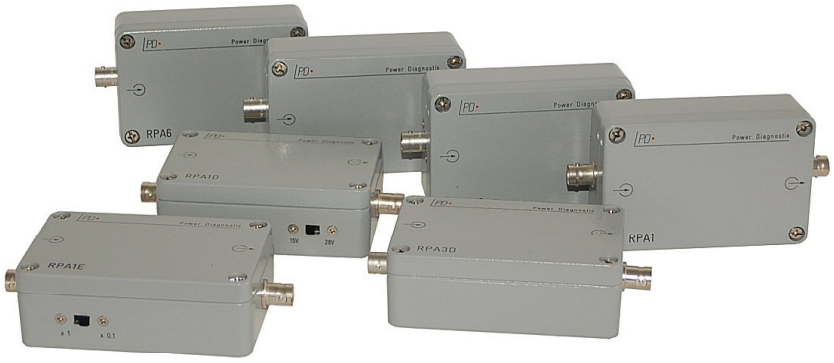
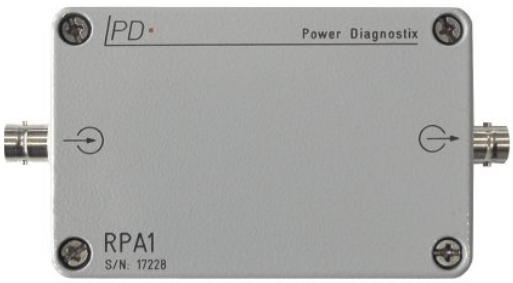
ICMseries Accessories:
Preamplifiers & Preaquisition Units



Some preamplifiers of the RPA series

Preamplifiers serve to condition, filter, and amplify the partial discharge signal to be measured. Because the frequency range in which PD signals are measured is strongly dependent on the preamplifier used, proper selection of a preamplifier is an important part of noise mitigation and can have a strong effect on the appearance of the partial discharge pattern itself.

Power Diagnostix provides a complete line of modular preamplifiers for various testing applications. The mos t significant difference among the preamplifiers is the frequency range in which they detect partial discharge signals. Other features that distinguish one preamplifier from another are: options for transparency and on/off switching, unipolar vs. bipolar charge detection, and the possibiltiy of galvanic isolation in the test setup.



The RPA1 preamplifier

All of the Power Diagnostix external signal conditioning modules and preamplifiers are remote supplied and remote controlled through a simple coaxial signal cable (RG58). This technique allows placement of these units close to the sensor or signal source. Furthermore, as these modules act as impedance converter and line driver, the weak signal source, such as voltage divider or coupling impedance, is not loaded by the cable capacitance or impedance.

This technique also provides enhanced over-voltage protection. All preamplifiers of the RPA series can drive a 50 W cable up to 50 m long.

The **RPA1** is the standard preamplifier for measurements in the low frequency range according to standards such as the IEC60270. The **RPA1D**, **RPA1E**, **RPA1F**, and **RPA1G** are variations on the RPA1.

The **RPA1D** and **RPA1G** are suited to connect directly to ultra-sonic acoustic sensors. To simplify connection, they provide selectable power supply for the sensor (15 V or 28 V DC).

The **RPA1L** and **RPA1H** are intended primarily for measurements on medium and high-voltage power cables using the ICM*compact*.

The **RPA2** is primarily for measuring the PD signal spectra found with rotating machines, while the **RPA2B** is used with capacitive sensors to monitor cables and cable accessories at a higher sensitivity.

The **RPA3** module is well-suited for measuring PD signal spectra, detected by sensors and antennas installed with gas insulated switchgear (GIS).

The **RPA4** is a preamplifier set with fiber optic transmission, offering outstanding isolation properties.

The frequency converter units of the **FCU** series are ultra-wide band preacquisition units with logarithmic output (40–2000 kHz) and are mainly used for GIS applications. The **FCU2B** covers an input range of 100–100 MHz, while the **FCU2A** can be used for input signals from 1–2 GHz. For cable applications Power Diagnostix offers the **FCU3** covering an input range of 100 kHz to 50 Mhz.

