

# DFA100



## DFA100 DIELECTRIC FAULT ANALYZER

The DFA100, Dielectric Fault Analyzer, is a handheld and battery powered instrument used for monitoring acoustic emissions. The acoustic emission diagnostic technique is a non-intrusive in-service test used for monitoring acoustic signals produced by partial discharge and loose components. The DFA100 is specifically designed to detect faults in grounded SF<sub>6</sub> gas-insulated systems, such as SF<sub>6</sub> filled dead tank circuit breakers. The DFA can also be applied to grounded oil filled instrument transformers. The DFA100 instrument can be directly applied to any grounded component that is associated with the SF<sub>6</sub> filled apparatus under test. During acoustic emission measurement, the DFA100 processes the results and determines the fault. The DFA100 instrument has the ability to differentiate between PD, particles, and mechanical defects.

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### DFA100 Application:

- Identify and Locate – PD, particles, and mechanical defects.
- Condition based monitoring of GIS, SF<sub>6</sub> filled dead tank breakers, instrument transformers, during commissioning and while in-service.
- The results can be used by itself or in conjunction with other in-service test results for assisting in decision making process.

### DFA100 Benefits:

- 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 for 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 utilizing a wireless synchronization module for timing PD and mechanical activity against the power system frequency.
- Selectable Settings – the DFA100 provides recommended setting for testing both SF<sub>6</sub> 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 Technical Specifications

<b>AE channels:</b>	1 Channel
<b>ADC Resolution:</b>	18 bit
<b>Sample rate:</b>	20 MSPS
<b>Power Requirements:</b>	External DC adapter (12V @ 1.5A), or Internal 7.2V NiMH battery
<b>Battery Life:</b>	Up to 4 hours intermittent use
<b>Recording length:</b>	5000 points
<b>Internal storage:</b>	128 Mbytes
<b>External Storage:</b>	Compact Flash
<b>AE Frequency Response:</b>	1.0 kHz to 1.0 MHz +/- 1.5 dB
<b>Display:</b>	3.5" Color LCD
<b>Computer interface:</b>	USB 2.0
<b>Weight:</b>	2.5 lbs (1.1 kg)
<b>Operating Temperature:</b>	- 5° to 45° C
<b>Storage Temperature:</b>	-20° to 60° C
<b>Dimensions:</b>	9.5" x 3.5" x 1.4" 24cm x 9cm x 4cm



## DFA100 Description

The DFA100 instrument can be directly applied to any grounded component that is associated with the apparatus under test. DFA100 instrument provides 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 AE signal. The continuous measuring mode provides four scales of acoustic signal measurement: the RMS signal, peak signal, degree of modulation with fundamental, and degree of modulation with second harmonic. 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 plot the amplitude vs. time between hits. Figure 3 illustrate a Pulse Plot.

## DFA100 Viewer Software

The DFA100 instrument is provided with DFA100 Viewer Software. The DFA100 Viewer Software provides the following benefits.

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

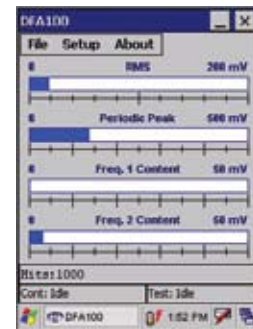


Figure 1 – Continuous

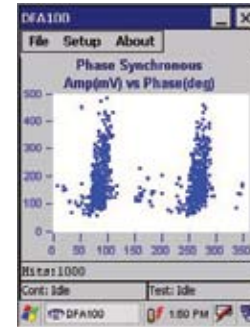


Figure 2 – Phase

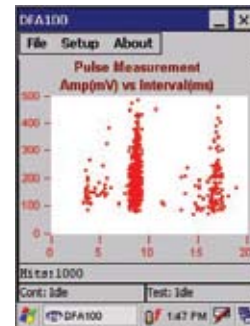


Figure 3 – Pulse

