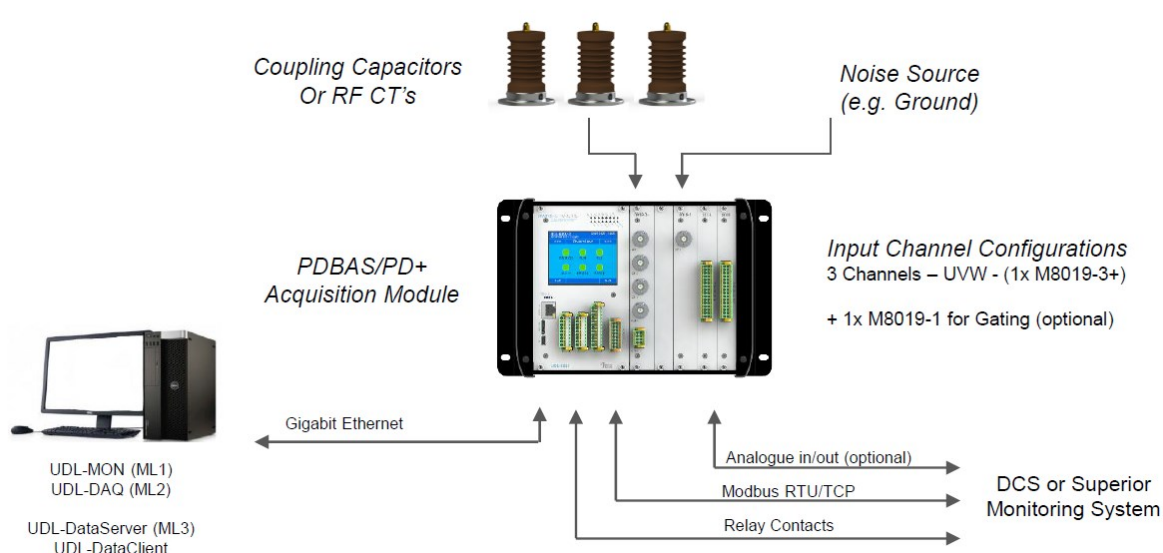


3-Channel Partial Discharge Monitoring and Data Acquisition System



UDL-8000-PD3G

Key Features

- Standalone Continuous Data Acquisition
- Compatible with most PD Sensors as 80pF & 1000pF Coupling Capacitors and RF-CT's
- Local True Color Touch LCD
- Upgradable to PD+ (High Resolution PRPD)
- Upgradable for Standalone Data Recording
- Support for UDL-DataServer for Long Term Data Storage

Application

- Rotating Machines
- Air Insulated Switchgears
- HV & MV Cables

Compliance

- IEC60270
- IEC60034-27-2
- IEC60034-27-1

General Description

The UDL-8000-PD3G is used for online partial discharge monitoring of high voltage machines. The system acquires partial discharge signals via a permanent installed PD sensors as coupling capacitors or RF CT's. Phase reference is measured either from the coupling capacitor or from multiple external sources via dedicated inputs.

Partial discharge signals are acquired typically in a continuous 30 second data stream and are presented as phase resolved partial discharge pattern (PRPD) and as a pulse height distribution diagram.

The system calculates various parameters given by international standards which are used for trending and alarm handling. All calculated parameters are available on Modbus RTU/TCP and can be linked to optional 4-20mA output channels.

If the system shall provide results for data analysis, the system can be upgraded to the PD+ acquisition module which offers high resolution PRPD Patterns which are in accordance to the sample catalogue shown in the annex of the IEC standards.

For the suppression of noise and disturbances, the system offers variable high and low pass filters and an optional noise gating channel, which is typically used for phase related disturbances as e.g. from the static excitation system in large generators.

The system can be extended with the data recording function for standalone event based recording of RAW data results (e.g. PRPD Patterns). Events can be freely programmed and restricted to operation conditions if needed.

For permanent long term data storage, the system can be integrated into the UDL-DataServer software, a centralized SQL database software supporting multiple devices and operation users.

The partial discharge monitoring system can be extended with other monitoring functions such as endwinding vibration, rotor flux, shaft voltage/current, power measurement or temperature monitoring.

