Providing all the answers needed, not just data, at the click of a button

- Power quality monitoring - IEC 61000-4-30 Class A (Edition 2.0)
- Digital fault recording
- Single screen power system overview
- Device and communication health check

**Product Summary**

**Description**

Single performance measuring and monitoring device with multi-functional capabilities including Class A power quality and fault recording. 9 (optional: 18/27/36) analog channels available as AC or DC. Eliminates 90% analytical time, very easy to use. Flexible, scalable architecture enables users to acquire only one function at a time adding other functions later.

**Application**

Distribution substation monitoring

**Power Quality**

Digital Fault Recorder

**Qualifier TROL® Field Services**

QUALITROL® provides on-site commissioning/start-up and comprehensive maintenance contracts to all customers worldwide. To further improve reliability, an extended warranty is available on selected products commissioned by QUALITROL®.

**QUALITROL® Educational Services**

QUALITROL® professional training (designed to achieve hands-on performance based objectives) prepares operations, maintenance, and engineering personnel to install, test, configure, operate and maintain QUALITROL® products.

**QUALITROL® Accelerated Delivery**

QUALITROL® provides accelerated delivery on many products and services including replacements, spare parts and repairs.

**About QUALITROL®**

QUALITROL® manufactures substation and transformer monitoring and protection devices used by electric utilities and manufacturing companies. It is the global leader in sales and installations of transformer asset protection equipment, fault recorders and fault locators. Established in 1945, QUALITROL® produces thousands of different types of products on demand, each customized to customers’ unique requirements.

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Providing all the answers needed, not just data, at the click of a button

- First monitor that combines (in one device) IEC 61000-4-30 Class A power quality, digital fault recording and energy metering (to double check billing meter)
- Scalable system to meet basic and demanding monitoring requirements
- INFORMATION - NOT DATA: due to the sophisticated software capabilities, the required information is available when needed, where needed and in the desired format
- One click data analysis available via customized shortcuts for preferred analysis style / parameter / device group (a favorite analysis style can be saved for quick, future reference)

Power quality monitoring

- Power quality measurement in accordance with IEC 61000-4-30 Class A for all parameters
- Continuous recording of up to 1014 parameters (min, max, avg) for 10 minute intervals (frequency 10 seconds, Pit 2 hours, harmonic reports in 3 second intervals)
- Continuous recording of up to 256 parameters (min, max, avg) for customized time interval (1 min - 24 hours)
- Triggered recordings for sags / dips, swells, interruptions, rapid voltage changes and triggers on other power quality parameters that exceeded predefined thresholds

Full function digital fault recording

- Fault records (512 samples per cycle) combine analog and digital events in one screen for fault analysis
- Many power quality monitoring devices are only designed to connect to the metering CT. The INFORMA PMD-A can also be connected to the protection CT
- Option available to connect to both (protection and metering) CTs on accurate normal load current (for power and energy calculation) and accurate fault current are required
- Unlike typical power quality monitors, the INFORMA PMD-A has extensive trigger options in addition to the normal sags / dips, swells and interruptions. There are level and rate of change triggers on all calculated parameters including frequency. There is also a power swing trigger based on low frequency oscillations plus triggering from all digital inputs. Records can be initiated by Boolean combinations of individual triggers. It is also possible for multiple devices in a substation to cross trigger each other
- Variable record length up to 30 seconds (shorter when disturbance is shorter)
- Records from different devices can be merged and analyzed as a single DFR composite waveform

Single screen power system overview

- This patent pending power system overview provides tailored information of your whole system in one single screen
- Supports big monitoring systems with up to 1000 devices
- Enables engineers to get a very quick status of all important PQ parameters

Device and communication health check

- This single screen of system and device health provides information about device communication, time synchronization, UPS status, power supply failure and critical memory status
- Enables engineers to fix communication infrastructure problems before device data is lost

High immunity

- The INFORMA PMD-A is designed to comply with Transmission EMC requirements

Embedded EN 50160 report

- Complete compliance reports automatically computed every week. Can be stored in the device for one year
- Provides rapid overview of the supply quality
- Can be summarized and printed with a single mouse click

Embedded user defined report

- Standard or user-defined thresholds can be set, e.g. dips defined at -10 % in EN 50160 can be changed to user thresholds of -15%
- Cumulative probability (CP) of 95% as defined in EN 50160 can also be changed (e.g. 99%)