The **UHF1** and **UHF2** offer an amplification of 27 dB in the range from 200 MHz to 1 GHz resp. 300 MHz to 2 GHz, and are suitable for boosting weak signals from GIS sensors.

Reference table for commonly used Power Diagnostix preamplifiers & preacquisition units

Type	Frequency Range	Input Impedance	Sensitivity Input	Roll-Off	Bipolar	Remarks
RPA1	40 kHz–800 kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	Standard preamplifier
RPA1D	40 kHz –800 kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	Built-in sensor supply, switchable (15/28 V)
RPA1E	40 kHz –800 kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	0/20 dB attenuation
RPA1F	40 kHz –800 kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	For the AIA*compact* only
RPA1G	40 kHz –800 kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	Built-in sensor supply, switchable (Off/15/28 V)
RPA1H	40 kHz–20 MHz	1 kΩ//50 pF	<400µV	40dB/dec	✓	Oil/paper cable, DSO
RPA1L	40 kHz–20 MHz	1 kΩ//50 pF	<200µV	40dB/dec	✓	Cable, DSO
RPA2	2 MHz–20 MHz	50 Ω//50 pF	<800µV	40dB/dec		Online measurements on rotating machines
RPA2B	2 MHz–20 MHz	50 Ω//50 pF	<200µV	40dB/dec		Cable sensors
RPA3	200 MHz–1 GHz	50 Ω//50 pF	<300µV	40dB/dec		GIS sensors
RPA3D	50 MHz–400MHz	50 Ω//50 pF	<300µV	40dB/dec		Nearfield detection
RPA3E	20 MHz–200MHz	50 Ω//50 pF	<300µV	40dB/dec		Nearfield detection
RPA4	40 kHz–800kHz	10 kΩ//50 pF	<200µV	40dB/dec	✓	Fiber optic isolation
FCU2	100 MHz–1.8 GHz	50 Ω//50 pF	<200µV	40dB/dec		Logarithmic output
FCU2A	1 GHz–2 GHz	50 Ω//50 pF	<200µV	40dB/dec		Logarithmic output
FCU2B	100 MHz–1 GHz	50 Ω//50 pF	<200µV	40dB/dec		Logarithmic output
FCU3	100 kHZ–50 MHz	50 Ω//50 pF	<200µV	40dB/dec		Logarithmic output, cable sensors
UHF1	200 MHz–1 GHz	50 Ω//50 pF	--	--		GIS sensors
UHF2	300 MHz–2 GHz	50 Ω//50 pF	--	--		GIS sensors

The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories:
Quadrupoles & Isolation Transformers

When a quadrupole and a coupling capacitor are used together as the coupling device, high voltage is applied both to a test object and to the coupling capacitor in parallel with the test object. A quadrupole (sometimes called a measuring impedance) can then be placed in series with either the coupling capacitor or in series with the test object. Some quadrupoles also output a low-voltage copy of the applied high-voltage wave for synchronizing the PD detector. The three basic models of available Power Diagnostix quadrupoles are briefly described here.

CIL Quadrupole

The **CIL** quadrupoles consist of an inductor in parallel with a damping resistor. The inductor and resistor are calculated to form, together with a high-voltage coupling capacitor, a second order high pass filter. Therefore, matching the range of the CIL with the size of the coupling capacitor with which it will be used is important.

CIL/V Quadrupole

The **CIL/V** quadrupoles are similar to the CIL quadrupoles but also contain a capacitor acting as a voltage divider together with the high voltage coupling capacitor. This provides a low-voltage copy of the applied high-voltage wave that can be used through a HST to synchronize the PD detector and monitor the quality of the applied high-voltage wave.

CIT Quadrupole

The **CIT** coupling units are transformer type units, where a preamplifier's input resistance serves as the required damping resistor. CIT units offer a higher sensitivity than the CIL coupling units, so they are suitable for measurements at HV cables with high C_x values. Furthermore, CIT units are available for bridged configurations to connect to two similar test objects (CITxy2 models).

