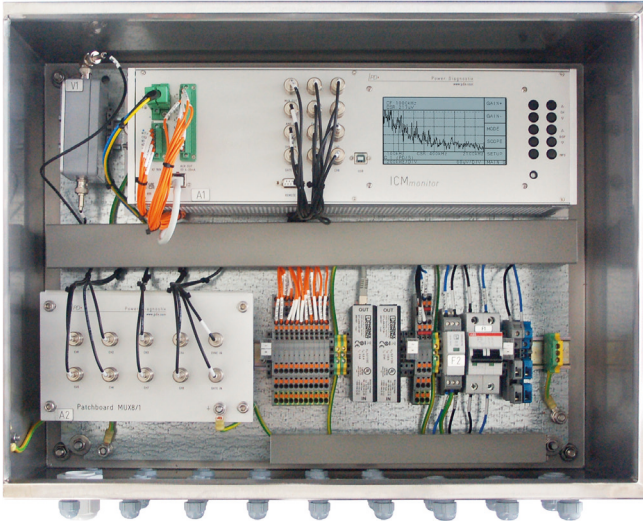


ICMmonitor

On-line PD monitoring system



- Versatile monitoring system for detecting partial discharge (PD) in various medium and high voltage assets
- Remote access with the monitoring web server (MWS) option for topical information about your asset's condition
- Excellent measurement results even under difficult environmental conditions thanks to effective noise cancelling techniques
- Partial discharge measurements according to IEC 60270
- Trending information for a reliable forecast and prevention of costly failures

DESCRIPTION

The ICMmonitor continuously monitors the condition of the insulation system of your medium and high voltage assets and gives you the ability to analyse the acquired data.

The ICMmonitor combines three devices into one instrument: A spectrum analyser, an acoustic detector, and a partial discharge (PD) monitor. The combination of spectrum analyser and PD detector greatly expands the measurement possibilities when analysing the insulation systems in a noisy environment. Thus, the ICMmonitor offers continuous PD on-line monitoring even with a large amount of electrical noise.

The monitoring web server function (MWS) enables you to remotely access the ICMmonitor instrument and shows topical information on your asset's condition. Additionally, you can receive an email notification in the case of system errors.

The ICMmonitor can be used for monitoring the following assets:

- Power transformers
- Motors
- Generators
- Cable systems

ADVANTAGES

- Monitors your asset without interrupting your daily business
- Always keeps you informed and updated about your asset's condition with the monitoring web server option
- Versatile feature and accessory options enable you to perform various measurements with one instrument
- By analysing the collected trending data you can detect defects in an early state and prevent costly outages

STANDARD FEATURES

- PD spectrum analysis for the selection of frequency bands with less disturbances, resulting in an improved signal-to-noise ratio
- A built-in four-channel multiplexer offers scanning of three-phase systems or multiple sensors, with each measurement channel separately configurable.
- Effective noise gating for blocking phase-stable or phase-independent noises
- Automatic data acquisition and storing for trend analysis, alarming, and reporting
- UHF measurements

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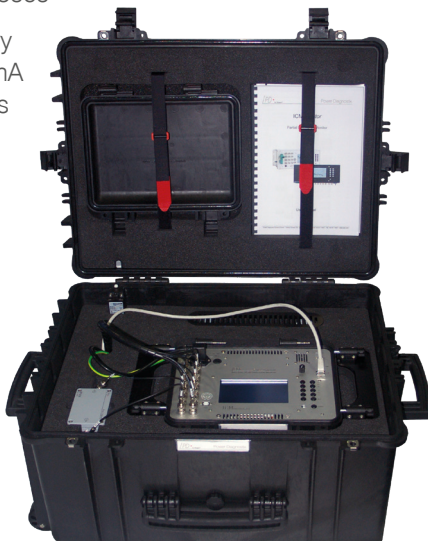
AVAILABLE OPTIONS

Power Diagnostix's ICMmonitor is available with five different housing models, giving it flexible installation and a range of configuration options that can meet your specific needs.



Available options are:

- Industrial monitoring cabinet with necessary supply and safety components pre-installed, suitable for outdoor installation
- 8- or 12-channel multiplexer
- Monitoring web server for web browser based remote access and control from everywhere in your network
- Mobile communication interface for remote access via UMTS
- Up to eight auxiliary 4–20 mA output signals for external monitoring purposes
- Up to six auxiliary inputs for 4–20 mA or 0–10 V signals
- IEC 61850 interface
- Built-in preamplifier
- Portable protective housing ICMoutlander
- Pre-installed control PCs or notebooks
- Expert software for PD pattern classification according to their PD faults



MONITORING WEB SERVER

Power Diagnostix's monitoring web server (MWS) provides an Ethernet gateway for a platform-independent remote access to monitoring data recorded with the ICMmonitor. Alarms triggered by the instrument can be reported by automated email to the responsible person.