Customized reporting

- Meeting utilities specific report requirements. Qualtrol's report writer enables customized reports, the saving of report templates, the creation of automatic reports and notification when critical events happen (via e-mail, text message or mobile phone)
- No need to create regulatory or company internal reports manually

Plug and play data backup on-site

- Plug and play USB port enabling the simple upload of device data onto a USB memory stick when on-site
- Easy data upload in the event that communication infrastructure is out of order
- Copy / synchronize the data into the main database
- Reduce risk of data loss when communication infrastructure breaks down

IEC 61000-3-6 and 61000-3-7 reports

- Automatic compliance reports in accordance with IEC 61000-3-6 (Assessment of emission limits for distorting loads in MV and HV power systems)
- Automatic compliance reports in accordance with IEC 61000-3-7 (Assessment of emission limits for fluctuating loads in MV and HV power systems)

Easy commissioning and configuration

- Device configuration can be copied from one device to another
- The device commissioning tool is designed to avoid that important parameters are not set
- Configuration and commissioning software does not require an installation on a PC, therefore no installation or license is required for the PCs of commissioning personnel
- Instruction for commissioning personnel can be done in a few minutes

Data available where and how you need it

- The default included database is the Microsoft SQL 2005 Express (4 GB)
- For larger systems the fully licensed Microsoft SQL is used
- The system is designed to work with up to 1000 devices

Transient Recording

- Capture impulsive transients (mainly caused by lightning) and oscillatory transients (mainly caused by capacitor bank switching) with very high resolution of 20 MHz sampling rate to get additional information to your normal fault record

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INFORMA PMD-A Performance measuring and monitoring device

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(Edition 2.0, 2008-02)

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INFORMA PMD-A - product description

IEC 61000-4-30 Class A Power Quality
• Power quality measurement is still a developing market. Basic variables (e.g. RMS values of voltage and current) are well defined but the calculation methods of the PQ quantities were not. With so many different manufacturers and devices available, it is likely to obtain varying results depending on the brand of instrument used. To obtain reliable, repeatable and comparable results, the International Electrotechnical Commission standard, IEC 61000-4-30 has defined standard measurement methods for each type of parameter.

Focus on user friendliness
• Delivering ease of use has been the main objective in the development process. Customer requirements collected over the past 20 years influenced the specification. Fast client-less information access (PQ reports), favourite parameters, overview screens, automated analysis, quick configuration copy from one device to another, easy device commissioning (wizard style) and system health checks are just some of the features built in. The end result is a comprehensive package that provides critical analysis at the click of a single button.

Future proof scalability
• The INFORMA PMD-A can be expanded in functionality as needs change. It can be configured as a power quality monitor, a simplified digital fault recorder or a fully integrated, full function power quality / digital fault recording device. Adding functionality in the future can be easily and inexpensively accomplished, without the need for an additional, separate device or software.

Input accuracy
• In accordance with IEC 61000-4-30 Class A.

Overview
Processor
32 bit, 400 MHz processor

9 configurable analog channels for INFORMA PMD-A 3U device
9/18/27/36 configurable analog channels for INFORMA PMD-A 6U device

Sampling rate 25.6 kHz at 50 Hz, 30.72 kHz at 60 Hz

Bandwidth 25 to 4600 Hz ± 0.5 dB

Operating system
MontaVista Linux with real time extensions

Status indicators
9 LEDs - healthy, communication, clock sync, battery, trigger, alarm and sensors (status)

Quality system
Developed, designed, and manufactured according to DIN ISO 9001:2000

Calibration
Solid state design, no user adjustments

Calibration check to be performed once in 5 years

Data storage
Compact Flash for record storage 4 GB standard (8 GB/16 GB optional)

On-board Flash for firmware - 64 MB

A RAM based temporary file system is used to avoid excessive Flash use avoiding Flash wear. The INFORMA firmware is designed to optimize the write operations for every memory block.

Type 1: 90 - 264 VAC (88-300 VDC), 47 - 63 Hz.

Type 2: 36 - 72 VDC.

Type 3: 18 - 36 VDC.

