## TECHNICAL SPECIFICATIONS

### Power supply
- Voltage range: 90 to 230 VAC, 47–63 Hz; 90 to 290 VDC
- Supply current: 115 or 230 VAC
- Power consumption: 10.5 W

### EMC (Disturb Corona)
- Input: Emission: Class A
- Immunity: IEC 61000-4 Series tests (ESD, IC, RF, EFT, BIL, CS, Conducted Immunity, and Radiated Immunity)
- MKII: LED display menu with multi interface

### Sensors (optional)
- Mounting: Internal or External
- Output: Communications by P2P, Bluetooth, Wireless 3G to 3G/IoT device
- Sensivity: > 8 bit
- Sampling Rate: 0.5 to 4.8 GSPS

### Remote/Host software
- Operating system: Windows XP / Windows 7 compatible
- Display: 12” touch screen, (1024 x 768). Rotary / push button
- Others: IE 6.0, Fast Ethernet, USB

### Performance
- Sample rate: 0.5 to 4.8 GSPS
- Data storage: 16 GB
- Omni: Yes
- Time synchronization: Yes
- Data transfer: Yes

### Dimensions and weight
- Environment: external size: 330 x 330 x 600; 15.4 KS/s per channel
- ID: 20 MB
- Memory: 1 GBD, upgradable (if required)
- Min size for installation: 20 MB
- Maximum monitoring locations: 107.5 KS/s for 7 channels (simultaneous sampling)
- Maximum power: 70 W
- Operating system: Windows XP / Windows 7 compatible
- Voltage range: 90 to 230 VAC, 47–63 Hz; 90 to 290 VDC
- Supply current: 115 or 230 VAC
- Current: 110 mA @ 230 VAC

### Environment
- Ambient operating temperature: -25°C to +55°C
- Humidity: 5 - 95% non-condensing
- Storage temperature: -25°C to +75°C
- Vibration: 1G, 0.5G, 0.2G, 0.05G, 0.02G
- Environmental test compliance: EK 860/01-1, ES E6201-07, ES E6201-07-20, EK 870/06-1, ES E6900-01, ES E6900-02, ES E6900-03
- Temperature test compliance: ES E6201-07, ES E6201-08, ES E6900-06, ES E6900-23

### Software
- License: EK 860/01-1
- Others: ES E6900-06

### Mechanical
- Dimensions and weight: 330 x 330 x 600; 15.4 KS/s per channel
- Display: 12” touch screen, (1024 x 768). Rotary / push button
- Operating system: Windows XP / Windows 7 compatible
- Voltage range: 90 to 230 VAC, 47–63 Hz; 90 to 290 VDC
- Supply current: 115 or 230 VAC
- Current: 110 mA @ 230 VAC

## About QUALITROL®

QUALITROL® is the largest and most trusted global leader for partial discharge monitoring, condition monitoring, and asset protection equipment and information products across generation, transmission and distribution. We are the largest and most trusted global leader for partial discharge monitoring, asset protection equipment and information products across generation, transmission and distribution. At QUALITROL®, we are redefining condition monitoring technology for electric utilities.

QUALITROL Portable PDM Partial discharge monitor for transformers and GIS

### Handy system for precise assessment of partial discharge during testing, commissioning, and periodic inspections

- Full characterisation and localisation of partial discharge faults to determine the severity of PD and help in scheduling maintenance
- Very rapid and easy deployment enables maximum time for condition assessment of assets
- Robust and rugged design to maximize portable operation life and support inspections / testing for extended period of time (24 hours up to 12 months)
- Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatus installed in substations

