

QUALITROL-IRIS POWER, THE WORLD'S LARGEST PROVIDER OF ON-LINE PERIODIC AND CONTINUOUS PARTIAL DISCHARGE MEASUREMENT SYSTEMS



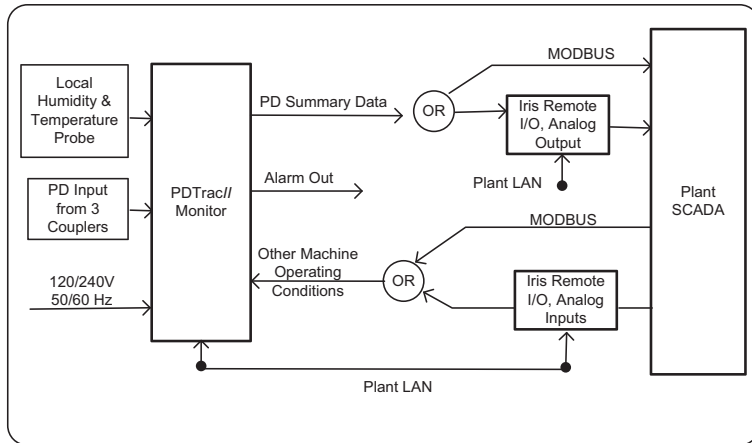
# Iris Power PDTracII™

Continuous On-line Partial Discharge Monitoring for Medium and High Voltage Motors, Transformers, and Switchgear



IRIS POWER ON-LINE PRODUCTS

# IRIS POWER PDTracII



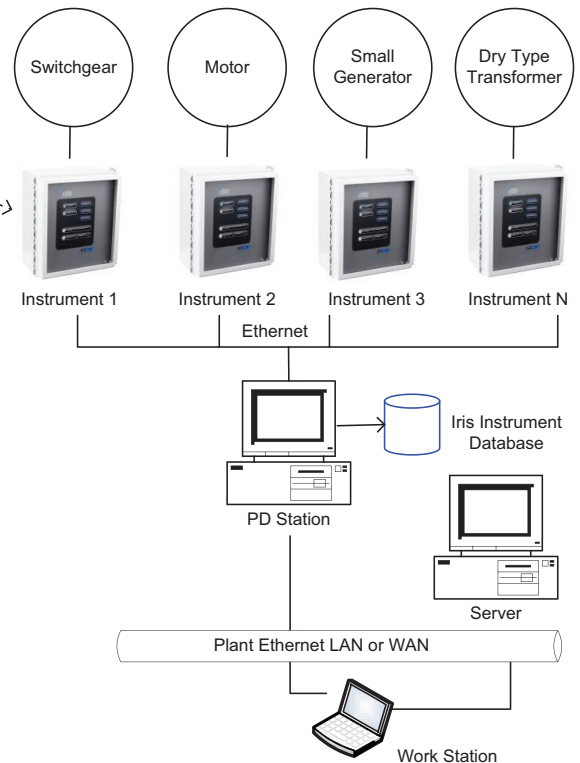
## IRIS POWER PDTracII SYSTEM

The Iris Power PDTracII system is an economical means of providing automated, continuous partial discharge (PD) measurement for motors, generators, switchgear, and dry type transformers. The Iris Power PDTracII system consists of three permanently installed capacitive couplers (one per phase), an Iris Power PDTracII instrument, plus digital communication. Alternatively, the PDTracII can be operated "stand alone" with only periodic downloading of stored PD data.

The Iris Power PDTracII is a third generation continuous on-line instrument that provides maintenance professionals with an opportunity to automate PD testing. The Iris Power PDTracII instrument also allows for the possibility of integrating important operating conditions needed for trending PD activity, and will trigger a remote alarm, indicating the need for a more detailed analysis. The instrument uses the same 80 pF capacitive sensors that have been permanently installed on motors, generators, and switchgear (3.3kV and higher) over the last 20 years by utilities and other industries around the world.

The Iris Power PDTracII instrument includes our unique and rigorously researched methods to overcome the electrical interference (noise) typical in most plant environments. This ensures reliable and repeatable measurements with a low probability of false alarms. The collected data can be easily interpreted by maintenance professionals after participating in a 2-day training seminar offered by Qualitrol-Iris Power's experienced engineering staff. The user's

assessment of motor and generator insulation systems using on-line PD testing is greatly enhanced by access to Iris Power's extensive PD database of over 225,000 test results. The collective experience and results of our clients are regularly summarized in statistical tables, available to all users. This is a service unique to Qualitrol-Iris Power and its clients and ensures objective interpretation of insulation condition.



# IRIS POWER PDTracII

Facilities that have existing “single-ended” bus coupler installations can easily install the Iris Power PDTracII instrument by connecting it to the existing sensor termination panel within the plant. This does not require an outage and the installation effort is limited to providing power to the monitor, wiring the alarm and/or sensor with networking option, and running a communication link to a local control room computer or an Ethernet LAN/WAN.

Machines not previously equipped with Iris Power capacitive couplers must have the 80 pF PD sensors installed during a suitable outage.

The Iris Power PDTracII instrument continuously collects PD data and archives data which are used to produce 2D and 3D (phase resolved) plots as well as summary numbers (Qm and NQN), which are used for trending and comparison with similar machines. Using the Windows™-based software, the archived PD data can be downloaded locally over a USB port, or remotely using Ethernet (TCP/IP) network communication.

