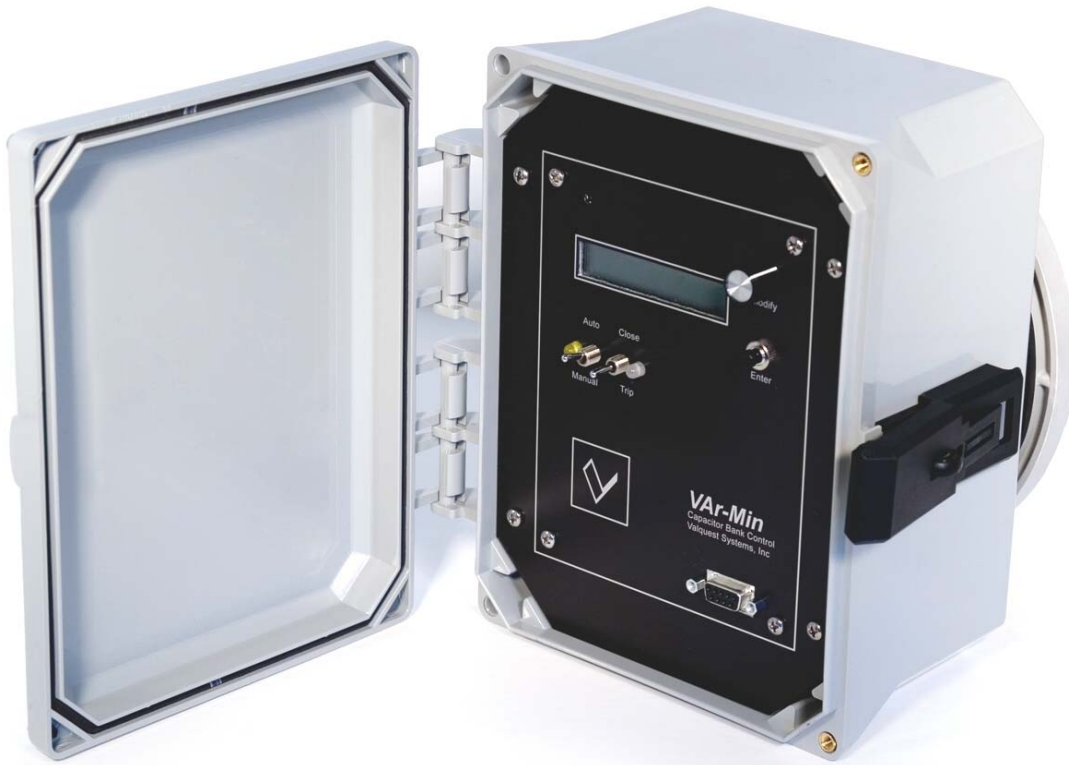


# VAr-Min

Unleash the VAr-Min on your losses



## VAr-Min is ...

### An Automatic Capacitor Control

That learns and compensates for Voltage changes at Switching

It is intended for use with 120 or 240 volt, 50 or 60Hz distribution systems. It reads voltage from the control transformer and current from a variety of sensors. Using proprietary algorithms, it calculates:

**kVAr      kW      Power Factor      Phase Angle      Voltage      Current**

### And a Trend Recorder.

It stores the values listed above in 15 minute intervals. Working with the Valquest **VMChart Software**, it is able to present user formatted graphs and tables. Recording capacity is 224 days.

**VarMin Companion Software** allows control setup using Wizard driven standard schemes or user defined special algorithms. Reports, charts, tables, and graphs are a few mouse clicks away.

# VAr-Min

Automatic Capacitor Bank Control  
from Valquest Systems, Inc.

## Specifications

### Parameter Measurement

	Range	Resolution
Voltage	95 to 280 VAC	+/- 0.2%
Current	0 to 9999 Amps	+/- 0.5%
Phase Angle	0 to 359.5°	+/- 0.5°
KW	-9999 to +9999 kW	+/- 0.5%
KVAr	-9999 to +9999 kVAr	+/- 0.5%
KVA	0 to 9999 kVA	+/- 0.5%
Power Factor	- 0.5% to +0.5%	+/- 0.5%
Line Frequency	50Hz or 60Hz	+/- 0.02 Hz
Temperature (Optional)	0 to 150F	1 degree

### Data Storage

	Parameters
Trend Parameters	Voltage, Current, Phase Angle
Derived Parameters	KW, kVAr, kVA, Power Factor
Trend Period (Minutes)	15
Max Records	65536

### Current Sensing

	Range
Lindsey Line Post Sensor	0-1200 Amps
Fischer Pierce Line Post Sensor	0-1200 Amps
0-10 Amp Secondary CT	0-9999 Amps

#### Standard control schemes:

- \* kVAr with Voltage override
- \* Power factor with Current override
- \* Temperature with Voltage override
- \* Time with Weekend / Holidays
- \* Time with Date modification
- \* End of line Voltage correction

#### User defined control schemes based on:

- \* kVAr
- \* Power Factor
- \* Voltage
- \* Current
- \* Date / Time / Day of week
- \* Temperature

## Environmental Specifications

### Condition

	Range
Operating Temperature	-40°F to 165°F
Humidity (Non-Condensing)	0 to 100%
Operating Voltage	95 to 300 VAC
Power Usage	½ Watt
Enclosure	Nema 4

# VAR-Min

Automatic Capacitor Bank Control  
from Valquest Systems, Inc.

