

# Iris Power Epoxy Mica Capacitors (80 pF)

## Partial Discharge Sensors for Testing Motors and Generators

The durable Iris Power Epoxy Mica Capacitors (EMCs) are designed to detect Partial Discharge (PD) activity in motors and generators while not imposing on the machine's operation or reliability in any way.

Iris Power EMCs are permanently installed (minimum one per phase) as close as possible to the stator winding to be monitored to maximize sensitivity. In order to improve noise separation, the Iris Power EMCs are installed directionally or differentially, depending on the equipment.

Iris Power's 80 pF EMCs are designed to block the 50/60 Hz power frequency and allow only high frequency (>40MHz) signals to pass through, be collected and analyzed by an appropriate Iris Power portable instrument or continuous monitor.

PD monitoring is applicable to diverse equipment installations. That is why Qualitrol-Iris Power offers four different voltage rated EMCs – 6.9 kV, 16 kV, 25 kV and 28 kV. The choice of which couplers to install is dependent on the operating voltage of the equipment.

The EMCs meet all the reliability requirements in IEC TS 60034-27-2 and IEEE 1434 for PD sensors.

### UNIQUE FEATURES

#### Mica Splittings Dielectric

Iris Power EMCs are safe for use in operating equipment because they have the excellent electrical properties of the mica splitting dielectric. For example, there is an 80 mm (3 inch) layer of epoxy impregnated mica splitting as the main dielectric in the 16 kV version. In comparison, a typical 13.8 kV stator coil has only about 3 mm (0.12 inch) thickness of epoxy mica paper.

#### Voltage Endurance Testing

Independent voltage endurance testing (IEEE 1043) proved that the 16 kV Iris Power EMC withstands over 1000 hours at 30 kVrms. According to statistical methods (IEEE 930-1987), this translates into 60,000 years of use at normal operating voltage. By comparison, the average 13.8 kV coil is expected to withstand only 400 hours of exposure to 30 kVrms. The Iris Power EMC's excellent endurance and thermal stability is due to the use of mica splittings, as opposed to mica paper or ceramics.



Over 60,000 Iris Power Epoxy Mica Capacitors are in service around the world, and have accumulated tens-of-thousands of years of reliable operation.



Iris Power EMCs are sold in kits complete with all installation materials including the silicone rubber insulating boot (EMC boot) shown here. Where required, insulating tapes are available.

# IRIS POWER EPOXY MICA CAPACITORS (80 pF)

## EMC VOLTAGE RATING

	6.9 KV	16 KV	25 KV	28 KV
DEV @ 1pC (kV)	8.0	18.6	29.0	32.3
AC Hipot (kVrms)	15	33	51	57
Mass (kg)	1.1	1.6	2.0	2.0
Height	95mm (3.75")	127mm (5.0")	206mm (8.1")	206mm (8.1")
Diameter	86mm (3-3/8")	86mm (3-3/8")	86mm (3-3/8")	86mm (3-3/8")

## DC AND IMPULSE CAPABILITY (BIL)

Iris Power EMCs have been independently tested to DC hipot and lightning impulse strengths greater than any other apparatus in its voltage class. For example, Iris Power 16 kV EMCs have passed:

- >50kV dc required by ANSI C37.20.2
- >95kV BIL required by ANSI C37.20.2

## HAZARDOUS LOCATIONS

The Iris Power EMCs can be used with Iris Power instruments certified for hazardous locations provided that they are installed in the appropriate enclosure to comply with the ATEX directive or UL certification for hazardous locations.

## RADIATION ENVIRONMENTS

Iris Power EMC kits with installation material according to IEEE 323-1983 for nuclear power generating stations are available.

## OTHER SPECIFICATIONS

- Mica Splittings Dielectric
- Voltage endurance tested to >1000 hours at 30 kVrms (16 kV EMC)
- Capacitance rating: 80 pF +/- 4 pF
- Dissipation factor: 0.10%
- PDEV Sensitivity: 1 pC (ASTM D1868 and IEC 60270)
- Bandwidth into 50 ohms: (-3dB); 40 MHz to 350 MHz
- Operating temperature range: -50°C to +130°C (-58°F to +266°F)
- Calculated 60,000 year life (tested to IEEE 930-1987)
- Thermal Cycle Testing to -40°C to +150°C
- Inclined Plane Tracking Test (ASTM D2303-85): 300 min
- Comparative Tracking Index (IEC 60112): 600 min

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QUALITROL-IRIS POWER HAS BEEN THE WORLD LEADER IN MOTOR AND GENERATOR WINDING DIAGNOSTICS SINCE 1990, PROVIDING A FULL LINE OF ON-LINE AND OFF-LINE TOOLS, AS WELL AS COMMISSIONING AND CONSULTING SERVICES.



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