Quadrupoles
CIL and CIT

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: 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. This inductor and the 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.

CIT Quadrupole
The CIT coupling units are transformer type units, where the RPA1's input resistance represents the required damping resistor. As these units offer a higher sensitivity than the CIL coupling units, their use is mandatory with applications suffering from signal attenuation, such as measurements on medium- and high-voltage cables.

CIL/V and CIT/V Quadrupole
The CIL/V and CIT/V quadrupoles are similar to the CIL resp. CIT 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 voltage converter to synchronize the PD detector and monitor the quality of the applied high-voltage wave.

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.

Technical Data:

CILXY, CITXY, CILXY/V, and CITXY/V

Coupling capacitor range (X):
2: 100–250 pF
3: 200–900 pF
4: 0.6–2.5 nF
5: 2–9 nF
6: 6–25 nF

Case: IP65 aluminum enclosure

Input connector: Banana

Output connector: BNC

Size: 98x75x38 mm^3–140x85x38 mm^3 (standard quadrupoles, depending on version)

CILXY and CITXY

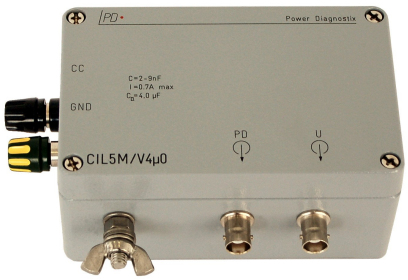
AC current range (Y):
Low (L) (125 kV @ 50 Hz)
Medium (M) (500 kV @ 50 Hz)
High (H) (1000 kV @ 50 Hz)

CILXY/V and CITXY/V

Max. AC current (Y): Maximum current depends on the divider ratio chosen, as the voltage output is limited to 100 V_{rms}.

Examples for standard quadrupoles

Type	Coupling Capacitor Range	Max. AC Current	C_D
CIL3M	200 pF–900 pF	200 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	-
CIL4M/V1µ0	600 pF–2.5 nF	400 mA	1 µF
CIL5M/V4µV	2 nF–9 nF	1600 mA	4 µF
CIL6M/V10µV	6 nF–25 nF	4000 mA	10 µF
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	-
CIT4M/V2µ0	600 pF–2.5 nF	400 mA	2 µF
CIT5M/V4µ0	2 nF–9 nF	1600 mA	4 µF
CIT6M/V10µ0	6 nF–25 nF	4000 mA	10 µF



Product information and design is subject to changes without notice.

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