged and reliable – the DFA100 is an instrument with outstanding durability for field use
- Simple, user-friendly PC interface – a simple interface allows the test results to be uploaded to a PC. Previous data and nameplate configurations can also be downloaded to the DFA100

DFA100 Description

DFA100 has three measuring modes: continuous, phase, and pulse.

Continuous Mode

The continuous mode is used for surveying the apparatus and locating the primary source of the acoustic emission (AE) signal. The continuous measuring mode provides four scales of acoustic signal measurement: the RMS signal, peak signal, degree of modulation with fundamental frequency, and degree of modulation with second harmonic frequency. Figure 1 is an example of the continuous mode locating a PD source.

Phase Mode

The phase mode correlates the acoustic signal and the fundamental power signal, and generates an amplitude vs. phase plot. This information is used to determine the synchronizing nature of the acoustical discharges relative to the fundamental power signal. The patterns obtained are used to identify the nature of the source: PD, particles, and mechanical defects. Figure 2 illustrates a typical PD pattern.

Pulse Mode

The pulse mode is primarily used for monitoring particles. The Pulse Mode plots the amplitude vs. time between hits. Figure 3 illustrates a Pulse Plot.

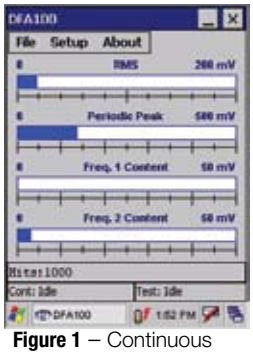

Figure 1 – Continuous

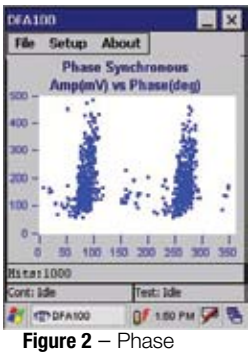

Figure 2 – Phase

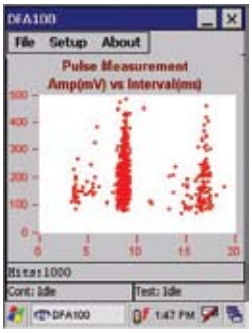

Figure 3 – Pulse

Specifications are subject to change without notice.
For more information, please contact us at info@doble.no

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