Combined with an LTE mobile router, a secure remote access via the Internet can be provided.



Key features

- Key information at a glance via remote access
- Instant visualisation of event log and corresponding PD data
- Alarm notification via email
- Database export
- Built-in report generator
- Easy integration into customer's network



MONITORING SOFTWARE

Main features

- Remote access to multiple monitoring instruments
- Automated data acquisition
- Long term trending, history structure
- Alarm handling
- Coloured PD pattern acquisition
- Connects via USB or TCP/IP

Trending information

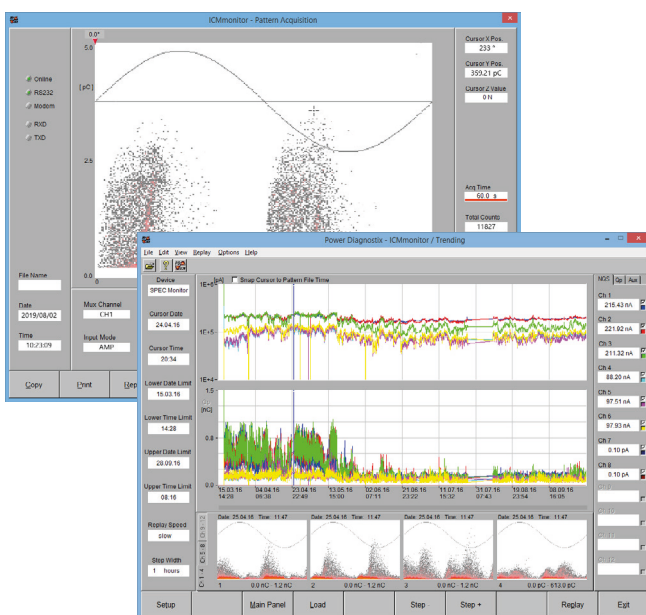
- By clicking on the data points in the PD trend chart, the related phase-resolved PD patterns can be opened
- Axis parameters and time spans are user-configurable

Warnings and alarms

- Easy set-up of alarm levels and threshold parameters
- Real-time display of current alarms
- View of the PD patterns of corresponding alarm events

Recording and storage

- Real-time recording of PD data on request or when triggered by threshold violations
- Automated storage of PD data for in-depth post analysis

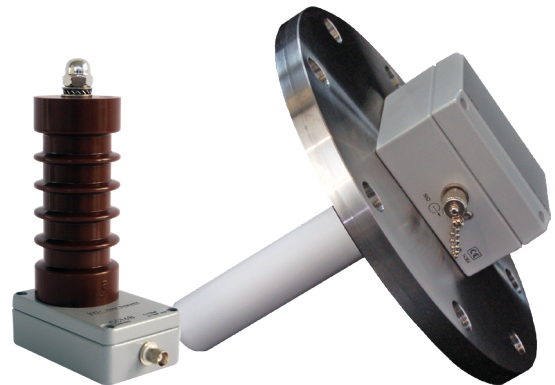


ACCESSORIES

A wide range of standard accessories are available to help you adapt the ICMmonitor to your specific monitoring situation and setup environment.

The following accessories are recommended:

- Bushing adapters
- Bushing coupling units
- UHF sensors
- Preamplifiers
- Frequency converter units
- Current transformers
- Disturbance antennas
- Coupling capacitors
- DAkKS certified calibration impulse generators



For more details, as well as ordering information on our accessories, please refer to our accessories catalogue.

TECHNICAL DATA

Acquisition unit

Mains supply	Half 19-inch version: 100 to 240 V AC, 50–60 Hz (automatic) $\frac{2}{3}$ 19-inch version: 100 to 240 V AC, 50–60 Hz (automatic) 19-inch enclosure version: 100 to 240 V AC, 50–60 Hz (automatic) Explorer case version: 90 to 264 V AC, 47 to 440 Hz (automatic) DIN rail version: 12 to 26 V DC, (external supply)
Line fuse	1.6 A (time lag)
Power requirements	Approx. 40 VA
Display type	Backlit LCD
Display size	120 mm x 64 mm
Display resolution	128 x 240 pixels b/w
Operation	10 buttons
Operation temperature	10 to 40 °C (non-condensing) 0 to 55 °C (optional)
Input impedance (AMP IN)	50 Ω 50 pF
A/D converter (PD)	8 bits (unipolar)
Size (W x H x D)	Half 19-inch version: 133 x 236 x 295 mm ³ (incl. connectors) $\frac{2}{3}$ 19-inch version: 319 x 132.5 x 125 mm ³ 19-inch enclosure unit: 133 x 482.6 x 345/310 mm ³ (depending on version) Explorer case version: 360 x 305 x 220 mm ³ (closed) DIN rail mounting enclosure: 300(±1) x 109 x 137 mm ³ (incl. connectors)
Weight	Approx. 1.6 to 5.6 kg (depending on installed options and enclosure)