40 VA for 3U INFORMA PMD-A device and 80 VA for 6U INFORMA PMD-A device

25 VA for 3U INFORMA PMD-A device and 50 VA for 6U INFORMA PMD-A device

DC output 12 VDC at 750 mA

Nominal (full scale) in VAC: 63.5 (140), 120 (270), 240 (480), 440 (800)

300 V CAT III, 150 V CAT IV

500 VDC continuous

420 kΩ (TX-AFE and HIA-AFE)

Error 0.1°

The transient voltage (up to 6 kV) is detected by the TR module with a bandwidth of 2.5 kHz to 5 MHz.

Sampling rates (user configurable): 20 MHz, 10 MHz, 5 MHz, 2.5 MHz, 1.25 MHz

12-bit resolution

Full scale in VDC: 12, 120, 240, 480

Safety rating: 300 V CAT III, 150 V CAT IV

Maximum overload: 1000 VAC continuous

Input option 1: TX_AFE
Impedance: > 2.5 MΩ (at 63.5 V), > 2 MΩ (at 120 V), > 1 MΩ (at 240 V), > 0.5 MΩ (at 440 V)

16-bit resolution for voltage. 20-bit resolution for current

(To achieve a 20-bit resolution on a current channel, two 16-bit A/D converters are used with different gain factors to provide an effective 20-bit resolution)

Input option 2: HIA_AFE
Impedance: > 4 MΩ

24-bit resolution for voltage/current channels.

Error ≤ 0.1°

Optional for HIA-AFE:

Fast Transient Recording
The transient voltage (up to 6 kV) is detected by the TR module with a bandwidth of 2.5 kHz to 5 MHz.

Sampling rates (user configurable): 20 MHz, 10 MHz, 5 MHz, 2.5 MHz, 1.25 MHz

12-bit resolution

Analog inputs - voltage AC

Analog inputs - Voltage DC (optional - instead of AC)

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### Technical Specifications

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<td>Impedance: &gt; 2.5 MΩ (at 63.5 V), &gt; 2 MΩ (at 120 V), &gt; 1 MΩ (at 240 V), &gt; 0.1 MΩ (at 440 V)</td>
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**INFORMA PMD-A Performance measuring and monitoring device**

**TECHNICAL SPECIFICATIONS**

**Analog inputs - current**
- Input range: Nominal (full scale) in AAC: 1 (10), 2 (20), 5 (50), 10 (100)
- Maximum overload: 200 A for 1 second, 40 A continuous
- Input impedance: < 0.02Ω, 20-bit resolution for current
- (To achieve a 20-bit resolution on a current channel two 16-bit A/D converters are used with different gain factors to provide an effective 20-bit resolution.)

**Digital inputs**
- 32 (isolated into groups of 8)
- Voltage range independent from 24/48 to 250 VDC
- Alarm notification: 4 form A/B relay outputs (configurable - normally closed or normally open at factory)
- Relay 1 indicates system healthy
- Relays 2 and 3 are user configurable for PQ parameters
- Relay 4 is user configurable for either temperature under/over temperature threshold
- Resistive load: 250 VAC 5 A, 110 VDC 0.5 A, 48 VDC 1.0 A

**Options**
- Time synchronization: GPS (accuracy ± 300 ns between time masters)
- IRIG-B modulated and level shift (accuracy ± 2 ms between time masters)
- Time slave (synchronized through 1 PPS)

**Mechanical**
- Dimensions - 3U device: H x W x D: 132.5 mm [5.2"] x 487 mm [19.2"] x 362.2 mm [14.3”]
- Dimensions - 6U device: H x W x D: 265.8 mm [10.5"] x 487 mm [19.2"] x 362.2 mm [14.3”]
- Weight - 3U device: 15 kg [33.1 lbs] without battery and 15.5 kg [34.2 lbs] with battery
- Weight - 3U device: 23 kg [50.1 lbs] without any external battery and 24 kg [52.9 lbs] with two external batteries
- Housing/mounting: Metal 19” rack mountable enclosure

**Communication Ports**
- Four serial ports (of these, three are RS232 ports with male DB-9 connectors, and one is RS485 with 1” pin connector)
- Internal PSTN (V.90) modem (optional on RS232-2)
- Two 100 Ethernet ports with RJ45 connectors
- Optional fiber optic Ethernet (on rear port)
- Differential (RS485 levels) for 1 PPS for time synchronization
- Fiber optic 1 PPS output (master) / input (slave)