Optionally, the quadrupoles with built-in divider capacitor for voltage measurement can be supplied with a rotary switch to select the divider capacitor. Especially, when connected to the measurement tap of transformer bushings, the selectable capacitors expand the applicable voltage range.

Reference table of standard Power Diagnostix quadrupoles

Type	Coupling Capacitor Range	Max. AC Current	Voltage Divider Capacitor (to be specified)
CIL1H	20 pF – 90 pF	50 mA	All CIL and CIT units are avalable with one, two, or multiple (switachble) built-in divider capacitors to provide a voltage output signal, marked by '/V'
CIL2H	60 pF – 250 pF	100 mA	
CIL3L	200 pF – 900 pF	50 mA	
CIL3M	200 pF – 900 pF	200 mA	
CIL3H	200 pF – 900 pF	500 mA	
CIL4L	600 pF – 2.5 nF	100 mA	
CIL4M	600 pF – 2.5 nF	400 mA	
CIL4H	600 pF – 2.5 nF	1100 mA	
CIL5L	2 nF – 9 nF	400 mA	
CIL5M	2 nF – 9 nF	1600 mA	
CIL5H	2 nF – 9 nF	3200 mA	
CIL6L	6 nF – 25 nF	1000 mA	
CIT4M	600 pF – 2.5 nF	400 mA	
CIT4H	600 pF – 2.5 nF	1100 mA	
CIT5M	2 nF – 9 nF	1600 mA	
CIT5H	2 nF – 9 nF	3200 mA	
CIT6M	6 nF – 25 nF	4000 mA	
CIT6H	6 nF – 25 nF	8000 mA	

IT Isolation Transformer

The IT series allows the permanent isolation of 250 Volts between input and output. Its high frequency behavior is optimized for 50Ω systems and the use with a multiplexer and RPA2 or RPA2B type of preamplifier. An extra voltage output '/V' with the 50/60 Hz fundamental frequency is available on request.

Type	Max. AC Current	Max. Voltage (< 1 minute)	-6dB LF Cut-Off	-3dB LF Cut-Off	-3dB HF Cut-Off	-6dB HF Cut-Off	Input Connector
IT2C	500mA	10 kV_{AC}	300 kHz	500 kHz	30 MHz	80 MHz	BNC
IT3B	1000mA	1 kV_{AC}	100 kHz	200 kHz	30 MHz	50 MHz	BNC
IT4B	1000mA	1 kV_{AC}	100 kHz	200 kHz	30 MHz	50 MHz	Banana

The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories: Coupling Devices

The Power Diagnostix line of coupling devices includes quadrupoles, current transformers, and coupling capacitors to adapt Power Diagnostix PD detectors to different measurement tasks. The coupling device in a PD measuring circuit provides the means of sensing the partial discharge pulse and sending it as a voltage signal to a preamplifier for conditioning.

The coupling device can be a capacitor and a quadrupole, a capacitor and a current transformer, or a current transformer alone. The standard capacitor for tanδ measurements, such as the SC30, consists of a capacitor and a built-in shunt capacitor, only. Additionally, combined units for tanδ and partial discharge measurements are available.

Coupling Capacitors

Power Diagnostix standard coupling capacitors (CC) are mounted on sturdy cast aluminum enclosures and can be used for on-line and off-line measurements on rotating machines as well as for a variety of smaller test setups. Usually, the CC units are connected to a coupler termination box (CTB), which provides protective grounding for the signal cable.The table on the right-hand side below lists some standard models of coupling capacitors provided by Power Diagnostix, along with their built-in circuits, if present. Coupling capacitors for special applications, e. q. ATEX couplers for areas exposed to explosion hazards, are also available.

