

# VAr-Min Automatic Capacitor Control

Unleash the VAr-Min on losses and power factor penalties



## Features

- Front Panel Setup Wizard
- Lineman Friendly / Safe
- SCADA Ready
- Bank Configuration Self-Test
- Event and Trend Recording
- Lockouts for Blown Fuse, Switch Malfunction, Anti-Oscillation, and Voltage THD
- Remote Fallback to Auto Operation for Loss of Comms
- Voltage and Current Total Harmonic Distortion (3<sup>rd</sup> to 15<sup>th</sup> odd harmonics)
- Smart-Switching (see reverse)



## Environmental

Operating Temperature	-40F to 165F
Operating Voltage	95 to 270 VAC
Enclosure	NEMA 4 with Meter Base or Amphenol Connector

# Smart-Switching

for Automated Capacitor Banks

**Smart-Switching** is incorporated in the **VAR-Min** Automatic Capacitor Control by Valquest Systems, Inc.

**Smart-Switching** involves the combination of six separate revolutionary features:



## Absolute Knowledge of Switch Position

The *VAR-Min* knows the position of the cap bank switches at all times regardless of any (or lack of any) previous operating history. It accomplishes this using Close and Trip Circuit Monitoring.

The result is that switching decisions are always made based on accurate information regarding the energized status of the capacitor bank. The switch position detection possibilities are:

- All switches open
- All switches closed
- Switches not all in the same position – possibly cause by switch malfunction
- Control cable unplugged – or damaged cable



## Anticipated Voltage Switching

The *VAR-Min* continuously learns with each close operation and with each trip operation how much the line voltage increases when the capacitor bank is switched on and how much the voltage decreases when the bank is switched off.

This is advantageous in that the user does not need to try to predict how much voltage variation to program into the control algorithm. Also, the control will modify its settings as line and load conditions change. This feature can be disabled.



## Delta Voltage based Op Delay

With the information from the Anticipated Voltage Switching feature, the Operation Delay Timing can be modified based on the absolute value of the change in voltage after switching.

This allows the controls on a feeder with more delta voltage to operate faster.



## Blown Capacitor Fuse Detection

Utilizing either a CT in the neutral connection of a grounded wye cap bank or a transformer from common to ground of an un-grounded wye bank the *VAR-Min* can sense a blown fuse condition.

At the users discretion a blown fuse can:

- Be reported via SCADA.
- Open the capacitor switches



## Voltage and Frequency Relaying

The *VAR-Min* has a special Fast Trip feature for when voltage or frequency go out of tolerance. This Fast Trip function will take the capacitors off line much faster than the Normal Open function which is usually based on kVAR, Temperature, Time, Voltage etc.

This is intended to protect both the capacitors and load equipment from dangerous electrical conditions which can occur when an up-line breaker opens on a reactively loaded circuit.



## Fast DC Tripping (aka Power Loss Trip)

This is a *VAR-Min* feature which allows extremely fast de-energization of the capacitor bank. It also allows opening the switches after loss of AC voltage.

For up to 30 seconds after loss of AC voltage, the control remains active and the bank can still be opened. Solenoid operated switches are required for the feature.