3-Channel Partial Discharge Monitoring and Data Acquisition System



Product Variants

UDL-8000-PD3G



P1042-PD3G0-A2

The P1042 enclosure is a 1/2 19" enclosure with 4HU height and is generally mounted on a mounting plate by four M6 screws within a cabinet. This package variant offers 2 additional slots for data acquisition and I/O Modules such as 4-20mA input or outputs. The system contains a dedicated slot for the noise gating channel and is powered by 24VDC.

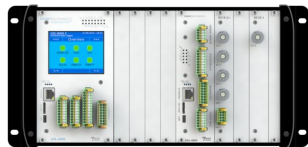
Dimensions (w x h x d): 272 x 189 x 176mm Weight: 1.6kg IP55
Power Requirements: 24VDC, ~500mA (without additional modules)



P1063-PD3G0-A6

The P1063 enclosure is a 2/3 19" enclosure with 4HU height and is generally mounted on a mounting plate by four M6 screws within a cabinet. This package variant offers 6 additional slots for data acquisition and I/O Modules such as 4-20mA input or outputs. The system contains a dedicated slot for the noise gating channel and is powered by 24VDC.

Dimensions (w x h x d): 378 x 189 x 176mm Weight: 2kg IP55
Power Requirements: 24VDC, ~500mA (without additional modules)



P1263-A4-PD3G0

The P1263 enclosure is a 2/3 19" enclosure with 4HU height and is generally mounted on a mounting plate by four M6 screws within a cabinet. This package variant is generally used for multi parameter monitoring with 2 CPU's, one dedicated for the partial discharge monitoring and one for maximum 4 other data acquisition modules such as endwinding vibration, rotor flux, shaft voltage/current, power measurement or temperature monitoring. The system contains a dedicated slot for the noise gating channel and is powered by 24VDC.

Dimensions (w x h x d): 378 x 189 x 176mm Weight: 2kg IP55
Power Requirements: 24VDC, ~500mA (without additional modules)



RP2084-AC-PD3G0-A6

The UDL-8000 Pro „All-in-one“ solution offers a complete monitoring solution including the UDL-DataServer for long term data storage, running on a 10" windows based touch panel PC. The UDL-8000 Pro is based on a 19" 6HU Rack ideally suited to be installed in a 19" Cabinet. 6 slots for acquisition and I/O modules are available for an extension of other monitoring parameters. The system contains a dedicated slot for the noise gating channel and is commonly powered by an universal power of 85-264VAC, 50/60Hz

Dimensions (w x h x d): 450 x 266 x 246mm Weight: 4kg IP55
Power Requirements: 85-264VAC, ~100mA (without additional modules)



C2050-AC-PD+3G0-A4
CA2050-AC-PD+3G0-A4

For periodic measurements, the C2050 variant is integrated in a rugged plastic carrying case. The Case includes a storage compartment in the base and in the lid for accessories as cables and connectors. The variant CA2050 offers a special compartment for one PPG-0010 (PD Pulse Generator) and one PDC17.5-1000 (Coupling Capacitor)

The portable partial discharge data acquisition system contains the upgrade PD+ for the acquisition of high resolution PRPD patterns and is ideally suited for online and offline measurements on rotating machines.

The system contains a dedicated slot for the noise gating channel and is commonly powered by an universal power of 85-264VAC, 50/60Hz

Dimensions (w x h x d): 505 x 409 x 256mm Weight: 12kg IP67
Power Requirements: 85-264VAC, ~100mA (without additional modules)

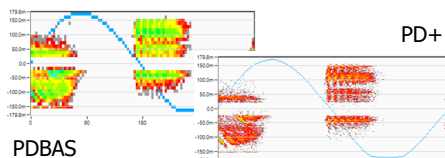
3-Channel Partial Discharge Monitoring and Data Acquisition System