CTB1A

Type	Channel	Spark gap	IN	OUT
CTB1A	3x	350 V	BNC	BNC
CTB1C	3x	350 V	TNC	BNC
CTB2A	4x	350 V	BNC	BNC
CTB2C	4x	350 V	TNC	BNC

Coupler termination boxes

Type	Capacitance	Nom. Voltage	Built-in Quadrupole	Built-in Voltage Divider	Built-in RF CT	Max. Height [mm]
CC7B	440 pF	7 kV	✓	✓		152
CC14B	220 pF	14 kV	✓	✓		190
CC20B	145 pF	21 kV	✓	✓		300
CC25B	1 nF	25 kV	✓	✓		300
CC25B/V	1 nF	25 kV	✓	✓		300
CC25C/V	1 nF	25 kV	✓	✓	✓	300
CC35B/V	145 pF	35 kV	✓	✓		310
CC50B/V	1 nF	50 kV	✓	✓		500
CC50C/V	1 nF	50 kV	✓	✓	✓	500
CC100B/V	1 nF	100 kV	✓	✓		695
CC150B/V	1 nF	150 kV	✓	✓		1210
CC200B/V	0.5 nF	200 kV	✓	✓		1300
CC300B/V	0.5 nF	300 kV	✓	✓		2425

Standard coupling capacitors and supplementary circuits

Various CT models

CT1 fixed current transformer

CT100 clamp-on current transformer

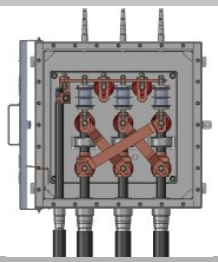
CT100 & RPA1

Current Transformers

When a current transformer is used instead of a quadrupole, the current transformer can be placed around a coupling capacitor terminal or around a part of the test object itself. A current transformer has the advantage of providing galvanic isolation between the ICM*series* PD detector and the high voltage circuit. Power Diagnostix offers current transformers as separate modules or integrated with a coupling capacitor into a single unit.

CT33 for on-site installations in cable cross link boxes

The CTs are a low-impact PD sensor option since no interruption of the power connection is required. Such installation is even possible under on-line conditions, as the CT100 is a clamp-on current transformer that can be opened and clamped around a connecting cable, a ground lead, or even a feeding medium-voltage cable with a high-voltage motor installation.



Three CT33s in a cross link box

Type	Transfer ratio at 50 Ω	Primary window	Bandwidth at -3 dB	Bandwidth at -6 dB
CT1	1:10	15 mm	0.5 – 80 MHz	0.3 – 100 MHz
CT33	1:10	33 mm	0.7 – 75 MHz	0.4 – 77 MHz
CT50/10	1:10	50x10 mm	2 – 90 MHz	1.7 – 93 MHz
CT60R	1:10	60 mm	2 – 25 MHz	1.2 – 40 MHz
CT100(R)	1:10	100 mm	2 – 25 MHz	1.2 – 40 MHz
CT125R	1:10	125 mm	2 – 25 MHz	1.2 – 40 MHz
CT150R	1:10	150 mm	2 – 25 MHz	1.2 – 40 MHz

The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

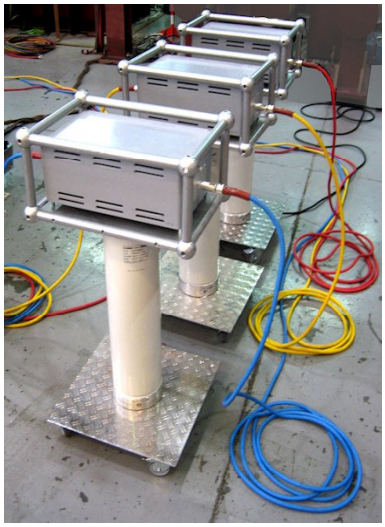
Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories: Filters

HV Filters

Partial discharge measurements are conducted in frequency ranges, which are partly covered by radio transmission. Further, impulse noise interference hamper sensitive measurements. Besides using small filters in the acquisition chain, power filters allow removing such disturbance from the high voltage supply. Power Diagnostix offers a range of different high voltage filters.



