

Capacitor Duty Contactors



Use of capacitor duty contactor enhance the life of the capacitors also limits the system transients thus improving power quality. Contactors have additional auxiliary contacts with current limiting resistors in series with it.

Specification:

- Technical data according to Standards IEC 947-4-1, IEC 947-5-1, EN 60947-4-1EN 60947-5-1 and VDE 0660

Range:

- Rating: 5 KVAR to 100 KVAR.
- Optional Voltage Range (380 V to 440 V).
- Operational ambient temperature up to 60° C

Features:

- Largest range.
- Excellent damping of inrush current by the use of leading contacts with wiper function and special resistors.
- Longer useful life of main contacts of capacitor Contactor.
- Soft switching of contactor and thus longer useful life.
- Weld resistant up to a possible peak inrush current of 200 times the rated capacitor current.
- Enhance mean life expectancy of PFC systems.
- Reduce Ohmic losses.
- Tamper proof and protected resistors.
- Suitable for use with or with out detuned reactors.
- Easy access for cable connection
- Type tested at CPRI.

Thyristor Switch Module



Thyristor switching is used when load variation is rapid as in case of cranes, lifts, spot welding, plastic extrusion etc. As there are no moving parts the switching life is very high as compared to contactors. The power electronic devices used have a rated PIV of 2200, one of the highest in its class, thus enhancing the reliability of the module.

Range:

- Suitable for 10, 25 and 50 KVAR.
- Rated Voltage 400, 415, 440 and 690 V.

Features:

- Suitable for real time power factor correction.
- Easy Installation: It can be used identically as a Contactor.
- Reaction time: 5 milli seconds.
- Permanent self- controlling of :
 - Voltage Parameter
 - Capacitor Current
 - Temperature of the thyristor switch.
- Alarm output per module.
- Manual operation possible.
- Automatic switch off in case of over current and over temperature.
- Display of:
 - Operations
 - Faults
 - Activation.

Three Phase Filter Reactor



Anti-resonance three phase filter reactor. Detuned reactors are used with shunt capacitor banks to prevent harmonic resonance and also harmonic overloading of capacitor banks. These reactors are characterized by high linearity, low loss and compact size.

Range:

- Effective Filter out put 5 KVAR to 100 KVAR
- Filtering factor: - (5.67%, 7% and 14% corresponding to tuning frequencies of 210 Hz, 189 Hz and 134 Hz for the base of 50 Hz)
- Rated Voltage: (230 V to 690 V)
- Available in three designs
 1. Aluminum Strip Wound
 2. Aluminum Foil Wound
 3. Copper Conductor wound.

Features:

- Highest linearity, low risk of reactor tilting
- Low losses and noise level
- High over loading capability
- Low weight in case of aluminum windings
- Safety device - temperature micro switch
- Type tested at CPRI.

Enclosed Detuned Harmonic Filter

With the growth in power electronic devices the percentage of harmonics in the grid is increased. This has also grown the popularity of detuned harmonic filter within APFC panel. To utilize the existing APFC panels and to replace the plain capacitor with appropriate combination of Reactor - capacitor, EPCOS offers the specially designed Enclosed Detuned Harmonic Filter.

Technical Data:

- Standard Rating - 12.5, 25 , 50 KVAR
- Voltage - 415V / 440V
- Capacitors - Phase Cap / Phi Cap
- Reactor - Aluminum / Copper wound

Features and Benefits

- Appropriate selection of Capacitor and detuned harmonic filter reactor rating
- Easy installation and maintenance
- Standardized rating of components
- Can be used with existing panels and switchgear
- Natural Ventilation
- Best retrofitting option.