**Protocols**
- TCP/IP, Modbus, IEC 60870-5, IEC 61850, GMS, GPRS

**Standard compliance**
- IEC 61000-4-30 Class A
- IEC 61000-4-7 harmonics and inter-harmonics
- IEC 61000-4-15 flicker
- CBEMA, ITIC
- IEEE 1159, IEEE 519

**Environmental**
- Temperature: Operating: -5°C to 50°C (23°F to 122°F)
  Cold start is not possible below 0°C (32°F)
- Storage: -30°C to +70°C (-22°F to +158°F)
- Humidity: 0 to 95% non-condensing
- Enclosure: IP 41 according to IEC 60529
- Others: RoHS compliant

**EMC STANDARDS**

- IEC 60255-22-6 / IEC 61000-4-4 Conducted Susceptibility (CS)
  Tested to IEC 61000-4-4, Tested for 10 V, 150 kHz - 80 MHz
  Tested on power line, RS232 -1, Ethernet port 1, analog inputs (V and I), digital inputs and relay outputs
  Passed with Criteria A

- IEC 60255-22-4 / IEC 61000-4-4 and ANSI C37.90.1.2002 Electrical fast transient burst test
  Tested to IEC 61000-4-4, Tested for 4 kW, 5 kHz / 10 kHz / 2.5 MHz
  Tested on power line, RS232-1, Ethernet port 1, analog inputs (V and I), digital inputs and relay outputs
  Passed with Criteria A

- IEC 60255-22-3 / IEC 61000-4-3 Radiated Susceptibility (RS)
  Tested to IEC 61000-4-3, Tested for 10 V/m, 80 MHz - 1000 MHz
  Tested on complete device
  Passed with Criteria A

- EN 55011 Conducted Emission (CE)
  Tested to CISPR-11. Tested for 79 dB [µV] quasi-peak and 68 dB [µV] average at 0.15 MHz to 0.5 MHz
  Tested for 73 dB [µV] quasi-peak and 60 dB [µV] average at 0.50 MHz to 5 MHz
  Tested on complete device
  Passed and the emission levels are within the specified limits of CISPR 11

- EN 55011 Radiated Emission (CE)
  Tested to CISPR-11. Tested for 40 dB [µV] quasi-peak from 30 MHz to 230 MHz at 10 m [32.8 ft]
  Tested for 47 dB [µV/m] quasi-peak from 230 MHz to 1000 MHz at 10 m [32.8 ft]
  Tested on complete device
  Passed and the emission levels are within the specified limits of CISPR 11

- IEC 61000-4-8 Power frequency magnetic field test
  Tested to IEC 61000-4-8, Tested for 30 A/m, ± 2 Hz, Tested on complete device
  Passed with Criteria A

- IEC 60255-22-1 / IEC 61000-4-12 and ANSI C37.90.1.2002 Damped oscillatory wave disturbance tests
  Tested to IEC 61000-4-12, Tested for 2.5 kV common mode, 1 kV differential mode, 1 MHz
  Tested on power-line, digital, analog inputs (V) and relay
  Passed with Criteria A

- IEC 61000-4-2 Damped oscillatory wave disturbance tests
  Tested to IEC 61000-4-2, Tested for 0.1 kV common mode, 10 kV differential mode, 1 MHz
  Tested on power-line, digital, analog inputs (V) and relay
  Passed with Criteria A

- IEC 61000-4-5 Surge test
  Tested to IEC 61000-4-5, Tested for class 4, ±0 V, 40 kV common mode, 1 kV differential mode
  Tested on power-line, digital, analog inputs (V) and relay
  Passed with Criteria A

- ENV 50204 Immunity to EMI from digital radio telephones
  Tested to ENV 50204, Tested for level 3, 10 V/m, at 900 MHz ± 5 MHz, at 1890 MHz ± 10 MHz keyed at frequency 200 Hz ± 1%, 50% duty cycle (2.5 ms ON 2.5 ms OFF).
  Tested on complete device
  Passed with Criteria A