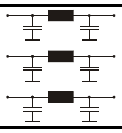
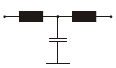
HV filter T100/100

π-Filters are for three-phase systems up to 2 kV, whereas the single-phase T-filters are used for testing with higher voltages. Those filters are installed inline between voltage source and device under test.

The typical frequency range of Power Diagnostix HV filters is 0–300 Hz. For a short time they can be operated with frequencies up to 400 Hz.

For gating purposes, filters that are used in combination with an ICM*flex* can be equipped with a high freqency current transformer (HF CT) and a BNC output.

Examples for standard filters:

Type	Name	$U_{N,rms}$	$I_{N,rms}$	Size (W x H x D) mm
3x π-Filter 	3PI1/20	1 kV	20 A	400 x 170 x 460
	3PI1/50	1 kV	50 A	400 x 170 x 460
	3PI2/20	2 kV	20 A	400 x 170 x 460
T-Filters 	T30/1	30 kV	1 A	357 x 620 x 357
	T30/5	30 kV	5 A	357 x 620 x 357
	T30/20	30 kV	20 A	357 x 620 x 357
	T30/100	30 kV	100 A	507 x 620 x 357
	T50/1	50 kV	1 A	357 x 800 x 357
	T50/5	50 kV	5 A	357 x 800 x 357
	T50/20	50 kV	20 A	357 x 800 x 357
	T50/100	50 kV	100 A	500 x 800 x 450
	T100/1	100 kV	1 A	357 x 1000 x 357
	T100/5	100 kV	5 A	357 x 1000 x 357
	T100/20	100 kV	20 A	357 x 1000 x 357
	T100/100	100 kV	100 A	507 x 1000 x 457

HV filters of different ratings (U_N, I_N) are available on request.

3PI 2/20 Filter

T 50/1

T100/100

T30/100

GF50 Ground Filter

Ground filter GF50

Partial discharge (PD) measurement requires a reasonable noise-free environment. Power Diagnostix' GF50 filter box is designed to reduce high frequent disturbance signals from the ground leads. It can be used for HF separation of the test specimen from the ground potential of the power supply or other HV equipment within the environment without influencing the power frequency. The efficiency strongly depends on the general earthing within the laboratory. A splitted ground lead or copper band can be connected to the multi contact connectors or alternatively to the wing screws beside.

Filter Models for Special Applications

Besides the standard HV filters, Power Diagnostix offers various filters for special high voltage applications, including line filters for cable testing (such as the LF15 and LF350) and filters with AC current and AC voltage measurement. With the latter a high voltage filter ist combined with a high voltage devider and a high current transformer in one unit; conventionally on rolls, or upside-down, as shown.

Different models of line filters

HV filter TVC100/123
with voltage and current measurement

The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories: Sensors

SFX1

SFX2 and SFX3 with sensors

AS75I

Ultrasonic PD Sensors

The AS75I and AS150I are active sensors with very high sensitivity for measurements on GIS, transformer tanks, or cable joints. They come with a built-in 40 dB preamplifier and can be connected to the RPA1D, RPA1F, RPA1G or directly to the AIA*compact*, ICM*system*, ICM*compact* or ICM*monitor.*

The SFX1 is suited to secure the acoustis sensors on a GIS.The magnetic sensor fixtures SFX2 and the sucking fixture SFX3 are for temporarily mounting of the acoustic sensors on a transformer tank.

WS Window Sensors

External window sensors are used to conveniently equip older GIS with UHF monitoring. Power Diagnostix offers such window sensors of different sizes to fit the inspection windows of older GIS. Instead of embedded sensors, additionally, modified earthing switches can be used. In case of non-shielded support insulator disks a proven method is to apply ring antennas to capture the UHF signals at the flanges.

