

PD Accessories

Preamplifiers

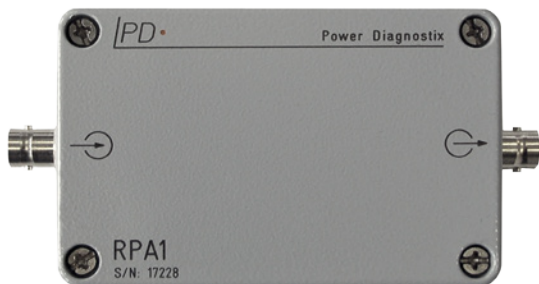
PREAMPLIFIERS & PREACQUISITION UNITS

Power Diagnostix provides a complete line of modular preamplifiers for various testing applications. The most 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 possibility of galvanic isolation in the test setup.

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 IEC 60270. The RPA1D, RPA1E, RPA1F, and RPA1G are variations on the RPA1.



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

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

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 unit FCU2 is an ultra-wide band preacquisition unit, covering 100 to 1800 MHz. It has a logarithmic output and is mainly used for GIS applications.

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.



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TYPE	FREQUENCY RANGE	INPUT IMPEDANCE	SENSITIVITY INPUT	ROLL-OFF	BIPOLAR	REMARKS
RPA1	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	Standard preamplifier
RPA1D	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	Built-in sensor supply, switchable (15/28 V)
RPA1E	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	0/20 dB attenuation
RPA1F	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	For the AIAcompact only
RPA1G	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	Built-in sensor supply, switchable (Off/15/28 V)
RPA1H	40 kHz–20 MHz	1 k Ω //50 pF	<400 μ V	40dB/dec	Yes	Oil/paper cable, DSO
RPA1L	40 kHz–20 MHz	1 k Ω //50 pF	<200 μ V	40dB/dec	Yes	Cable, DSO
RPA2	2 MHz–20 MHz	50 Ω //50 pF	<800 μ V	40dB/dec	No	Online measurements on rotating machines
RPA2B	2 MHz–20 MHz	50 Ω //50 pF	<200 μ V	40dB/dec	No	Cable sensors
RPA3	200 MHz–1 GHz	50 Ω //50 pF	<300 μ V	40dB/dec	No	GIS sensors
RPA3D	50 MHz–400 MHz	50 Ω //50 pF	<300 μ V	40dB/dec	No	Nearfield detection
RPA3E	20 MHz–200 MHz	50 Ω //50 pF	<300 μ V	40dB/dec	No	Nearfield detection
RPA4	40 kHz–800 kHz	10 k Ω //50 pF	<200 μ V	40dB/dec	Yes	Fiber optic isolation
FCU2	100 MHz–1.8 GHz	50 Ω //50 pF	<200 μ V	40dB/dec	No	Logarithmic output
FCU2A	1 GHz–2 GHz	50 Ω //50 pF	<200 μ V	40dB/dec	No	Logarithmic output
FCU2B	100 MHz–1 GHz	50 Ω //50 pF	<200 μ V	40dB/dec	No	Logarithmic output
FCU3	100 kHz–50 MHz	50 Ω //50 pF	<200 μ V	40dB/dec	No	Logarithmic output, cable sensors
UHF1	200 MHz–1 GHz	50 Ω //50 pF	–	–	No	GIS sensors
UHF2	300 MHz–2 GHz	50 Ω //50 pF	–	–	No	GIS sensors