- IEC 62305-5 Clause 6 Dielectric test
  Tested to IEC 61000-4-2. Tested for 2.5kV for 1 minute. Tested for 2 kV for power port, analog inputs (V and I), digital inputs, relay and 1 kV for isolated communication ports (RS232 and RS485)
  No flashover or breakdown occurred

- IEC 62305-5 Clause 1 Insulation test
  Tested to applied 500 VDC with respect to earth, Tested on power port, analog inputs (V and I), digital inputs and relay. The impedance was greater than 100 MO

- IEC 62305-5 Clause 8 Impulse voltage test
  Tested to ±5 kV, 0.5 J. Tested on power-line, digital, analog inputs (V and I) and relay
  Tested to ±5 kV, 0.5 J. Tested on power-line, digital, analog inputs (V and I) and relay
  No flashover or breakdown occurred

- IEC 61000-4-11 Supply voltage dips and interruptions
  Tested to dips - Class-3, interruptions - Class-3. Tested on Power-port.
  Passed with dips - Criteria A, interruptions - Criteria B

- IEC 60255-22-3 / IEC 61000-4-4 and ANSI C37.90.1.2002 Electro static discharge tests
  Tested to IEC 61000-4-4, Tested for 8 kV contact, 15 kV air
  Tested on enclosure, all accessible I/O lines and ports
  Passed with Criteria A

- IEC 60255-5 / EN62055-6 Supply voltage limit test
  Tested for PS2
  Tested for DC range 80 VDC to 150 VDC

- IEC 60068-2-1 / EN60068-2-1 Cold test
  Tested for cold storage -40°C / 40°F for 96 hours. Cold operating -9°C (29°F) for 16 hours
  Tested on complete device

- IEC 60068-2-8 Vibration tests
  Tested for 2g acceleration, frequency is 10 - 150 Hz, 20 sweep cycles in each of three mutually perpendicular planes (x, y and z)
  Tested on complete device

- IEC 60068-2 Cyclic temperature test
  Tested for cyclic temperature test for 5 cycles
  Each cycle has 3 hours for 70 degrees and 3 hours for -5 degrees in power off condition
  Tested on complete device

- BS EN 62650-2002 Spring hammer test
  Mechanical shocks of 0.5 J

- BS EN 60068-2-29 Bump test
  Peak acceleration value: 10 ms - 2. Duration of the pulse: 16 ms
  Number of jolts: 1000 x 10. Rate: 3 jolts per second

- IEC 61000-4-13 Testing and measuring techniques
  Harmonics and inter inter harmonics
INFORMA PMD-A Performance measuring and monitoring device

**TECHNICAL SPECIFICATIONS**

**Input range** Nominal (full scale) in AAC: 1 (10), 2 (20), 5 (50), 10 (100)

**Maximum overload** 200 A for 1 second, 40 A continuous

**Input impedance** < 0.02Ω, 20-bit resolution for current

**Digital inputs** 32 (isolated into groups of 8)

**Voltage range independent from 24/48 to 250 VDC**

**Alarm notification** 4 form A/B relay outputs (configurable - normally closed or normally open at factory)

**Relay 1** indicates system healthy

**Relays 2 and 3** are user configurable for PQ parameters

**Relay 4** is user configurable for either temperature under/over temperature threshold

**Resistive load** 250 VAC 5 A, 110 VDC 0.5 A, 48 VDC 1 A

**Time synchronization**

**GPS** (accuracy ± 300 ns between time masters)

**IRIG-B modulated and level shift** (accuracy ± 2 ms between time masters)

**Time slave (synchronized through 1 PPS)**

**Mechanical**

- **Dimensions - 3U device**
  - H x W x D: 132.5 mm [5.2'] x 487 mm [19.2'] x 362.2 mm [14.3']
  - Dimensions - 6U device
  - H x W x D: 265.8 mm [10.5'] x 487 mm [19.2'] x 362.2 mm [14.3']

- **Weight - 3U device**
  - 15 kg [33.1 lbs] without battery and 15.5 kg [34.2 lbs] with battery

- **Weight - 6U device**
  - 32 kg [70.5 lbs] without any external battery and 24 kg [52.9 lbs] with two external batteries

