

POWER CAPACITORS

For Reactive Energy Improvement



PRODUCT FAMILY

Power Capacitors

- ◆ TRICAP ND-R / HD-R
- ◆ TRICAP ND-S/HD-S
- ◆ APP 1 Layer / 2 Layer
- ◆ MV Capacitors

Components for PFC

- ◆ Detuned Harmonic Block Reactors (CU/AL Wound) upto 100 KVAR
- ◆ HT Reactors for MV
- ◆ Thyristor Switching Module up to 100 KVAR
- ◆ Automatic Power Factor Controllers (4-16 stage 1/3 CT)
- ◆ TSM Switched/Contactor Switched APFC Panels
- ◆ Harmonic Filtration System APFC Panels

Energy Audit and Power Quality Audits

MPP Capacitor (Self Healing Capacitors)

NORMAL DUTY / HEAVY DUTY



[Ref. Standards : IS 13340: 1993 / IEC 60831]

'TRINITY' MPP capacitors are manufactured using imported Zn-Al Metallised Polypropylene Film with reinforcement. This special construction enables capacitor to withstand higher switching surges.

In case of Oil filled capacitors assembly is done in CRCA containers and impregnated with NPCB oil.

For dry type capacitors assembly is done in Aluminium can container and are impregnated with polyurethane resin/wax.

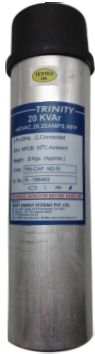
These modules have pressure interrupter arrangement for safety against bursting.

Both designs are available in normal duty and Heavy duty applications

Available Range : TRICAP ND-R/HD-R (1-25 KVAR)

TRICAP ND-S/HD-S (1-50 KVAR)

Voltage : 415V/440V/480V/525V/690V



APP Capacitor (Non – Self Healing Capacitors)

[Ref. Standards: IS 13585: 1994 (Part I) / IEC 60931]

1) APP Capacitors – 'TRINITY' APP Capacitors are manufactured using Double Hazy Double Thick Polypropylene films as dielectric between two electrodes of thick soft annealed, 99.35% purity of Aluminium foil and have extended foil construction. Capacitors are impregnated with NPCB, bio- degradable impregnant and are hermetically sealed.

2) APP Double Layer Capacitors – 'TRINITY' APP(DL) Capacitors are manufactured using two layers of Polypropylene Films as dielectric between two electrodes of thick soft annealed, 99.35% purity of Aluminum foil and have extended foil construction. Capacitors are impregnated with NPCB, bio- degradable impregnant and are hermetically sealed.

Available Range : (5-50 KVAR)

Voltage : 440V, 480V, 525V



HT Capacitor

HIGH VOLTAGE CAPACITOR [Ref. ISS 13925]

'TRINITY' make HT capacitors are manufactured from high quality BOPP film as dielectric & high purity AL foil as electrode. Capacitor consist no. of element in series/parallel with/without fuses. Elements are made with ' Edge folding, extended foil design& firm edge soldering' to improves its life. Impregnation with NPCB oil will help to work capacitor under normal condition without excess heating for indoor/outdoor applications.

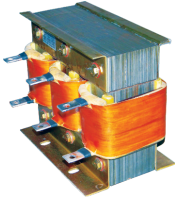
Available Range : 50KVAR to 400KVAR

Voltage : 3.3 KV to 33KV



COMPONENT OF PFC

Harmonic Reactors



- Three Phase AL/CU wound Reactors.
- Detuning Factor Range : 5.67%, 7%, & 14%
- High Linearity available
- Vacuum impregnation
- Compact Design

Available Range : 5, 10, 15, 20, 25, 50, 75, 100 KVAR

Thyristor Switching Module



- Rated Voltage 415V \pm 10%
- Fast response time as small as 10 msec.
- Built in Alarm for protection of Module

Available Range : 10, 25, 50, 100 KVAR

Automatic Power Factor Controllers



- Intelligent Switching
- Available modes : Straight fifo, fifo, PF & VAR
- Sensing on 1 % load in VAR mode.
- Auto sensing enabled
- Multiparameter monitoring
- optional Rs485 port, Dual sensing, memory block.



Available Range Single CT : 4-6 (Nanovar 96 x 96 sqmm)
6-8 (Newton+ 96 x 96 sqmm)
4-16 (APFCR 144 x 144 sqmm)
Three CT : 6 (IVC3P 96 x 96 sqmm)
8 & 15 (Accuvar 144 x 144 sqmm)
12 (VARLOG 144 x 144 sqmm)

Contactor / Thyristor Switched PFC Panel with / without Harmonic Reactors



- System designed to work under high harmonics conditions by de-tuning L-C series reactors.
- Switching system can be designed to work as harmonic filter & PF correction simultaneously.
- Low maintenance cost.
- Close control over P.F. even under highly variable load conditions.
- Available in different output KVAR options as per customer request in different switching options.



