

Initiative  
Towards  
Betterment

**BE**  
BRAWN ENERGY



## Thyristor Switching Module

***"THE ELECTRONIC SWITCH"***  
for Rapid correction of Power Factor

**BRAWN ENERGY**

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## Profile

*We as BRAWN ENERGY are ready to measure your power quality-related problems by using high end power measuring equipment's. We are one of the leading Power Quality solution providers based at Pune Maharashtra.*

*We help clients in maintaining their Power Quality by conducting thorough specialised electrical studies like Power Quality Analysis, Reactive Power Study, Harmonic Study, etc. at their site, recommending optimum power correction methods, designing and installing the right product which minimizes harmonics and increases power quality. This equips the system to function optimally. This not only increases the efficiency of the system but also plays a relevant role in saving power.*

## Thyristor Switching Module

BRAWN ENERGY's TSM is a Thyristor Switching Modules specifically designed for high-speed switching of Power Factor Correction Capacitor Banks. The ratings available from 1KVAR to 10kVAR, 15KVAR, 25kVAR, 50kVAR, 75KVAR and 100KVAR - 440VAC/50Hz.

With this thyristor module, we provide the main component – 'The Electronic Switch'- for dynamic power factor correction. The TSM series offers fast electronically controlled, self-observing thyristor switches for capacitive loads that are capable to switch PFC capacitors within a few milliseconds nearly without a limitation to the number of switching during the capacitor lifetime. These switching modules are easy to install, have a fast reaction time of 5 msec and come with built-in indications of operations, phase voltage activation, power ON, Trigger signal and Over temp. These thyristor modules are very compact and operate at lower power losses.

Thyristor Switching Modules are free of Mechanical Wear and Tear, operate without noise and provide practically transient free switching eliminating inrush currents which are associated with Electromechanical Contactor Switching. An unlimited number of switching operations, without applying significant stress to the capacitors.

BRAWN ENERGY's TSM is made using high quality components. With Semikron IGBT, and other high-quality components to minimise heat losses. The protection is provided to PCB (Conformal Coating) and busbar to prevent corrosion in difficult environments.





## Salient features

- Suitable for real-time capacitor switching
- Available from 1KVAR to 100KVAR
- Available in 1800, 2200 & 4000 PIV
- SCR-DIODE control, thyristors - SEMIKRON make
- Most advanced thyristor firing card
- Compact and heat efficient design
- LED indication : Supply ON / Signal ON / R-Phase ON / B-Phase ON / Over Temp. Cut Off
- Ambient Temperature : 50° C
- Over temperature protection : thermal cut-off switch
- Control voltage : 24/12 Vdc
- Cooling : Natural / Forced (Force cooling above 75KVAR rating)
- Easy to install and maintenance free
- No inrush current limiting reactors required
- Number of Switching without delay
- No noise emission during switching operation

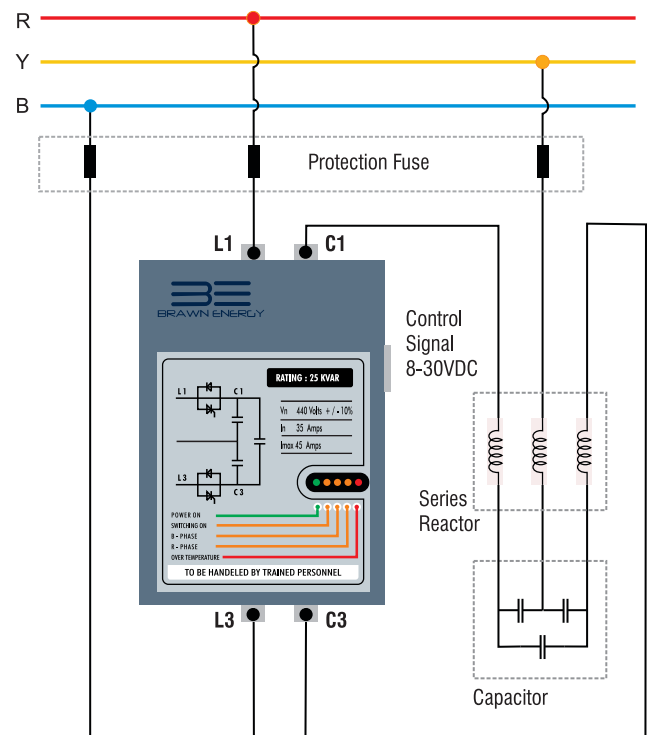
## Applications

Fast switching - Real Time (Dynamic) Power Factor Correction.

