

**Automatic Power
Factor Correction
(APFC)
Panels
110V to 600 V**



UNIVERSAL CABLES LIMITED

UNISTAR

TECHNOLOGY

Universal Cables Ltd. UCL* a company of M.P. Birla Group started its capacitor division in the year 1967 with the technical collaborations with TOSHIBA of Japan. In 1977 we switched over to Mixed Dielectric technology of General Electric of USA, after entering into a technical collaboration with them. Finally the collaboration was extended with General Electric (GE, USA) to include all Polypropylene dielectric (APP) technology capacitors.

During all these phases one thing which has remained constant is the superior quality and unmatched performance of our capacitors

*UCL has recently launched 220 KV EHV power cables has become the first company to manufacture 220/400 KV grade EHV Cables in India.

FEATURES

- Provided with most reliable APP type* Heavy duty power capacitors confirming to IS-13585 (1994) / IEC-60931 & long lasting switchgears / components of reputed makes.
- Application based system configuration with multi-bank capacitors, microprocessor, protection & safety devices.
- System selection based on load and operational analysis.
- Proper selection of components to achieve uninterrupted cohesive operation.
- System switching either with Power Contactor / Capacitor Duty Contactor OR Thyristorised module with necessary protections.
- Wide ranges available from 25 KVAR to 1500 KVAR in single module. Multi module construction for higher ratings.
- Microprocessor based controller.
- Self adaptable for extremely fluctuating loads.

APPLICATIONS

- Rolling Mills.
- Furnace Loads.
- Cement, Steel Plants & Automobile Industries.
- Furnace Transformers of Ferro Alloy units.
- Industrial / Commercial complexes having variable loads.



*Earlier there was only IS-2834/1986 & IEC - 831 for all HT/LT Capacitors.

ATTENTION!

UCL has discontinued MPP Capacitors (IS - 13340 / IEC-831) due to self heating tendency i.e. deterioration in capacitance & poor field performance of MPP Technology in Indian Conditions / Polluted electrical environments.

CONSTRUCTION

The design is made in all the alternatives to suit customer application.

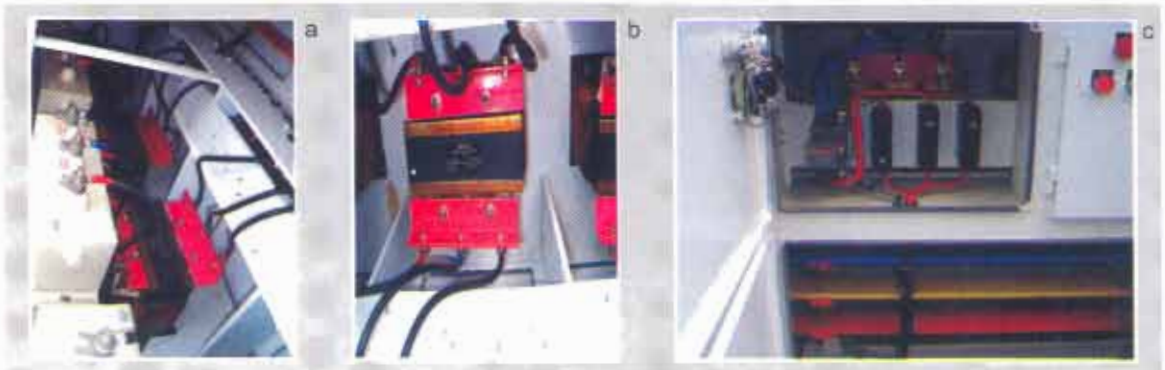
Enclosures, Bus bars Lables and Wirings

Cubicle, hinged type doors are fabricated by 14/16 SWG CRCA steels sheet, painted after, degreased, phosphated & 7 tank process / Oven baked, powder coated. Electrical grade AL / CU bus bars of suitable sizes bolted with spring washers. Bus bars supported power terminations above 63 Amps shall be made by using bus bars of suitable rating. Lables for Danger, Bus bars, Cable bays and ON/OFF etc. Wiring by copper wires of suitable rating as per IS-8623/1977 with proper lugs & ferrules as per requirement of drawing. Main supply 415/3Ph/4 wires and control supply 230 Volts/1Ph/50Hz.

Testings

Panels undergo following testing prior to dispatch.

Functional test, HV test at 5KV, Load run test at rated load, Tripping and meter calibration test if applicable



a. Capacitor alongwith filter reactor

b. Top view of detuned filter reactor

c. Inner view of compartment & bus bars

HARMONIC FILTER REACTOR

Detuned three-phase filter reactors for non linear (Harmonics Generating) Loads.

Features

- High resistance to harmonics
- Very low losses
- High linearity to avoid choke tilt
- Low noise
- Simple mounting
- Long useful life
- Temperature protection (Thermal Operated Switch)



Technical Data of UNISTAR Reactors

Filter reactors

Frequency	50 Hz
Voltage	433 V (Other voltages upon request)
Output	5 to 250 kvar (other ratings upon request)
Detuning	5.4%, 6%, 7% & 14%
Cooling	Air Natural (AN)
Ambient temperature	40°C
Class of protection	I
Enclosure	IP00
Thermal stress	$I_{th} = 1.05 * I_{max}$
Linearity	$I_{th} = 1.2 * (I_1 + I_3 + I_5 + I_7); > 0.95 * L_{th}$
Temperature protection	Microswitch

Technical data of APP Heavy Duty Low Voltage Capacitors

Parameter		Parameter	
Power	2.0 to 200 KVAR	Case shape	Steel/Rectangular
Rated Voltage-Un	230 to 1000 Volts AC	Terminal	Stud terminal with Steatite bushings
Frequency	50/60 Hz	Mounting & grounding	Self standing with mounting bracket
Inrush current-I	300 times Rated current	Enclosure	IP41, optionally IP54
Temperature category	-40 to +65° C	Standard	IS : 13585 / IEC-60931
Losses:		No. of switching operations per annum	7500 nos
- Dielectric in W/KVAR	<0.2	ISI Marking (upto 440V)	Yes
- Total in W/KVAR	<0.5	Test Voltage	2.15 x Un
Max. Humidity	95%	Hidden Losses	Nil ⁺⁺
Safety	Internal High Rupturing Capacity HRC Fuses	Type Testing	CPRI / ERDA / UCL
Impregnation	Non PCB Oil ⁺		
Useful life	1,50,000 hours		
Cooling	Natural		

⁺ Non PCB Oil Provides Better Cooling, High Voltage Capacitors are also impregnated with same oil World wide.

⁺⁺ All PP Capacitor does not require inrush suppression coils which are used in MPP design capacitors. Coils contribute heavy power losses (2 to 4 Watts / Kvar) in MPP technology.