## Product Summary

- **Description**: A self sufficient and portable PDM system for rapid monitoring and analysis of partial discharge in gas insulated switchgear (GIS) and power transformers. The system is field operated, touch screen based and goes where the engineers are located to stop or diagnose partial discharge with limited or no access to the main PDM infrastructure.
- **Application**: Used for low-cost, high performance portable and offline PD testing on HV insulating systems of GIS and power transformers to help with emergency installations, power plants and large industrial consumers. The information gained from the system may be used in condition based maintenance decisions.
- **Benefits**: PD testing and analysis whilst installation and commissioning of HV GIS and transformers. Quicker testing for PD during or after assembling or manufacturing of GIS and transformers.
- **Limb measurements**: PD in any condition enabling far superior data review method for scientific and research laboratories.
QUALITROL Portable PDM Partial discharge monitor for transformers and GIS

Handy system for precise assessment of partial discharge with live display in challenging and periodic insulations
- All testing functions integrated into a single, hand-carried system (17 kg [37.5 lbs]) in a compact enclosure with trolley wheels.
- Wideband measurement across the frequency range of 300 - 1500 MHz.
- Higher data acquisition rate of 16 GB samples per second.
- UHF technology based proven (for more than 20 years) hardware and software in identifying partial discharge.

Full characterization and localization of partial discharge feeds to determine the severity in extending lifetime.
- Interpretation is based on multiple artificial neural network classification of events.
- A reference library holds the historic PD data of the same asset stored into real-time database (time stamped events for up to 3 years).
- Ability to detect multiple PD sources simultaneously.
- Helps in approximate localization of partial discharge by amplitude comparison.

Very rapid and easy deployment enables maximum time for condition assessment of assets.
- Pre-installed software - no installation required on site.
- Easy configuration of system through on-line / on-site using touch screen interface.
- Sensors can be fitted to any available inspection hatch or manhole as a retrofit.
- Require only one field engineer / operator with basic knowledge of partial discharge.

Robust and rugged design to maximize portables operation life and support inspections / testing for extended period of time (up to 6 months).
- IP66 rated highly protective case.
- Built-in display (no separate laptop) helps in putting system in any environmental condition for a longer time.
- 16 GB data storage sufficient to store PD events continuously for 12 months.
- Facility to store data into external storage further enhances data storage capacity.

Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatuses installed in substations.
- Outstanding sensitivity and unique accuracy (5 dBk / 1 GHz) of UHF measurements.
- In-built sensitivity of 75 dBk enables better PD analysis.
- Noise gating by external signal antenna (optional).
- Cross channel coincidence gating.
- Live streaming data recording up to 3 days.
- Higher sampling rate (15.4 kS/s per channel) improves the chances of PD detection.

HVIC compatibility saves cost of buying different PD testing equipment for HV apparatuses.
- In-built LCD screen with touch screen based interface.
- Easy to add / modify / delete substation / site location.
- 2D and 3D display of PD signals in multiple formats (Single Cycle, Peak Hold, 2D, 3D).
- Clean, intuitive interface.

Advanced HMI provisions (SmartSUB Software - intelligent data handling, display and interpretation).
- In-built LCD screen with touch screen based interface.
- Auto test / modify / delete substation / site location.
- 2D and 3D display of PD signals in multiple formats (Single Cycle, Peak Hold, PRPD and STT).
- Automatic self-check of PDM with faults logged and alarmed.
- Trend analysis facility on stored PD data.
- State of the art data export function for PD results.

Intelligent customizable reporting
- Needs based customizable reports created automatically in a single document. These reports indicate possible courses of action for customers.
- Fast and easy access of data in generating reports.

Smart and quick real time alarming / alerting mechanism
- Programmable alarm thresholds and user defined alarming / alerting mechanism.
- Facility to send alarms / warning to local user interface.
- Real-time monitoring of events with time accuracy of 1 millisecond.

Expandable and field upgradeable without dismounting
- Expansion of internal storage to 32 GB with ability to remove / install the UHF memory stick for backup.
- 2 GB program memory capacity of field upgrading if required.
- Supports the addition of future client applications.
- Facility to link other portables to expand monitoring capabilities.

Other key benefits
- Designed to meet highest security standards, including NERC cyber-security standards.
- Built-in time synchronization through NTP / SNTP.
- Provides timely information where needed through its multiple communication methods (Ethernet, USB).
- Superior safety in high voltage test setup.