Upgrade to PD+

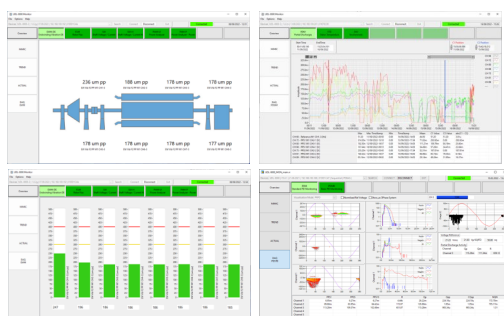
By default, the acquisition module PDBAS is installed, offering PRPD Patterns and Pulse Height Distribution plots, suitable to distinguish noise and disturbances from real partial discharge activities and is an ideal, cost effective solution for partial discharge monitoring and trend analysis. In case partial discharges shall be analysed and compared to the sample catalogue provided by the IEC standard, an upgrade to PD+ is suggested as PD+ offers high resolution PRPD Patterns.

P/N: UDL8000-UPGPD+



UDL-8000-PD3G

Monitoring Level 1



UDL-MON Software

The monitoring Level 1 offers continuous standalone monitoring and visualisation of real-time partial discharge activities.

2 alarm thresholds can be configured on every available parameter and can be delayed if needed.

The included UDL-MON software allows to visualize the actual acquired data as mimics, trend, bargraph and PRPD Data on a windows PC on a temporary basis.

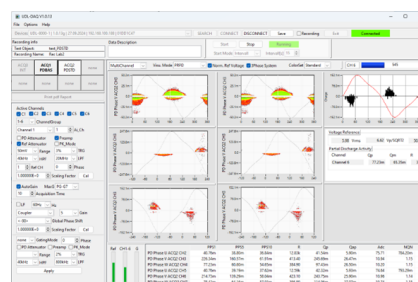
The measurement results can be exported into a pdf document for archiving.

Monitoring Level 2

The recording option extends the monitoring level 1 and offers standalone event based data recording, e.g. after alarm state or at specific time intervals. The data will be stored within the device until it is manually downloaded by the operator.

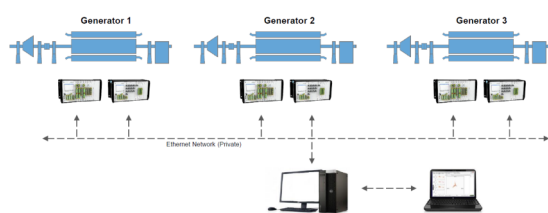
Additionally the recording option offers manual data acquisition function via the UDL-DAQ software. This software includes a file management system used to handle manual and automatic recorded data on a windows PC.

P/N: UDL8000-REC



UDL-DAQ Software

Monitoring Level 3



Example of an Centralized DataServer within the same Powerplant

The UDL-DataServer option extends the monitoring level 2 and allows to connect the UDL-8000 system(s) to the centralized UDL-DataServer software for continuous long term data storage in a centralized database software. The UDL-DataServer offers state of the art monitoring functions including machine mimics and data correlation of all acquired parameters.

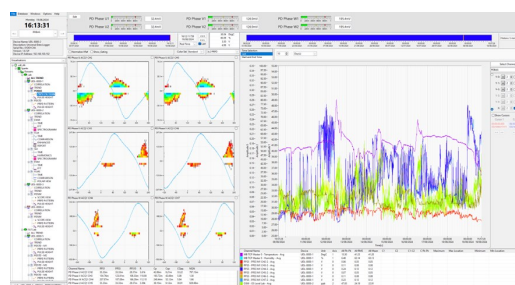
All devices are connected to a common Ethernet network and are registered at the UDL-DataServer within the same power-plant or within the same corporate network. Once the devices are connected to the server, all acquired data is automatically stored within the SQL Database.

The acquired data is then further visualized via the windows based UDL-DataClient. When running the UDL-DataServer Pro, all acquired data can be visualised simultaneously thanks to the multi-window function.

Data can either be presented simultaneously between different monitoring parameters or between different instruments / monitoring objects.

All data stored within the SQL database can also be visualized via a Web-Dashboard.