WS window sensors in different sizes

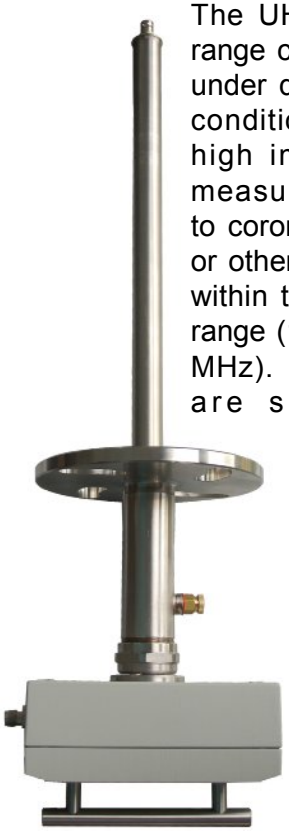
EFS1 sensor

EFS1 Sensor

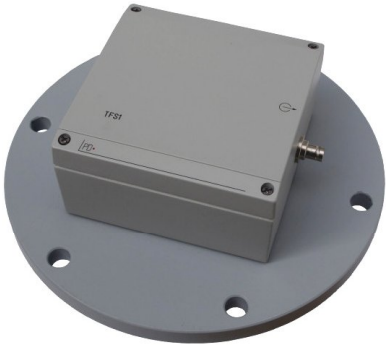
The external flange sensor EFS1 is a wide-band UHF antenna for PD detection on GIS and GIL. Since it is wrapped around the unshielded flange connection, the flange dimensions are required on order. With the N-connector it can be directly jointed with a UHF preamplifier like the UHF1, UHF2 or FCU2.

UHF Transformer Sensors

UHF transformer sensors can be used to detect internal PD on power transformer in a frequency range between 300 MHz and 1 GHz. The UHF frequency range can be chosen under difficult on-site conditions, such as high impact of the measurements due to corona discharges or other disturbances within the typical HF range (100 kHz to 10 MHz). UHF sensors are suitable for retrofitting as well as for pre-installation. The sensitivity can be proven by injecting an impulse generator signal in the UHF range into the system. UHF PD signals can be used for PD pattern analysis as well as for triggering acoustic measurement systems, like the FOS4, for instance. Power Diagnostix provides the TFS1 for valve flanges and the TVS2 for oil valves. Both sensors can be modified and designed in accordance of special customer specifications.



Valve sensor TVS2



Flange sensor TFS1

DFS Differential Foil Sensor

Besides the embedded coaxial sensor of cable accessories, external sensors can be applied to joints and terminations. Especially on cross-bonding joints differential foil sensors serve to capture partial discharge signals in elevated frequencies. Such foil sensors can be permanently installed for monitoring or temporary applied for survey type measurements.

Foil sensor DFS1

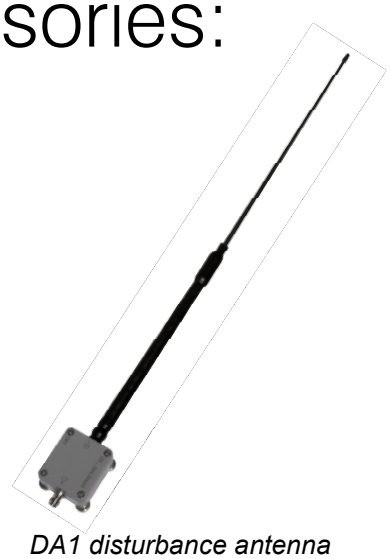
The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories: Miscellaneous

DA2 disturbance antenna



DA1 disturbance antenna

DA Disturbance Antennas

The disturbance antenna DA1 can be used to pick up noise signals caused by local corona discharge, or AM radio waves for instance. Its magnetic holder allows a flexible placement on a transformer tank or to other metallic parts close to the object under test. The output signal can be used to trigger the gate input circuit of all PD acquisition or monitoring devices.

The wideband antenna DA2 consists of a UHF antenna and a frequency converter unit. It is designed to filter HF signals e. g. emitted by GSM transmitting antennas. Therefore it is especially used for GIS monitoring.

DRA1 Discharge Radiation Antenna

With its built-in wide band logarithmic amplifier this antenna is suitable for the detection of discharge signals on air insulated switchgear (AIS) cabinets. It consist of a VHF antenna and a magnetic holder for simple fixture on visual inspection holes on metal housings.