- Press loads
- Welding machines
- VMC & CNC Machine loads
- Cranes and Elevators
- Rolling Mills

## Super Fast Switching

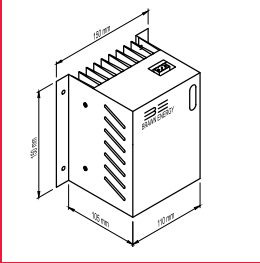
### Connection Diagram



**Note: Use Semiconductor or Fast acting HRC fuses at input side of TSM Connection**

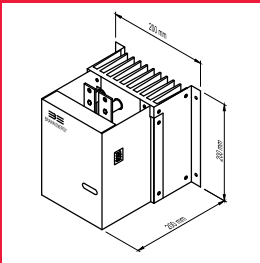
# Technical Specifications

Diagram A



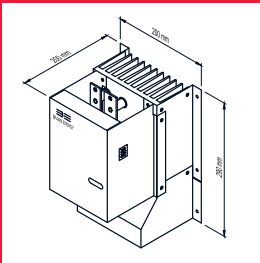
1~10 KVAR TSM

Diagram B



15~50 KVAR TSM

Diagram C



75~100 KVAR TSM

**Super Fast  
Power Factor  
Correction product**

Order Code	BE TSM - 1	BE TSM - 2	BE TSM - 3	BE TSM - 5	BE TSM - 7.5	BE TSM - 10	BE TSM - 12.5
Actual Rating in KVAR	1 KVAR	2 KVAR	3 KVAR	5 KVAR	7.5 KVAR	10 KVAR	12.5 KVAR
Rated Voltage	440 VAC						
PIV	1800 and 2200 PIV						
Nominal Current Per TSM (In)	1.39 A	2.78 A	4.17 A	6.95 A	10.42 A	13.9 A	17.37 A
Max. Current (I Max)	1.8 A	3.6 A	5.4 A	9 A	13.5 A	18 A	22.5 A
Discharge of Capacitors	Fast Discharge Resistor						
Switching Time	5 ms - 20 ms / With in a cycle						
External trigger supply	8 - 30 VDC						
Power (VA)	Less than 12 VA						
Reset Time	Depending on degree of detuning and rating of discharge resistor						
Range of Temp.	Operating Temp. - 0°C to 45°C						
	Automatic Thermal Cut Off when Temp. exceed Limit over 90°C						
Indications	Power ON, Switching ON, B- Phase Available, R - Phase Available and Over Temp.						
Dimensions	150 mm x 150 mm x 105 mm ( L x H x W)						
Design / Drawing	A						
Mounting Position	Vertical - Direct Mounting on mounting Plate						
Degree of Protection	IP 20						
Weight	1.5 Kg						
Cooling Type	Natural Cooling						
Cooling Fan	NA						

Order Code	BE TSM - 15	BE TSM - 20	BE TSM - 25	BE TSM - 50	BE TSM - 75	BE TSM - 100
Actual Rating in KVAR	15 KVAR	20 KVAR	25 KVAR	50 KVAR	75 KVAR	100 KVAR
Rated Voltage	440 VAC					
PIV	1800 and 2200 PIV					
Nominal Current Per TSM (In)	20.85 A	27.8 A	34.75 A	69.5 A	104.25 A	139 A
Max. Current (I Max)	27 A	36 A	45 A	90 A	135 A	180 A
Discharge of Capacitors	Fast Discharge Resistor					
Switching Time	5 ms - 20 ms / With in a cycle					
External trigger supply	8 - 30 VDC					
Power (VA)	Less than 12 VAC					
Reset Time	Depending on degree of detuning and rating of discharge resistor					
Range of Temp.	Operating Temp. - 0°C to 50°C					
	Automatic Thermal Cut Off when Temp. exceed Limit over 90°C					
Indications	Power ON, Switching ON, B- Phase Available, R - Phase Available and Over Temp.					
Dimensions	200 mm x 200 mm x 200 mm ( L x H x W)			200 mm x 290 mm x 200 mm ( L x H x W)		
Design / Drawing	B			C		
Mounting Position	Vertical - Direct Mounting on mounting Plate					
Degree of Protection	IP 20					
Weight	4.95 Kg			5.80 Kg	5.95 Kg	
Cooling Type	Natural Cooling			Forced Cooling	Forced Cooling	
Cooling Fan	NA			Built - in	Built - in	

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