

VARIABLE FREQUENCY CYLINDER TYPE REACTORS



650kV, 5850VA Cylinder Type Reactors for GIS AND Short Cable Testing



675kV, 3375kVA, Cylinder Type Reactors for Onsite Testing of GIS

Phenix Technologies Cylinder Type Variable Frequency Reactors have been optimized for onsite testing of GIS, short cables, very high voltage bucket trucks and other capacitive test objects. Cylinder type modules can be stacked up to 4 units in series (cascade) to achieve higher voltages or connected in parallel to supply higher currents.

The reactors are designed to withstand frequent transportation and can be used outdoors in fair weather conditions. Due to the small weight to kVA ratio most of the modules can be moved via fork lift or can make use of cargo elevators found in underground substations.

EXPERIENCE

QUALITY

RELIABILITY

DESIGN:

The reactor design uses two parallel coils which are constructed out of layer type windings. The windings are mounted on a grain oriented laminated steel core which is equipped with multiple gaps. The use of multi gapping keeps the flux fringing to a minimum. The use of a steel core eliminates the problems associated with coil only reactors, which can cause interferences with surrounding steel structures, which results in a low system Q. The coils and core are enclosed in an oil filled fiber glass cylinder which allows stacking up to four cylinders in series.

DUTY CYCLE:

The standard duty cycle is 1 Hour On / 1 Hour Off. In order to maximize the output power the modules are gapped for a 5 minute On / 1 Hour Off enhanced duty cycle which increases the available output current by ~ approximately 40%. This enhanced duty cycle feature is very useful when conditioning large GIS installations.

PARTIAL DISCHARGE:

The standard partial discharge level is < 10pC at full voltage. Optionally the modules can be quoted with lower partial discharge levels.

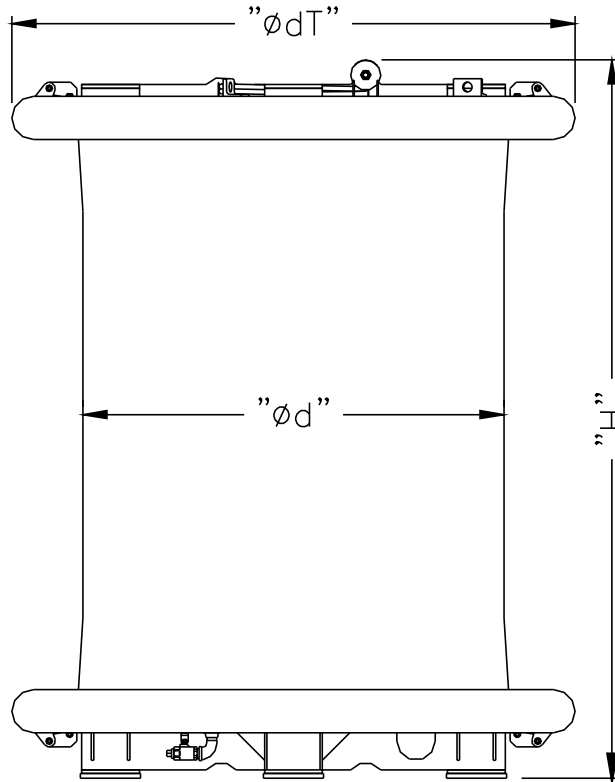
REDUCED VOLTAGE AND REDUCED FREQUENCY OPERATION:

Operation of the reactors down to 23Hz is possible at reduced voltages in order to avoid saturating the steel core. At 23Hz the output voltage is reduced by 50% this is based on the 45Hz design frequency.

ENVIRONMENTAL CONDITIONS:

The reactors are designed for indoor / outdoor use in fair weather. The temperature range for operation is -5° to 45° C. The humidity less than 90%, non-condensing. Low pollution level. Altitude less than 1000 meters above sea level. Operation at higher altitudes is possible with de-rating of the output voltage.

TYPICAL REACTOR LAYOUT:



STANDARD VRTS CYLINDER TYPE REACTORS:

Reactor Model:	Output Voltage kVAC	Current 5 min Duty Cycle A	Current 1 hour Duty Cycle A	Inductance H	Design Frequency Range: Hz	Extended Frequency Range: Hz	Highest Voltage @ 23Hz	Load Capacitance at maximum Voltage nF	Height “H” “ (mm)	Cylinder Diameter “Ød” “ (mm)	Total Diameter “ØdT” “ (mm)	Weight: lb (kg)
8CX225-1125	225	5	3	159	45-300	23-300	112.5	78.6-1.77	75.5 (1917)	43.75 (1111)	58.5 (1485)	7200 (3265)
8CX225-1575	225	7	5	113.7	45-300	23-300	112.5	110-2.47	75.5 (1917)	52 (1320)	66.5 (1689)	11500 (5216)
8CX225-2025	225	9	7	88.4	45-300	23-300	112.5	141.4-3.18	75.5 (1917)	58 (1473)	72.5 (1841)	12850 (5828)
8CX225-2812	225	12.5	9	63.66	45-300	23-300	112.5	196.5-4.42	75.5 (1917)	61 (1550)	78.5 (1994)	14250 (6464)
8CX300-1500	300	5	3	212.2	45-300	23-300	150	58.9-1.32	87 (2209)	52 (1320)	66.5 (1689)	11000 (4989)
8CX300-2100	300	7	5	151.5	45-300	23-300	150	82.5-1.85	87 (2209)	62.5 (1587)	77 (1955)	13300 (6032)
8CX300-2700	300	9	7	117.9	45-300	23-300	150	106.1-2.38	87 (2209)	65 (1651)	79.5(2020)	14900 (6758)
8CX300-3750	300	12.5	9	127.3	30-300	23-300	210	221-2.21	89 (2260)	68 (1727)	82 (2080)	17500 (7940)
8CX400-1200	400	5	3	282.9	45-300	23-300	200	78.6-1.77	102 (2590)	68 (1727)	82 (2080)	14700 (6668)
8CX400-2800	400	7	5	202.1	45-300	23-300	200	110-2.47	102 (2590)	81.6 (2072)	96.1 (2440)	17500 (6758)
8CX400-3600	400	9	7	157.2	45-300	23-300	200	141.4-3.18	102 (2590)	89 (2260)	103.5 (2628)	18800 (8527)

Notes:

- 1) Modules are equipped with an additional corona electrode rated for full voltage of the system. Not shown on typical reactor layout drawing.
- 2) Additional duty cycles and voltage ratings are available upon request.
- 3) Due to Phenix Technologies Inc continual research and development program specifications may change without notice.

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