GST1 Gate Signal Transmitter

The gate signal transmitter GST1 converts TTL or analog gate signals into a fiber optic TTL output signal. It has a logarithmic amplification and can be set to three different frequency ranges (40 to 800 kHz, 2 to 20 MHz, or 200 to 600 MHz), which can be selected with a push button. The active bandwidth mode is marked by a lit green LED. The trigger level can be adjusted by a rotary knob, while an LED bargraph indicates the actual signal strength.

AB1

IPU input protection units

AB1 Active Bridge Adapter

The active bridge adapter is an optional accessory that can be used in certain circumstances to “subtract” noise from the measurement setup.

The active bridge adapter AB1 serves to balance the signal picked up by two preamplifiers to reduce the common mode noise or disturbance. This method is applicable when two branches are available.

A mismatch of the signal strength can be adjusted with the AB1‘s control knob. With the preamplifiers of the two branches connected to the “Pos” and “Neg” input of the AB1, and the output connected to the AMP IN of the PD detector, the control knob is used to minimize the common mode signal.

CTB1 Coupler Termination Box

The CTB1 provides protective grounding of the cabling comming from the coupling capacitors. An over voltage protection of the signal path is included and ensures safe working on live test specimen.

IPU Input Protection Units

The protection units are designed to avoid damage of spectrum analyzer input circuits or of preamplifier input stages under the presence of strong transient signals.

They are available for indoor application (IP52 protection) and for outdoor use (IP65 protection).

CSC1 Signal Combiner

The CSC1 allows to select or combine signals from 4 BNC-inputs to one BNC-output. The input and output impedance is thereby kept to 50W, even if one channel is selected or if the sum of all four channels is selected.

CSC1

The versatility of the Power Diagnostix line of PD detection equipment is due in large part to the range of accessories available for the ICM*series* instruments. Each ICM*series* data acquisition unit can be combined with different accessories to suit specific applications.

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521

ICMseries Accessories: Miscellaneous

HVT High Voltage Transformers

Power Diagnostix offers miscellaneous transformers as voltage source for testing purposes. Depending on the customer's needs and the specific testing application Power Diagnostix high voltage transformers cover a voltage range up to 300 kV. Please contact us for detailed information.

HV transformer HVT100/11

TCU Transformer Control Units

Power Diagnostix TCU is made for controlling of high voltage transformers. Together with HVcontrol it combines all standard functions required to manually or automatically operate a high voltage transformer, including safety loops, door locks, and all voltage and current measurements.

The transformer control unit comes in a moveable 19" rack and includes a built-in regulating transformer. The delivery range of the TCU includes a warning lamp and a built-in horn.

Examples:

Type	Voltage	Power	Current	Connection	Height	Dimensions W x H x D
TCU7.5	0–230 V	7.5 kVA	34 A_{max}	CEE 400/32A (L-N)	9 HU	553 x 506 x 600 mm
TCU10	0–230 V	10 kVA	48 A_{max}	CEE 400/63A (L-N)	9 HU	553 x 506 x 600 mm
TCU10/2	0–400 V	10 kVA	25 A_{max}	CEE 400/63A (L1-L2)	9 HU	553 x 506 x 600 mm
TCU25/2	0–400 V	25 kVA	34 A_{max}	CEE 400/63A (L1-L2)	34 HU	556 x 1627 x 600 mm

Transportation Case for the ICM*series* Instruments

All instruments of the ICM*series* can be delivered with a solid transport case with cut-out foam to carry one instrument and its accessories.

Width: 67 cm
Height: 26 cm
Depth: 51 cm
Weight (empty): 11 kg

BCU Bushing Coupling Units

BCU2C

The bushing coupling units are for permanent installation on power transformers. Together with a matching bushing adapter they serve to make different signals available for measurement and monitoring. The bandwidth of the partial discharge signals extends to 20 MHz. The voltage signal of the built-in capacitive divider serves to synchronize the partial discharge acquisition and to measure the voltage. However, the excellent bandwidth of the voltage signal also allows transfer impedance measurements and loss factor measurements. The bushing coupling unit comes in a IP66 protected enclosure with a PTFE insulated input cable. Thus, it is suitable for indoor and outdoor use. The voltage range and bushing capacitances (C1 and C2) have to be specified on order.