**Housing/mounting** Metal 19" rack mountable enclosure

**Communication**

- **Ports** Four serial ports (of these, three are RS232 ports with male DB-9 connectors, and one is RS485 with 15 pin connector)
- **Internal PSTN (V.90) modem**.
- **Optional telephone line** (on rear port)
- **Differential (RS485 levels) for 1 PPS for time synchronization**
- **Fiber optic / 1 PPS output (master / input) (slave)**

**Protocols**

- **TCP/IP, Modbus, IEC 60870-5, IEC 61850, GSM, GPRS**

**Standard compliance**

- **IEC 61000-4-30 Class A**
- **IEC 61000-4-7 harmonics and inter-harmonics**
- **IEC 61000-4-15 flicker**
- **CBEMA, ITIC**
- **IEEE 1159, IEEE 519**

**Environmental**

- **Temperature** Operating: -5°C to 50°C (23°F to 122°F)
  - Cold start is not possible below 0°C (32°F)
  - Storage: -30°C to +70°C (-22°F to +158°F)

- **Humidity** 0 to 95% non-condensing

- **Enclosure** IP 41 according to IEC 60529

- **Enclosure** RoHS compliant

**Options**

- **Time synchronization**
- **Temperature**
- **Humidity**
- **Weight**
- **Dimensions**

**EMC STANDARDS**

- **IEC 60255-22-6 / IEC 61000-4-6 Conducted Susceptibility (CS)**
  - Tested to IEC 61000-4-6, Tested for 10 V, 150 kHz - 80 MHz
  - Tested on power line, RS232-1, Ethernet port 1, analog inputs (V and I), digital inputs and relay outputs. **Passed with Criteria A**

- **IEC 60255-22-4 / IEC 61000-4-4 and ANSI C37.91.2002 Electrical fast transient burst test**
  - Tested to IEC 61000-4-4, Tested for 4 kW, 5 kHz / 100 kHz / 2.5 MHz
  - Tested on power line, RS232-1, Ethernet port 1, analog inputs (V and I), digital inputs and relay outputs. **Passed with Criteria A**

- **IEC 60255-22-3 / IEC 61000-4-3 Radiated Susceptibility (PS)**
  - Tested to IEC 61000-4-3, Tested for 10 V/m, 80 MHz - 1000 MHz
  - Tested on complete device, Passed with Criteria A

- **EN 55011 Conducted Emission (CE)**
  - Tested to CISPR-11, Tested for 79 dB [µV] quasi-peak and 66 dB [µV] average at 0.15 MHz to 0.5 MHz
  - Tested for 73 dB [µV] quasi-peak and 60 dB [µV] average at 0.5 MHz to 5 MHz
  - Tested for 75 dB [µV] quasi-peak and 60 dB [µV] average at 0.5 MHz to 5 MHz
  - Tested on complete device. **Passed and the emission levels are within the specified limits of CISPR 11**

- **EN 55011 Radiated Emission (CE)**
  - Tested to CISPR-11, Tested for 40 dB [µV/m] quasi-peak from 230 MHz to 2330 MHz at 10 m [32.8 ft]
  - Tested on complete device. **Passed and the emission levels are within the specified limits of CISPR 11**

- **IEC 61000-4-8 Power frequency magnetic field test**
  - Tested to IEC 61000-4-8, Tested for 30 A/m, x, y, z axis. Tested on complete device

- **IEC 61000-4-2/1 / IEC 61000-4-12-1 / IEC 61010-1-22 Tested for 2.5 kHz common mode, 1 kHz differential mode, 1 MHz**
  - Tested on power-line, digital, analog inputs (V), relay. Passed with Criteria A

- **ENV 50024 Immunity to EMI from digital radio telephones**
  - Tested to ENV 5024, Tested for level 3, 10 V/m, 900 MHz ± 5 MHz, ± 1.8 kHz ± 10 kHz key at frequency 200 Hz ± 1%, 50% duty cycle (2.5 ms ON 2.5 ms OFF). Tested on complete device **Passed with Criteria A**

- **IEC 60255-5-8 Clause 8 Dielectric test**
  - Tested to IEC 61000-4-5. Tested for 8 kV contact, 15 kV air
  - Tested to dips - Class-3, interruptions - Class-3. Tested on Power-port. **Passed with Criteria A**

- **IEC 60255-5-8 Clause 7 Insulation test**
  - Tested to applied 500 VDC with respect to earth. Tested on power port, analog inputs (V and I), digital inputs and relay. The impedance was greater than 100 MO

- **IEC 60255-5-8 Clause 8 Impulse voltage test**
  - Tested to x5 kV, 0.5 J. Tested on power-line, digital, analog inputs (V and I) relay.