Real-time display of up to 6 UHF channels.

System software - LCD display with full touch interface
- Flight-friendly and lightweight system (17 kg [37.5 lbs]) and easy to operate by one person.
- Supports the addition of future client applications.
- Requires only one field engineer / operator with basic knowledge of partial discharge.
- IP66 rated highly protective case.
- Built-in display (no separate laptop) helps in putting system in any environmental condition for a longer time.
- 16 GB data storage sufficient to store PD events continuously for 12 months.
- Facility to store data into external storage further enhances data storage capacity.
- Live streaming data recording up to 3 days.
- Higher sampling rate (15.4 kS/s per channel) improves the chances of PD detection.

...from the world leader in PDM
Handy system for precise assessment of partial discharge in substations

- All testing functions integrated into a single, hand-carried system (17kg [37.5 lbs]) in a compact enclosure with trolley wheels
- Wideband measurement across the frequency range of 300 - 1500 MHz
- Higher data acquisition rate of 1000 samples per second
- UHF technology based proven (for more than 20 years) hardware and software in identifying partial discharge

Full characterization and localization of partial discharge saves cost of extended period of time (24 hours up to 12 months)

- Interpretation is based on multiple artificial neural network classification of events
- A reference library from the historic PD data of the same asset stored into real-time database (time stamped events for up to 6 years)
- Ability to detect multiple PD sources simultaneously
- Helps in approximate localization of partial discharge by amplitude comparison

Very rapid and easy deployment enables maximum time for condition assessment of assets

- Pre-installed software - no installation required on site
- Easy configuration of system (offline / online) using touch screen interface
- Sensors can be fitted to any available inspection hatch or manhole as a retrofit
- Requires only one field engineer / operator with basic knowledge of partial discharge

Robust and rugged design to maximize portability and operation life

- IP-66 rated highly protective case
- Built-in display (no separate laptop) helps in putting system in any environmental condition for longer time
- 16 GB data storage sufficient to store PD events continuously for 12 months
- Facility to store data into external storage further enhances data storage capacity

Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatuses installed in substations

- Outstanding sensitivity and unique accuracy (75 dBm / 5pC) of UHF measurements
- In-built sensitivity of -75 dBm enables better PD analysis
- Noise gating by external signal antenna (optional)
- Cross channel coincidence gating

Higher data acquisition rate of 51000 samples per second

Wideband measurement across the frequency range of 300 - 1500 MHz

Minimal installation and Smart inspection... from the world leader in PDM

System software - LCD display with full touch interface

- Real-time display of up to 6 UHF channels
- Programmable alarm criteria and rule engines
- Facility to send alarms / warnings to local user interface
- Real-time monitoring of events with time accuracy of 1 millisecond

Key features

- User-friendly interface with QWERTY touch keyboard
- Display up to 6 UHF channels at once
- View live and recorded data via FTP, RFID, STN, history archive and event archive
- Easy configuration of all parameters
- Built-in self diagnostics

QUALITROL Portable PDM: Partial discharge monitor for transformers and GIS

www.qualitrolcorp.com
Handy system for precise measurement of partial discharge for condition assessments and periodic inspections

- All testing functions integrated into a single, hand-carry system (17kg [37.5 lbs]) in a compact enclosure with rolling wheels
- Wideband measurement across the frequency range of 300 - 1500 MHz
- Higher data acquisition rate of 1000 samples per second
- UHF technology based proven (for more than 20 years) hardware and software in identifying partial discharge

Full characterization and localization of partial discharge feeds to determine the severity and location of partial discharge in outstanding equipment

- Interpretation is based on multiple artificial neural network classification of events
- A database library from the historic PD data of the same asset stored into real-time database (time stamped events for up to 1 year)
- Ability to detect multiple PD sources simultaneously
- Helps in approximate localization of partial discharge by amplitude comparison