BA Bushing Adapters

Type	Thread	Size	Conn.	Size	Suitable for
BA2	inside	G3/4"	female	4 mm	Micafil: RTKF, RTKG, RTKK, RTF, RTXF 21, RTXF 36
BA3	outside	M45x2	female	8 mm	ABB: GOB 1050-750-110-0.6-B
BA4 adapter	flange inside	-- M76x1,5	male	8 mm	Nanjing Electric: BRLW-500/1250-3
BA5	inside	M24	male	4 mm	HSP: ESKTFK 1050/245-A, OTFS 550/123-0
BA6	outside	M38x1,5	male	4 mm	Micafil: WTF 420/1800 (1978)
BA7C	outside	2¼"-12 UNF	female	8 mm	PCORE: CSA standard, POC ser. 2; ABB: GOE, GSB (245–550 kV)
BA7D	outside	2¼"-12 UNF	female	3.5 mm	Trench: OTA 363/1250/1300, OTA (72.5–1200 kV), COTA 1675-H016-23-AG3-01
BA8	inside	5/8"-11 UNC	--	3 mm	ABB: GOB 650/1250/L
BA9	outside	M30x1,5	female	4 mm	HSP: SETFt 600-123-2000, SETFt 1550/420-1800, SETFt 1550/420-2200
BA9B	inside	M30x1,5	female	8 mm	Alstom Grid P.F. Tap
BA10	outside	M16x1,5	female	4 mm	Trench: COT 125-X...1800-X (≥ 123 kV)
BA10B	outside	M16x1,5	female	4 mm	Trench: COT(C) 125-X...1800-X (< 123 kV)
BA10C	outside	M16x1,5	female	4 mm	Trench: COT 750-800
BA11	flange		female	8 mm	ABB: GOA 650, GOA 1050, GOA 1550 400 kV
BA12	outside	M30x2	female	6 mm	NGK: R-D5350D-KEW
BA14	outside	1 1/16"-12 UN	female	8 mm	Transelectrix
BA15	outside	M30x2	female	9 mm	NGK: R-C6200V-LN
BA17	outside	M30x2	female	4 mm	ABB: GOM, GOB 1050-750-1100-0.6-B, GOB 250 ... 750/1250, GSA-OA 52-0A/2000, GSA-OA 73/2000, GSA-OA 123/1600, GSA-OA 145/1600, GSA-OA 170/1600
BA18	flange	--	female	8 mm	Mozisolyator, GMTA-90-110/2000
BA19	flange	--	female	8 mm	Mozisolyator, GMTA-45-330/2500
BA21	outside	M24x1.5	female	4 mm	HSP: SETFt 750-170-4000, SESTFt 1050-245-B E6 B, SETFt 1200/245-1250, SETFt 1200/245-3000, SETFt 1425-420-1600, EKTG (72.5–800 kV)
BA21B	outside	M24x1.5	female	4 mm	HSP: OTF (420–800 kV)
BA23	inside	M36x3	female	5 mm	BHEL: Tap Inv. no. BCE-4-1232
BA25	outside	1¼"-12 UNF	spring	5 mm	PCORE: B-81515-57-70
BA26	outside	1 1/8"-12 UNF	female	1/4"	Electro Composites, 350-006-T-730-00
BA 27	outside	1 1/8"-12 UNF	female	8 mm	Passoni Villa PNO, POBO, PCTO, PAO (< 110 kV)
BA 28	outside	¾"-14 NPSM	spring	9 mm	ABB: O Plus C (O Plus Dry)

Power Diagnostix Systems GmbH
Vaalser Strasse 250
52074 Aachen
Germany

Email: support@pdix.com
Web site: www.pdix.com
Tel: + 49 241 74927
Fax: + 49 241 79521