Capacitor Duty Contactors and TSM

Type	Rating KVAR	Voltage V (AC)	Description	Material Code	MRP/ Unit Rs.
Capacitor Duty Contactor - Standard Series					
Contactor - Standard series	7	240	7 KVAR Cap.DutyCont.1NO1NC240V	B44066S0711C240N 1	1980
Contactor - Standard series	10	240	10 KVAR Cap.DutyCont.1NO1NC240V	B44066S1011C240N 1	2220
Contactor - Standard series	12.5	240	12.5 KVAR Cap.DutyCont.1NO1NC240V	B44066S1211C240N 1	2400
Contactor - Standard series	16	240	16 KVAR Cap.DutyCont.1NO1NC240V	B44066S1611C240N 1	3170
Contactor - Standard series	20	240	20 KVAR Cap.DutyCont.1NO1NC240V	B44066S2011C240N 1	3620
Contactor - Standard series	25	240	25 KVAR Cap.DutyCont.1NO1NC240V	B44066S2511C240N 1	4040
Contactor - Standard series	33	240	33 KVAR Cap.DutyCont.1NO 2NC 240V	B44066S3312C240N 1	7890
Contactor - Standard series	40	240	40 KVAR Cap.DutyCont.1NO 2NC 240V	B44066S4012C240N 1	10980
Contactor - Standard series	60	240	60 KVAR Cap.DutyCont.1NO 2NC 240V	B44066S6012C240N 1	12210

Capacitor Duty Contactor - Premium Series					
Contactor - Premium series	12.5	230	Capacitor Contactor 50°C 0-12.5 KVAR	B44066S1811J230	4270
Contactor - Premium series	20	230	Capacitor Contactor 50°C 0-20 KVAR	B44066S2411J230	5350
Contactor - Premium series	25	230	Capacitor Contactor 50°C 0-25 KVAR	B44066S3211J230	5940
Contactor - Premium series	33.3	230	Capacitor Contactor 50°C 0-33.3 KVAR	B44066S5011J230	8900
Contactor - Premium series	50	230	Capacitor Contactor 50°C 0-50 KVAR	B44066S6211J230	9780
Contactor - Premium series	75	230	Capacitor Contactor 50°C 0-75 KVAR	B44066S7411J230	12590
Contactor - Premium series	100	230	Capacitor Contactor 50°C 0-100 KVAR	B44066S9911J230	23580

Thyristor Switch and Discharge Resistor					
TSM LC 10	10	440	Thyristor Switch Module 10 KVAR, 440V	B44066T10R440N 1	23960
TSM LC 25	25	440	Thyristor Switch Module 25 KVAR, 440V	B44066T25R440N 1	31160
TSM LC 50	50	440	Thyristor Switch Module 50 KVAR, 440V	B44066T50R440N 1	36870
TSM HV 50	50	690	Thyristor Switch Module 50 KVAR, 690V	B44066T50R690N 1	54440
EW22-Resistor	-	440	Discharge Resistor 22K, 50W, 5%	B44066T 22S400N 1	1170
EW22-Resistor, 690V	-	690	Discharge Resistor 22K, 50W, 5%, 690V	B44066T 22S690N 1	2310
Output Buffer Card, 24V	-	24	Buffer Card	B44066R1116R230N 1	8100

Important Information: 5

Power Factor Controllers:	Capacitor Duty Contactor:	Thyristor Modules (TSM)
<p>Controller hunting: When putting the capacitor bank into operation, it is required to avoid needless switching cycles (means permanent switching on and off of steps without significant change of consumer loads). This so called "controller hunting" would increase the number of switching operations of the connected contactors and capacitors, decrease the expected life cycle (wear out) and result, in worst case, in bursting and fire etc. This can be avoided by a proper programming of the PF controllers with the actual system parameters (current transformer prim. and sec., first KVAR step, control series, switching time).</p>	<p>Contactors are electromechanical switching elements used to switch Capacitors or Reactor and Capacitor in standard or de-tuned PFC system. Capacitor contactors with damping resistors make use of pre-switching auxiliary contacts. They close before the main contacts and pre-load the capacitor thus avoiding current peak values.</p> <p>This influences positively the life expectancy of the capacitor significantly, in addition to the positive impact on the power quality (avoiding transient and voltage sags that otherwise may be caused by switching in capacitors).</p>	<p>For discharging the capacitors, special high-voltage resistors type EW-22 are required. Standard resistors cannot be used!</p> <p>In dynamic PFC systems discharge reactors cannot be used (this would be a short circuit of the high voltage DC)!</p> <p>In PFC systems without filter circuit reactors current limiting reactors are required (e.g. BD-100) for the TSM.</p> <p>For short circuit protection, super fast electronic fuses for protection of the thyristor are required, standard HRC fuses are not suitable.</p> <p>Failure to follow cautions may result, worst case, in premature failures or physical injury.</p>