Very rapid and easy deployment enables maximum time for condition assessment of assets

- Pre-installed software - no installation required on site
- Easy configuration of system offline / online using touch screen interface
- Sensors can be fitted to any available inspection hatch or manhole as a retrofit
- Require only one field engineer / operator with basic knowledge of partial discharge

Robust and rugged design to maximize portability, operation life and support inspections / testing for extended period of time (24 hours up to 12 months)

- IP68 rated highly protective case
- Built in display (no separate laptop) helps in putting system in any environmental condition for longer time
- 16 GB storage sufficient to store PD events continuously for 12 months
- Facility to store data into external storage further enhances data storage capacity

Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatus installed in substations

- Outstanding sensitivity and unique accuracy (75 dBm / 5pC) of UHF measurements
- In-built sensitivity of -75 dBm enables better PD analysis
- Noise gating by external signal antenna (optional)
- Cross channel coincidence gating

HIDC compatibility saves cost of buying different PD testing equipment for HIDC apparatuses

- Live stream data recording up to 3 days
- Higher sampling rate (15.4 kS/s per channel) improves the chances of PD detection

Advanced HIDC provisions (SmartSU Software - intelligent data handling, display and interpretation)

- Real-time display of all parameters
- Online monitoring of events with time accuracy of 1 millisecond
- Ability to detect multiple PD sources simultaneously
- In-built time synchronization through NTP / SNTP
- Provides timely information where needed through its multiple communication methods (Ethernet, USB)
- Facility to send alarms / warnings to local user interface
- Programmable alarm criteria and rule engines
- Supports the addition of future client applications

System software - LCD display with full touch interface

- Flight-friendly and lightweight system (7 lb [3.2 kg] and easy to operate by sole person)
- Supports the addition of future client applications
- Easy configuration of all parameters
- Built in self diagnostics

Key features

- Clean, intuitive interface with QWERTY touch keyboard
- Display up to 6 UHF channels at once
- View live and recorded data on PDM, PRPD, STT, history archive and event archive
- Built-in synchronization through NTP / SNTP
- Provides timely information where needed through its multiple communication methods (Ethernet, USB)
- Facility to send alarms / warnings to local user interface
- Programmable alarm criteria and rule engines
- Supports the addition of future client applications

Intelligent customizable reporting

- Needs based customizable reports created automatically in single document. These reports indicate possible courses of action for customers
- Fast and easy access of data in generating reports

Smart and quick real time alarming / alarming mechanism

- Programmable alarm criteria and rule engines
- Facility to send alarms / warnings to local user interface
- Real-time monitoring of events with time accuracy of 1 millisecond

Robust and rugged design to maximize portability, operation life and support inspections / testing for extended period of time (24 hours up to 12 months)

- Pre-installed software - no installation required on site
- Easy configuration of system offline / online using touch screen interface
- Sensors can be fitted to any available inspection hatch or manhole as a retrofit
- Require only one field engineer / operator with basic knowledge of partial discharge

Other key benefits

- Designed to meet highest security standards, including NERC cyber-security standards
- Supports the addition of future client applications
- 2 GB program memory capable of being upgraded if required
- Expansion of internal storage to 32 GB with ability to use removable / portable media e.g. USB memory stick for backup
- Facility to link other portables to expand monitoring capabilities
- Support for the addition of future client applications
- Built-in display (no separate laptop) helps in putting system in any environmental condition for longer time
- 16 GB storage sufficient to store PD events continuously for 12 months
- Facility to store data into external storage further enhances data storage capacity

Programmable alarm criteria and rule engines

- Supports the addition of future client applications
- Facility to link other portables to expand monitoring capabilities
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- Built in self diagnostics

Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatus installed in substations

- Outstanding sensitivity and unique accuracy (75 dBm / 5pC) of UHF measurements
- In-built sensitivity of -75 dBm enables better PD analysis
- Noise gating by external signal antenna (optional)
- Cross channel coincidence gating