Alarm relay

Contact rating	Models with 230 V AC supply voltage: 5 A/160 V AC, 5 A/30 V DC Models with 12/24 V DC supply voltage: 6 A/160 V AC, 6 A/30 V DC
Minimum contact load	Models with 230 V AC supply voltage: 100 mA/5 V DC Models with 12/24 V DC supply voltage: 10 mA/5 V DC

Standard PD mode

Lower cut-off (-6 dB)	40, 80, or 100 kHz (software controlled)
Upper cut-off (-6 dB)	250, 600, or 800 kHz (software controlled)
Input sensitivity	< 500 μV RMS/5 pC (without preamplifiers)
Gain range	1, 2, 4, 8, 10, 20 ..., 200, 400, 800

Preamplifiers

Input impedance

RPA1/RPA1D/RPA1G/RPA4	10 kΩ 50 pF
RPA1L / RPA1H	1 kΩ 50 pF
FCU2 / RPA2	50 Ω 50 pF

Input sensitivity

RPA1/RPA1D/RPA1G/RPA4	< 50 μV RMS/0.03 pC
RPA1L	< 15 μV RMS/0.02 pC
RPA1H	< 40 μV RMS/0.05 pC
RPA2	< 800 μV RMS
RPA3	< 2 mV RMS
FCU2	< 200 μV RMS (46 dBμV)

Bandwidth

RPA1/RPA1D/RPA1G/RPA4	40 to 800 kHz
RPA1L/RPA1H	40 kHz to 20 MHz
RPA2	2 to 20 MHz
RPA3	200 MHz to 1 GHz
FCU2	100 MHz to 1800 MHz

Synchronisation / HVM

Synchronisation frequency	
Standard	5 to 320 Hz (automatic)
UHF mode	5 to 250 Hz (automatic)
Maximum voltage	200 V _{peak} (140 V RMS), 100 V RMS nominal
Input impedance	10 MΩ

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TECHNICAL DATA

Spectrum function

Input sensitivity	< 5 μ V RMS/0.5 pC (270 kHz bandwidth); < 1 μ V RMS/2 pC (9 kHz bandwidth)
Maximum input voltage	120 mV RMS (270 kHz bandwidth); 5 mV RMS (9 kHz bandwidth)
Frequency range	100 kHz to 10 MHz (in steps of 10 kHz)
Bandwidth	9 kHz or 270 kHz
Measurement uncertainty	Typ. < 5%

Available communication interfaces

USB 2.0
LAN
RS232 (57.6 kBits/s)

ORDERING INFORMATION

Product	Order no.	Options	Order no.
4-channel ICMmonitor, 1/2 19-inch desktop housing	PX10301	8-channel multiplexer (eight PD inputs, one sync. input)	PX10306
4-channel ICMmonitor, 2/3 19-inch rack mounting enclosure	PX10371	8-channel multiplexer (eight PD inputs, eight sync. inputs)	PX10302
4-channel ICMmonitor, 19-inch rack mounting enclosure	PX10378	12-channel multiplexer (twelve PD inputs, one sync. input)	PX10303
4-channel ICMmonitor, DIN rail mounting enclosure	PX10370	Built-in monitoring web server MWS	PX90048
4-channel ICMmonitor, DIN rail mounting enclosure without display	PX10372	External monitoring web server MWS, DIN rail mountable	PX90054
4-channel ICMmonitor, portable Explorer case	PX10308	Mobile communication interface MCI2	PX90058
8-channel ICMmonitor, portable Explorer case	PX10377	2-years VPN license for mobile communication interface	PX90059
12-channel ICMmonitor, 19-inch desktop housing	PX10384	10-years VPN license for mobile communication interface	PX90063
Cable set for permanent outdoor installation (e.g., transformers and switchgear)	PX17023	IEC 61850 interface	PX10420
Cable set for permanent indoor installation (e.g., rotating machines and cables)	PX17199	Four auxiliary outputs	PX10356
Cable set for portable ICMmonitor with 4-channel multiplexer	PX17048	Eight auxiliary outputs	PX10354
Cable set for portable ICMmonitor with 8-channel multiplexer	PX17117	Four auxiliary inputs	PX10352
		Six auxiliary inputs	PX10407
		Industrial monitoring cabinet PDMAR500	PX90044
		Temperature control system for industrial monitoring cabinet	PX90056
		Remote control computer system with pre-installed software	PX90000
		IP65 protective housing ICMoutlander	PX10381
Software	Order no.		
ICMmonitor control software	PX19003		
ICMmonitor device driver license for an additional instrument	PX19023		
ICMexpert software for PD pattern classification	PX19002		

Set of measuring cables is NOT included with the instrument and must be ordered separately.

SALES OFFICE

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ICMMONITOR_DS_E1.06

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