

VJ POWER

Mail ID: vjpower88@gmail.com

Support Help Line Number:
Contact No. 9822353835/9175980116

USER MANUAL ALL TYPES OF VJ POWER MAKE TSM MODULES

Thyristor module for power factor correction

Version: 2.1

General Information:

The TSM Module is a fast electronically controlled, Thyristor switch for capacitor switching up to 100 Kvar (380V TO 440 VAC) which is capable to switch Capacitor within a few milliseconds, as often and as long as required without detrition.

Thyristor Triggering can be done by means of both types controllers - TSM OR Contactor Module work on one condition, it should get 12 Volt signal input.

- 1) Thyristor module for compensation systems in grids from 380 to 440VAC, 50/60HZ
From 5KVAR To 100KVAR
- 2) Optimized switching behaviour of capacitor branches by micro-processor controller.
- 3) Suitable to work with detuning reactors upto 14% or without reactors or with current Limiting Reactors of choice
- 4) Monitoring & Indication of Heat Sink Temperature status via LEDs
- 5) Easy Maintenance and long service life.
- 6) Enhanced connections -Can connect 50Kvar and 100kvar capacitors to thyristor module bus bars
- 7) Enhanced temperature management - by controlling fan and in case of over Temperature fault, disconnecting the capacitor bank to cool heat sink faster.

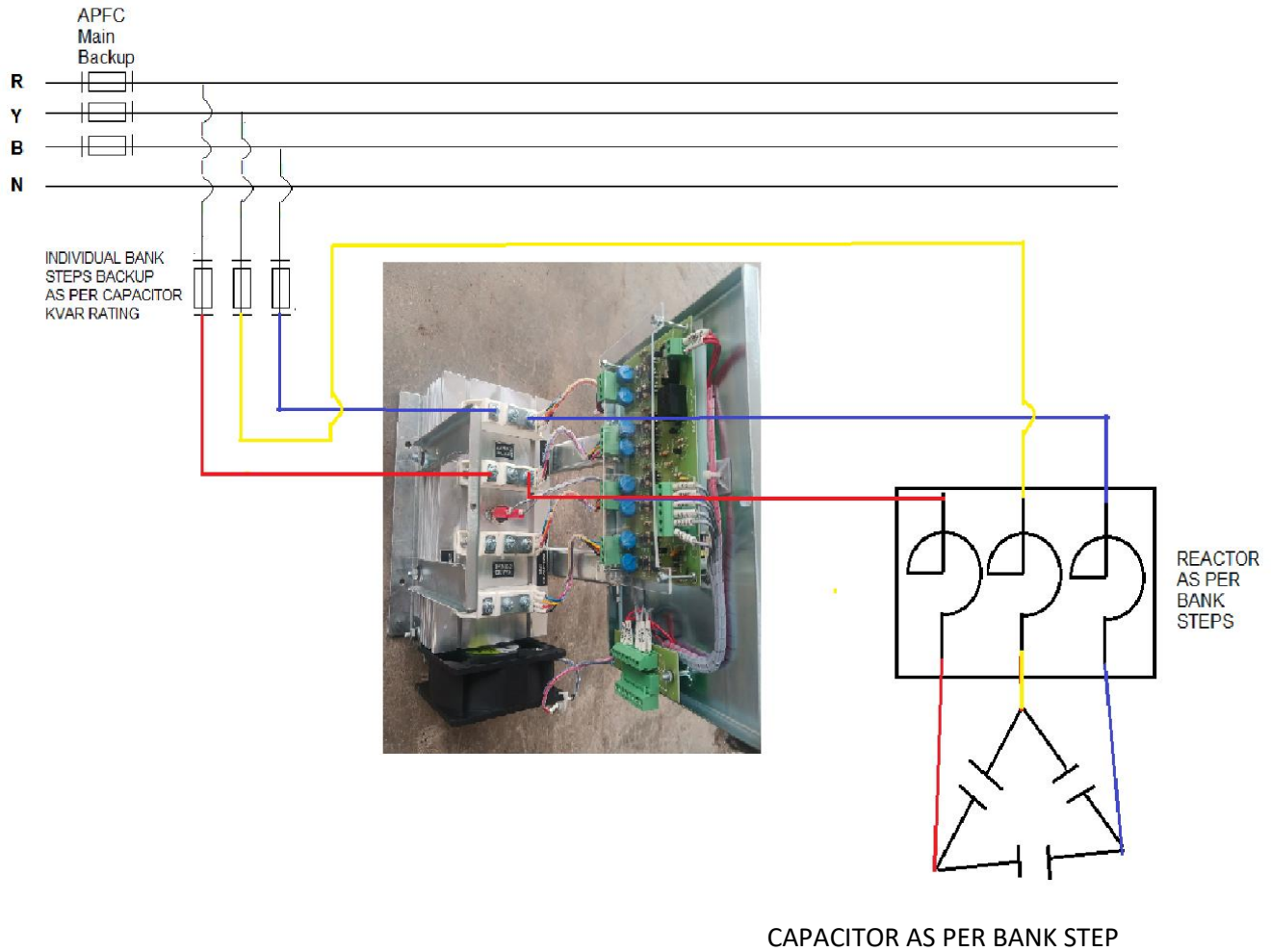
Applications:

WORKS ON VARIOUS TYPES OF LOAD AS -

- 1) Welding Loads
- 2) Variable Frequency Drive Connected Motors
- 3) Wind turbines
- 4) Inductive loads.