**Environmental**

- **IEC 61000-4-11 Supply voltage dips and interruptions**
  - Tested to dips - Class-6, interruptions - Class-3. Tested on Power-port.
  - Passed with dips - Criteria A, interruptions - Criteria B

- **IEC 60255-6-1 EN60255-6 Supply voltage limit test**
  - Tested to IEC 61000-4-2. Tested for 8 kV contact, 15 kV air
  - Tested on enclosures, all accessible I/O lines and ports. Passed with Criteria A

- **IEC 60255-5-8 / IEC 61000-4-12 Damped oscillatory wave disturbances test**
  - Tested to 2.5kHz for 1 minute. Tested for 2 kHz for power port, analog inputs (V and I), digital inputs, relay and 1 kV for isolated communication ports (RS232 and RS485)

- **IEC 60255-6-1 EN60255-6 Cold tests**
  - Tested for cold storage -40°C [-49°F] for 96 hours. Cold operating -5°C [23°F] for 16 hours
  - Tested on complete device

- **IEC 60255-6-2 / IEC 60255-6-2-1 Vibration tests**
  - Tested for 2g acceleration, frequency 10 - 150 Hz, 20 sweep cycles in each of three mutually perpendicular planes (x, y, z). Tested on complete device

- **IEC 60255-6-2 Cyclic temperature test**
  - Tested for cyclic temperature test for 5 cycles
  - Each cycle has 3 hours for 70 degrees and 3 hours for -5 degrees in power off condition
  - Tested on complete device

- **IEC 60255-6-2 Spring hammer test**
  - Mechanical shocks of 0.5 J

- **IEC 60255-6-3 / IEC 60255-6-3-1 Bump test**
  - Peak acceleration value: 10 ms - 2. Duration of the pulse: 16 ms
  - Number of jobs: 1000 x 10. Rate: 3 jobs per second

- **IEC 60255-6-4 / IEC 60255-6-4-3 Shock test**
  - Dry heat storage: 70°C [158°F] for 4 days (96 hours), humidity 0 - 96 % non-condensing
  - Dry heat operating: 40°C [113°F] for 16 hours, humidity 0 - 96 % non-condensing

- **IEC 60255-6-5 Mechanical shock test**
  - Safety requirements for electrical equipment for measurement, control and laboratory use

- **IEC 60255-6-7 Mechanical shock test**
  - Provides general recommendations concerning the choice of relevant tests
POWER QUALITY
Digital Fault Recorder

INFORMA PMD-A
Performance measuring and monitoring device

Providing all the answers needed, not just data, at the click of a button

- Power quality monitoring - IEC 61000-4-30 Class A (Edition 2.0)
- Digital fault recording
- Single screen power system overview
- Device and communication health check

Product Summary

Description
Single performance measuring and monitoring device with multi-functional capabilities including Class A power quality and fault recording. 9 (optional: 18/27/36) analog channels available as AC or DC. Eliminates 90% analytical time, very easy to use. Flexible, scalable architecture enables users to acquire only one function at a time adding other functions later

Application
Distribution substation monitoring

QUALITROL® Field Services
QUALITROL® provides on-site commissioning/start-up and comprehensive maintenance contracts to all customers worldwide. To further improve reliability, an extended warranty is available on selected products commissioned by QUALITROL®.

QUALITROL® Educational Services
QUALITROL® professional training (designed to achieve hands-on performance based objectives) prepares operations, maintenance, and engineering personnel to install, test, configure, operate and maintain QUALITROL® products.

QUALITROL® Accelerated Delivery
QUALITROL® provides accelerated delivery on many products and services including replacements, spare parts and repairs.

About QUALITROL®
QUALITROL® manufactures substation and transformer monitoring and protection devices used by electric utilities and manufacturing companies. It is the global leader in sales and installations of transformer asset protection equipment, fault recorders and fault locators. Established in 1945, QUALITROL® produces thousands of different types of products on demand, each customized to customers’ unique requirements.