HIDC compatibility saves cost of buying different PD testing equipment for HIDC apparatuses

- Live stream data recording up to 3 days
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- In-built LCD screen with touch screen based interface
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- Automatic self-check of PDM with faults logged and alarmed
- Trend analysis readily on stored PD data
- State of the art software export function for PD results

Minimal installation and Smart inspection... 
...from the world leader in PDM

www.qualitrolcorp.com
QUALITROL Portable PDM Partial discharge monitor for transformers and GIS

TECHNICAL SPECIFICATIONS

Power supply
Voltage range: 90 to 315 VAC, 50-60 Hz; 180 to 290 VDC, unregulated supply
Supply current: 110 VA / 230 VAC
Frequency: 50 Hz

EMC (Electro Magnetic Compatibility)
Input: 0 | 1 GHz
Immunity: 1 McKee equivalent for noise immunity
Output: Alarm indication in the screen: PD alarm / PD count - PD warning alarm - System status indicator

MIU (Master Interface Unit)
RS485 (2-port) USB (4-port)

EMI / RFI immunity
IEC 61180-1 BS EN61000-4-8, BS EN61000-4-11, BS EN61000-4-18; IEC 60255-5, BS EN55022 (:2006); BS EN61000-3-2 to -3-3, BS EN61000-4-2 to -4-6, substations.

Confirms to relevant specifications for monitoring / control equipment in HV substations.

BS EN60068-2-2, BS EN60068-2-1, BS EN60068-2-78 IEEE C37.98 (Seismic Testing of Relays)

NEMA IP66

Ambient operating temperature
-25ºC to +75ºC
-25ºC to +55ºC

Noise gating coincidence filters

15.4 KS/s per channel
Total of 107.5 KS/s for 7 channels (simultaneous sampling)

Time synchronization
1 additional channel for noise antenna

ESD (Electro-Static Discharge)
5 - 95% non-condensing

Dimensions and weight
Available for rapid monitoring and analysis of partial discharge in gas insulated switchgear (GIS) and power transformers. The system is field operated, touch screen based and gives engineers the tools required for diagnosing partial discharge with limited or no access to the main PDM infrastructure.

Used for low-cost, high performance cost monitoring of GIS and power transformers in terminals installations, power plants and large industrial consumers. The information gathered from the system may be useful for condition based maintenance decisions.

PD testing and analysis under installation and commissioning of GIS and transformers. Qualitrol testing for PD during or after assembling or manufacturing of GIS and transformers.

Labor measurements of PD in any installation material for scientific and research laboratories.

About QUALITROL®

Established in 1945, with continual improvement at the core of our business, QUALITROL® provides smart utility asset condition monitoring across the globe. We are the largest and most trusted global leader for partial discharge monitoring, asset protection equipment and information products across generation, transmission and distribution. At QUALITROL® we are redefining condition monitoring technology for Electric utilities assets.

QUALITROL Portables PDM Partial discharge monitor for transformers and GIS

Handy system for precise assessment of partial discharge during testing, commissioning, and periodic inspections

- Full characterization and localization of partial discharge faults to determine the severity of PD and help in scheduling maintenance.
- Very rapid and easy deployment enables maximum time for condition assessment of assets.
- Robust and rugged design to maximize portable operation life and support inspections / testing for extended period of time (24 hours up to 12 months).
- Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatus installed in substations.

Product Summary

Description
A self sufficient and portable PDM system for rapid monitoring and analysis of partial discharge in gas insulated switchgear (GIS) and power transformers. The system is field operated, touch screen based and gives engineers the tools required for diagnosing partial discharge with limited or no access to the main PDM infrastructure.

Application
Used for low-cost, high performance cost monitoring of GIS and power transformers in terminals installations, power plants and large industrial consumers. The information gathered from the system may be useful for condition based maintenance decisions.

PD testing and analysis under installation and commissioning of GIS and transformers. Qualitrol testing for PD during or after assembling or manufacturing of GIS and transformers.