Important operating conditions such as ambient humidity, stator winding or equipment temperature, voltage, and/or ambient temperature can be recorded and stored with the archived PD data. These parameters are useful for in-depth analysis and trending of the partial discharge activity.

## FEATURES

- The Iris Power PDTracII instrument contains superior noise separation technology based on filtering and pulse shape analysis, reliably distinguishing partial discharges from electrical interference (noise) in order to prevent false indications (alarms) when the monitored equipment is connected to the power system by >30m of power cable.
- Data collected by the Iris Power PDTracII instrument is compatible with the existing patented TGA/PDA technology. Users with existing sensor installations can commission the system without a machine outage. Data is easily confirmed and further analyzed with the Iris Power TGA-B™ or Iris Power PDA-IV™ portable instruments.
- The Iris Power PDTracII instrument performs continuous PD measurements with advanced alarm features, allowing minimal intervention by maintenance personnel. In response to an alarm, users can review the pulse height analysis plots, and the 24 window phase resolved PD plots using basic interpretation to confirm the cause of the alarm. Alarm levels are preset based on the Iris Power database of over 225,000 test results.
- Alert Output is a dedicated relay fitted within the monitor enclosure. The relay has a solid state latching contact that can activate a remote indicator, which must be reset by the user. The alarm conditions are configurable through the operating software. The alert output may be connected to a plant monitoring system.
- The Iris Power PDTracII instrument is equipped with ambient sensor input modules to enhance data gathering for trending and analysis. Available inputs include ambient temperature and ambient humidity which impact PD readings.
- USB memory stick port for downloading stored data without a laptop computer.
- Qualitrol-Iris Power has extensive experience with continuous on-line PD monitoring. Over 2,000 continuous PD monitors have been installed.
- Networking with Ethernet port for remote diagnostics, downloading, configuration with Iris Power software.
- Modbus over Ethernet protocol included for interfacing to third party applications.
- Configurable FTP server included for automatic data uploading.



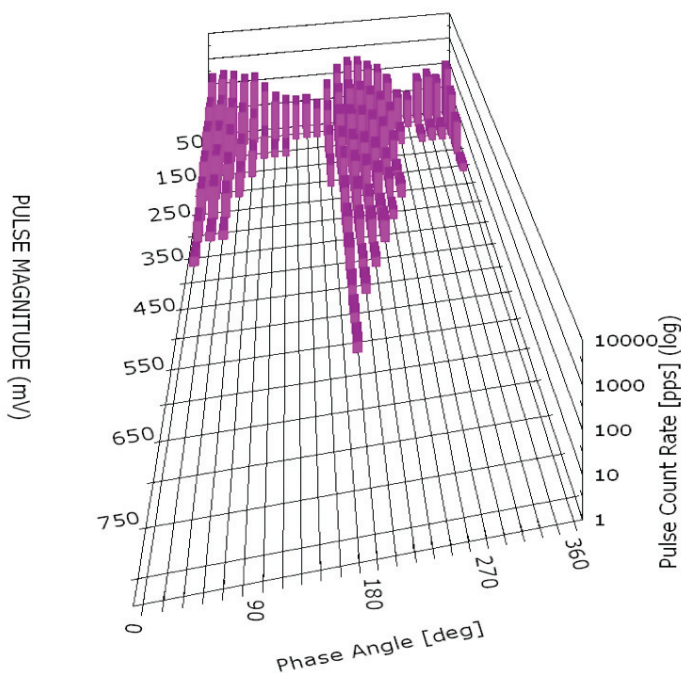
*Installed Capacitive Coupler*



# IRIS POWER PDTracII

## OPTIONS

- Remote I/O over Ethernet with four analog inputs proportional to operating conditions such as stator winding temperature, voltage, current, or power. These conditions are recorded for trending and analysis.
- Remote I/O over Ethernet with six analog outputs proportional to the level of PD activity (+Qm and -Qm). This is applicable in situations where the user is interested in having the real-time PD activity acquired by their DCS or control system.



3D pulse phase analysis PD plot

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## WHAT IS PARTIAL DISCHARGE?

Partial discharges (PD) are small electrical sparks that occur within the high voltage electrical insulation in stator windings, dry type transformers, and switchgear. PD occurs whenever there are small air gaps or voids in or on the surface of the insulation. Normally, well-made apparatus that are in good condition display very little PD activity. However, over 60 years experience has shown that as insulation deteriorates from vibration, operation at high temperatures, or contamination from oil, moisture and other chemicals, the PD activity will increase by a factor of ten or more. Thus, on-line PD monitoring detects the main root causes of failure. Since PD monitoring can be performed during normal apparatus operation, and generally gives two or more years of warning indicating a risk of failure, on-line PD monitoring has become a very powerful tool for predictive maintenance.

Some benefits of PD monitoring are:

- Increased availability of high voltage apparatus
- plan maintenance based on actual conditions
- significant reduction of in-service failures.

QUALITROL-IRIS POWER HAS BEEN THE WORLD LEADER IN MOTOR AND GENERATOR WINDING DIAGNOSTICS SINCE 1990, PROVIDING A FULL LINE OF ON-LINE AND OFF-LINE TOOLS, AS WELL AS COMMISSIONING AND CONSULTING SERVICES.



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