P/N: UDL8000-DS



3-Channel Partial Discharge Monitoring and Data Acquisition System



Technical Data

Controller Specifications

CPU: 667 MHz, Dual Core Arm Cortex-A9
RAM / ROM: 512 MB Ram, 512 MB Flash
Data Storage: Industrial 8GB Micro SD Card, Ext4

Display: 3.5" Cap-Touch True Color
320 x 240 pxl
Operating System: RT Linux

Communication Interfaces

Ethernet Gigabit Ethernet 1000Base-TX via RJ45
Static IP or DHCP
USB-C: Virtual Ethernet via USB-C
Modbus RTU (Master/Slave): RS485 Optically Insulated
Max 115'200 Baud

Modbus TCP (Master/Slave): via Gigabit Ethernet
Digital Inputs: 5-48VDC, 20mA, optically insulated
Digital Outputs: 5-40VDC, Max 50mA, optically insulated
Relay Contacts: 0..220VDC, I_{max} see manual
0..240VAC, I_{max} 1A

Partial Discharge Measurement (PDBAS)

No of PD Channels: 3, Sequential Measurement
RF input impedance: 50 Ohm
Variable High Pass Filter: 0.04, 0.1, 0.5, 1, 2, 3, 5, 10MHz
Variable Low Pass Filter: 0.8, 5, 10, 20, 300MHz
Measurement Range: 5mV - 50Vp
Measurement Unit: mV / pC

PRPD Patterns: bipolar & unipolar, user selectable
PRPD Amplitude Windows: 2x16 or 32
PRPD Phase Windows: 100
Pulse Detection Rate: 50kHz
Pulse Detection: >2ns

Partial Discharge Measurement (PD+)

PRPD Patterns: bipolar & unipolar, user selectable
PRPD Amplitude Windows: 2x128 or 256

PRPD Phase Windows: 256

Reference Measurement

Ref1 (From Coupler): 20mV .. 50V, 3..400Hz, 20kOhm
Ref2 (BNC): 30V, 3..400Hz, 100kOhm
Ref3: 0.1..30V, 3..400Hz, 100kOhm

Ref4: 10..300V, 3..400Hz, 100kOhm
Variable LP Filter: 12, 20, 30, 40, 50, 60, 100, 200Hz

Product Numbers & Ordering Codes

UDL-8000-P1042-PD3G0-A2	UDL-8000 3-Channel RF Partial Discharge Monitoring System (2 Slots)
UDL-8000-P1063-PD3G0-A6	UDL-8000 3-Channel RF Partial Discharge Monitoring System (6 Slots)
UDL-8000-P1263-A4-PD3G0	UDL-8000 Dual CPU Multi-parameter Monitoring System (4 Slots) with 3 RF Partial Discharge Channels
UDL-8000-RP2084-AC-PD3G0-A6	UDL-8000 Pro – All-in-one 3-Channel RF Partial Discharge Monitoring System (6 Slots) with Integrated 10" Touch Panel PC
UDL-8000-C2050-AC-PD+3G0-A4	UDL-8000 Case - Portable 3-Channel RF Partial Discharge Acquisition System (4 Slots) for online and offline with Compartment for Accessories
UDL-8000-CA2050-AC-PD+3G0-A4	UDL-8000 Case - Portable 3-Channel RF Partial Discharge Acquisition System (4 Slots) for online and offline with Compartment for PPG-0010 & PDC17.5-1000
UDL-8000-M8019-1	Noise Gating Channel Module
UDL-8000-UPGPD+	Upgrade to High Resolution PRPD Patterns PD+
UDL-8000-REC	Upgrade for Data Recording incl. UDL-DAQ Software (ML2)
UDL-8000-DS	Upgrade for UDL-DataServer Integration (ML3)
UDL-8000-AIS1 / AIS2	16x / 32x 4-20mA Input Channels
UDL-8000-AO1 / AO2	16x / 32x 4-20mA Output Channels
UDL-8000-DI1 / DI2	16x / 32x Digital Input Channels
UDL-8000-DO1 / DO2	16x / 32x Digital Output Channels

Additional Acquisition Modules please refer to the application specific datasheets

WME-504030	Standard Wallmount Cabinet, 500 x 400 x 300mm (for e.g. D/P1028 / P1042)
WME-505030	Standard Wallmount Cabinet, 500 x 500 x 300mm (For e.g. P1063)
WME-606030	Standard Wallmount Cabinet, 600 x 600 x 300mm (For e.g. P1080 / P1263)

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