Labor measurements of PD in any installation material for scientific and research laboratories.
**Power supply**
- Voltage range: 30 to 300 VAC, 110-115 V, 220-230 VAC
- Supply current: 113 or 220 VAC

**Mechanical Immunity**
- EMI / RFI immunity: IEC 61180-1
- Vibration test compliance: IEEE C37.98 (Seismic Testing of Relays)
- Shock test compliance: BS EN68-2-6, BS EN68-2-27, BS EN68-2-29

**Ambient operating temperature**
- Operating: -25ºC to +75ºC
- Storage: -25ºC to +55ºC

**Dimensions and weight**
- Dimensions: 508 mm x 355 mm x 254 mm [20" x 14" x 10”]
- Weight: 17 kg [37.5 lbs]

**Environmental**
- Enclosure rating: NEMA IP66
- Humidity: 5 - 95% non-condensing

**Comms**
- USB: Yes
- RJ45 (10/100 Mbps): Yes

**Clock**
- Time synchronization: Yes

**Data storage**
- Data storage: 1.2 GHz
- Operating system: Windows XP / Windows 7 compatible
- Total of 107.5 KS/s for 7 channels (simultaneous sampling)

**Data sheet**
- Sensitivity: > 6 mm, < 5pC
- Bandwidth: Wideband 300 - 1500 MHz
- Output: 70 W
- Input: 90 to 264 VAC, 47-63 Hz; 40 to 290 VDC universal supply
- Voltage range: 90 to 264 VAC, 47-63 Hz; 40 to 290 VDC universal supply

**System alarms**
- System fault, channel fault

**Outputs**
- Alarm indications on the screen: PD fault alarm - PD alarm - System status indicator - PD warning alarm

**Inputs**
- 1 additional channel for noise antenna

**Other**
- 6 UHF channels
- 1 extra channel for noise antenna

**Performance**
- Display: 12” touch screen, (1024 x 768)
- Others: 508 mm x 355 mm x 254 mm [20" x 14" x 10”]. 17 kg [37.5 lbs]

**Software**
- Optional software download of data

**About QUALITROL**

Established in 1945, with continual improvement at the core of our business, QUALITROL provides smart utility asset condition monitoring across the globe. We are the largest and most trusted global leader for partial discharge monitoring, asset protection equipment and information products across generation, transmission and distribution. At QUALITROL we are modeling condition monitoring technology for Electric utilities assets.

QUALITROL Portable PDM

**Partial discharge monitor for transformers and GIS**

**Application**
- Lab measurements of PD on any insulating material for manufacturing of GIS and transformers.
- Commissioning of HV GIS and transformers.
- PD testing and analysis whilst installation and decisions.
- May be used for condition based maintenance strategy.
- Used for low-cost, high performance scientific and research laboratories.

**Description**

A self sufficient and portable PDM system for rapid monitoring and analysis of partial discharge in gas insulated switchgear (GIS) and power transformers. The system is field operated, touch screen based and goes everywhere the tools required for diagnosing partial discharge with limited set-up access to the main PDM infrastructure.

**Hybrid test**

Handy system for precise assessment of partial discharge during testing, commissioning and periodic inspections

- Full characterization and localization of partial discharge faults to determine the severity of PD and help in scheduling maintenance.
- Robust and rugged design to maximize portable operation life and support inspections for extended period of time (24 hours up to 12 months).
- Accurate fault detection improves reliability of HV testing ensuring safe and stable HV apparatus installed in substations.

**PD measurement under difficult conditions**

**Excellent interference immunity for HV record mode, versatile sync, high performance portable equipment for rapid detection of PD and help in scheduling maintenance of GIS and power transformers.**

**Faster testing and analysis whilst installation and commissioning of GIS and transformers.**

**Qualify testing for PD during or after assembling or manufacturing of GIS and transformers.**

**Lab measurements of PD in any isolating material for scientific and research laboratories.**

**Product Summary**