Thyristor module LED Indiction Details	
LED - Center side Green	"Module ON" (Bank On Trigger from APFC Relay)
LED - Yellow	Temperature "OK"
LED - Red	12VDC POWER ON (12VDC AVAILABLE, SMPS Healthy)
Technical data	
Net voltage	380 ... 440 V - 50/60 Hz
Max. power	Max. 75 A (up to 50 kvar/400 V)
Activation	12VDC (approx. 10 mA) via terminal clamp, internally insulated
Switching-on time	Approx. 10 ms
Display	Via LEDs
Monitoring	Heat sink temperature must be below 50 °C The over temperature trip limit is set at 70 °C (±5 ° C)
Max. RMS-current	100 A - No continuos current - thermal load has to be considered!
Max. voltage	440V/AC
Protection	A 5 Amp fuse provided for fan protection and MOVs of 690V across Thyristor for surgeovervoltage voltage protection.
Dimensions:	As Per Bank Step's 1) 75Kvar Combine Four Bank (10 Kvar To 75Kvar) Eg: 2+5+10+20 OR 5+10+20+40 Dimensions: Hight 500mm X Width 190mm X Depth 185mm 2) 90Kvar Combaine Six Bank (10 Kvar To 90Kvar) Eg: 1+2+3+3+5+5 OR 5+10+15+20+20+20 Dimensions: High 600mm X Width 190mm x Depth 185mm 3) 150kvar Combine Four Bank (100 To 150Kvar) Eg: 10+20+30+40 OR 25+25+50+50 Dimensions: Hight 500mm X Width 190mm X Depth 255mm 4) 50Kvar Combaine Six Bank (100Kvar To 150Kvar) Eg: 5+10+10+20+25+30 OR 5+10+20+25+40+50 Dimensions: Hight 600mm X Width 190mm X Depth 255mm 5) 5 TO 30Kvar Single Module Bank Dimention: Hight 260mm X Width 190mm X Depth 185mm 6) 40 TO 100KVAR Single Module Bank Dimention: Hight 270mm X Width 190mm X Depth 255mm
Assembling	Direct mounting on mounting base plate via nut bolts
Mounting position	Vertical, minimum 150 mm distance upwards, downwards and from sides
Operating ambient temperature with nominal load	-10 ... 60 °C

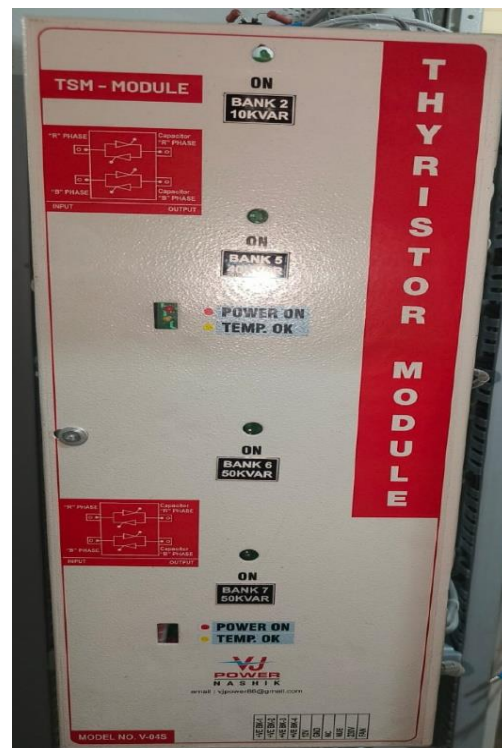
PICTURE - 1 : Connection diagram three phase load



TSM MODULE IMAGES

Four Banks Combined Module

1KVar To 25KVar



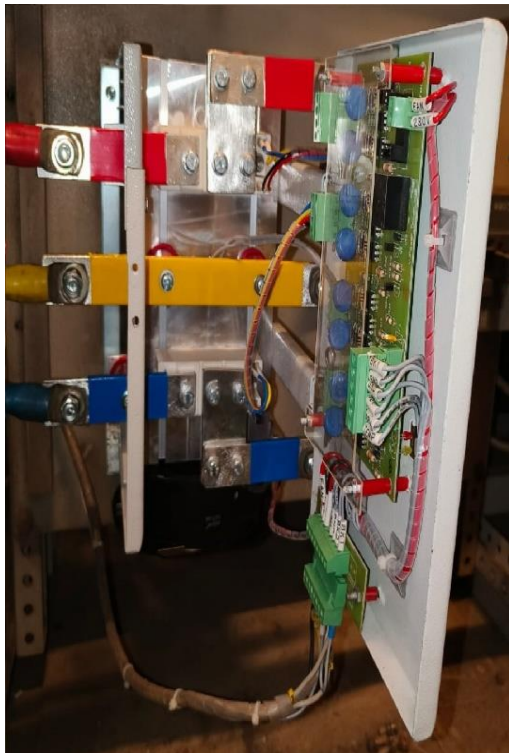
Single Bank Module

5KVAr To 50Kvar



Single Bank Module

100 KVAr



Attention: Please follow Electrical Safety Instructions before handling the modules

General Instructions -

- 1) The TSM Modules must only be used for their intended utilization.
- 2) The TSM Modless must only be used in combination appropriate safety devices (E.g. Superfast Fuses, MCBs etc)
- 3) The TSM Module have to be protected in such a way that no uncontrolled high current and voltages can occur in case of faults.
- 4) The devies have to be protected against humidity and dust - a sufficient ventilation has to be assured.

ALL TSM MODULE SPECIFICATION

- 1) System Voltage: 415 +/- 10%, 3 Phase, 50Hz +/- 3%
- 2) Switching Technology: THYRISTOR (Silicon Controlled Rectifier) switching Zero Voltage Crossing (ZVC)
- 3) Response Time: 10ms (Half Cycle Switching) **as per IEC 61000-3-2**
- 4) Thyristor Module: Bi-directional SCR Pair (anti-parallel) rated 1600 PIV, 106A
- 5) Integrated Protection - IP20, heatsing mounted with Fan

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