

AIAcompact



AIAcompact - Acoustic Insulation Analyzer

Instruments

The *AIAcompact* is a portable unit for in-service acoustic and electric (UHF) partial discharge measurements on gas-insulated switchgear (GIS), transformers, and cable accessories. The instrument is fitted with a battery pack for independent operation up to 3 hours and adapts to a variety of piezo-electric acoustic sensors and is supplied with a versatile sensor fixture. Additionally, the *AIAcompact* allows partial discharge measurements on external UHF sensors.

Acoustic partial discharge measurements can be easily applied on gas-insulated switchgear and other high voltage equipment without the need of interrupting the operation. Such online measurements help to identify internal imperfections of the insulation system, which may lead to breakdown and system failure in the future.

Easy-to-apply substation condition assessment

Acoustic partial discharge measurements rely on the close acoustic contact of the area producing the discharge to the point of access, where the sensor is placed. Most of the partial discharge activity in GIS offer such a good contact and, hence, can be detected at a good sensitivity.

Therefore, discharges from sharp points or cones as well as discharge activity from delaminations can be identified at a sensitivity, which is mostly comparable to the conventional electrical detection according to the IEC60270.

For some defect types, such as the so-called hopping or bouncing particles, the acoustic detection is by far superior to the electrical detection.

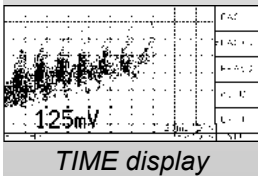
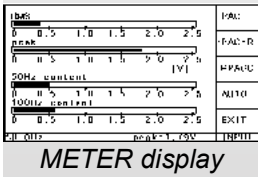
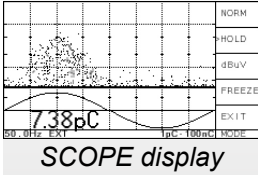
Based on the proven hardware core of the ICMcompact, the *AIAcompact* offers automatic detection of the sensor or preamplifier used. Normally, the instrument is operated with acoustic sensors with remote supplied embedded pre-amplifiers directly connected to the signal input. Alternatively, the RPA1F can be inserted close to the sensor to boost the signal, in case longer signal cables are used or in case of low-level measurements.

UHF measurements on external sensors are possible with the use of the FCU2, a logarithmic frequency converter, which covers 300 MHz-2 GHz. As with the pre-amplifiers, the *AIAcompact* automatically detects the FCU2 and changes into the logarithmic display for the UHF detection. To protect the instrument's hardware an input protection unit like IPU2B can be connected to the sensor's output.

The instrument offers three display modes, which are selected using dedicated control buttons: SCOPE, METER, and TIME.

SCOPE

In SCOPE mode, the *AIAcompact* shows the phase-resolved partial discharge signal or pattern. Here, the 'Freeze' function



allows keeping such a captured pattern for further evaluation or for taking screen-shots.

METER

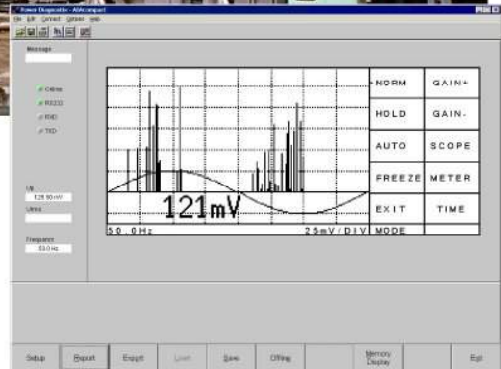
The METER mode offers four bar graph displays showing derived quantities of the captured activity. The graphs display the RMS and the peak PD level, as well as their 50 Hz (60 Hz) and 100 Hz (120 Hz) content. The instrument automatically synchronizes to the line frequency.

TIME

Within the TIME mode, the AIAcompact displays five or ten AC cycles triggered by a partial discharge event. Thus, this display shows the pattern of consecutive partial discharge events and, hence, offers a clear identification of bouncing particles and the severity of their activity.



Offering easy-to-use acoustic partial discharge analysis of gas-insulated switchgear (GIS) and other high voltage equipment plus the optional analysis on embedded or external UHF sensors makes the AIAcompact the ideal solution for convenient in-service substation condition assessment.



Options

- AIAcompact software: All captured patterns and displays can be transferred to a notebook via an USB interface using the optional AIAcompact software. Optionally, the software allows acquisition of color PD patterns.
- Gating: Software controlled noise reduction for PD measurements in environments with high frequency disturbance.
- MUX: Built-in 4- or 12-channel multiplexer to split the PD signal and the voltage signal, with individual setup and calibration factor for each channel.
- 57kB modem: A built-in analog modem allows to access the AIAcompact via a common phone line.