Technical Specifications

APP Capacitor			
Sr. No.	Description	APP	APP Double Layer
1	Standard Voltage Range	415/440/480/525/600 VAC	415/440/480/525/600/ 1000 VAC
2	Frequency	50Hz/60HZ	50Hz/60HZ
3	Impregnate	NPCB	NPCB
4	Insulation Level	3KV	3KV
5	Dielectric Loss	< 0.2 watt/KVAR	< 1.0 watt/KVAR
6	Capacitor Loss	< 0.5 watt/KVAR	< 2.0 watt/KVAR
7	Connection	3Ph,Delta	3Ph,Delta
8	Life Expectancy	1,50,000 Hrs.	2,00,000 Hrs.
9	Maximum Permissible Over Voltage	115 % Of Vn	130 % Of Vn
10	Maximum Permissible Over Current	170 % Of In	190 % Of In
11	Other	<ul style="list-style-type: none"> Up to 50kvar single unit & above 50kvar banking will be provided. Dimension of capacitor will available on request. 	<ul style="list-style-type: none"> Up to 25kvar single unit & above 25kvar banking will be provided. Dimension of capacitor will available on request. Mixed Dielectric Capacitor are available on request
HT Capacitor			
1	Rated Output	As per requirement	
2	Rated Voltage	1.1 KV to 26KV	
3	Phases	Single or Three Phases	
4	Connection	Star or Delta	
5	Frequency	50/60 Hz	
6	Protection	Fuses (I/E)	
7	Mounting	Vertical/Horizontal	
8	Safety	Discharge resistor fitted internally.	
9	Installation	Indoor/Outdoor	
10	Features	<ul style="list-style-type: none"> Very low capacitor loss design High current handling capacity Very strong & economical design High temperature withstand capacity with no change in output Excellent Performance Easy handling & suitable mounting 	

Technical Specifications

MPP Capacitors					
Sr. No.	Details	Description	Mpp Heavy Duty	Mpp Normal Duty	Mpp Box Type
1	Applicable Standards		IS-13340	IS-13340	IS-13340
2	Technical details	Rated Voltage	440/415/480/525 VAC	440/415 VAC	440/415/525/660 VAC
		Frequency	50Hz	50Hz	50Hz
		Losses (tan delta)	0.0025 MAX.	0.0025 MAX.	0.0025 MAX.
		Peak inrush current	200 TIMES	150 TIMES	200 TIMES
		Over voltage	10%	10%	10%
		Over current	30%	30%	30%
		life expectancy	30000 WORKING HRS.	20000 WORKING HRS.	30000 WORKING HRS.
		Capacitance tolerance	+5%	+5%	+5%
		Voltage Test Between terminals	1.75 TIMES OF RATED VOLTAGE	1.75 TIMES OF RATED VOLTAGE	1.75 TIMES OF RATED VOLTAGE
		Voltage Test Between earth & terminals	3 KVAC	3 KVAC	3 KVAC
		Discharge resistors	CFR	CFR	CFR
		Safety	PRESSURE INTERRUPT	PRESSURE INTERRUPT	PRESSURE INTERRUPT
		Terminal casing	DOUBLE HOUSING	DOUBLE HOUSING	DOUBLE HOUSING
		Casing	ALLUMINIUM CAN	ALLUMINIUM CAN	CRCA BOX
		Number of Elements	3	3	Upto 10KVAR -3 no's / Upto 25KVAR - 6 no's
		Dielectric	METALLISED POLYPROPELENE FILM	METALLISED POLYPROPELENE FILM	METALLISED POLYPROPELENE FILM
		Impregnation	EPOXY	EPOXY	EPOXY
		Ambient temperature	50°C	50°C	50°C
		Temperature rise (°C)	10°C	10°C	10°C
		Location	OUTDOOR	OUTDOOR	OUTDOOR
		Type	MPP-SH	MPP-SH	MPP-SH
Insulation level	3KVAC	3KVAC	3KVAC		
Type of capacitor bank connection	DELTA	DELTA	DELTA		
IP 65	OK	OK	OK		
Discharge device	RESISTORS	RESISTORS	RESISTORS		

TRINITY ENERGY SYSTEMS PVT. LTD.

386, Savli G.I.D.C Estate, Manjusar-391775, Dist.-Vadodara, Gujarat, India
 Tele: +91-9228004452/53/54 • E-Mail: info@trinityenergy.co.in

web : www.trinityenergy.co.in

TRINITY
 Making Energy Matter