## Features

### Cost Effective

Unsurpassed full function control at a price comparable to single mode capacitor controls.

### Outstanding Service

Valquest Systems is committed to our clients. We believe in continued support and finding solutions for every need.

### Data logging and collection

The **VAR-Min** records fifteen minute averages of voltage, current, phase angle, oil switch position and temperature are maintained for periodic retrieval. **VarMin Companion Software** lets you view historical data as graphs, which are scaled to show as much detail as possible.

### Versatile user defined Control Algorithm

Build control schemes based on any combination of:

- kVAR
- kW
- Voltage
- Current
- Frequency
- Date / Time / Day of week
- Holiday
- Temperature

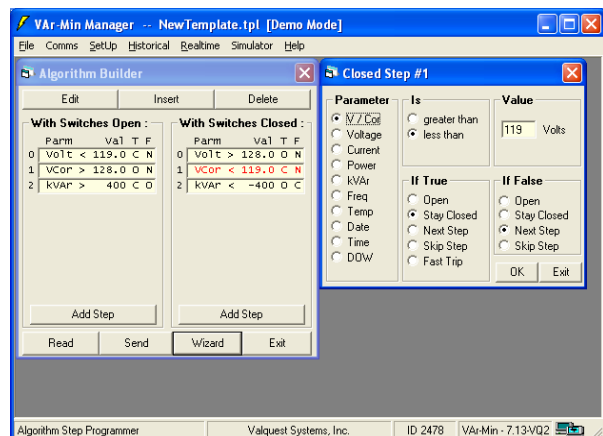
### Easy to use software and Simulator.

**VAR-Min** Companion Software is simple and easy to use. It is the most user friendly Cap Control Interface available.

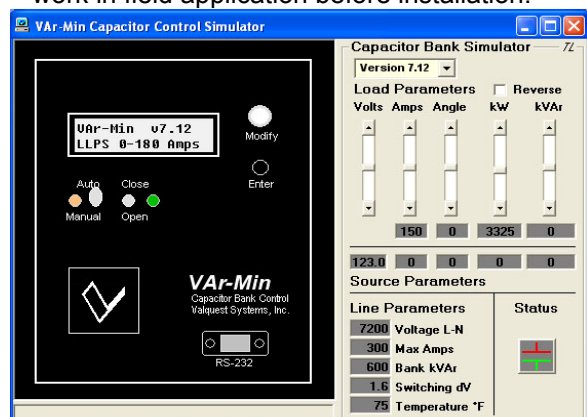
The **VAR-Min** Simulator behaves identically to the actual capacitor control. It allows you to simulate load conditions and observe responses. The simulator communicates with the companion software just as if it were a real Var-Min.

## Benefits

- Low cost multi-purpose capacitor control.
- Very cost-effective for upgrading / replacing existing capacitor controls.
- These units can control on voltage, kVAR, kW, current, frequency, time, temperature, and / or date as needed, reducing inventory.
- Valquest staff has a combined experience rate of over seventy years in working with over one hundred utility companies who provide electricity, gas, oil and water/sewer.
- Confirms proper operation of the control.
- Lets you evaluate the effect of capacitors on voltage regulation.
- Monitors power outage information.
- Event report show times and causes of capacitor switch operations



- Reduces time required for training personnel.
- Allows user to experience how the control would work in field application before installation.



**Faceplate LCD and switches**

Auto/Manual switch and Open/Close LEDs keep user informed. The LCD displays all real-time data and set points. Scroll through the data and change various set points from the front panel.

- Front programmable from the field and requires no computer for installation, monitoring, or troubleshooting control operation.
- Easy setup



**Control Scheme Wizard**

<b>Control On</b>	<b>Override With</b>
kVA	Voltage
Time	Day of wk
Temp	Volt & Dow
Time-Temp	None
Voltage	

- All standard control schemes can be implemented through the front panel.



**Relay Functions: Over/Under Frequency Over/Under Voltage**

Currently the **only** Capacitor Control which acts as a **relay to protect** equipment from damage

- Immediately removes capacitors from the line in unfavorable conditions.
- Opens solenoid operated vacuum switches in the event of a **power outage** (with optional DC Trip module)

**Automatic switched bank delta voltage tracking and compensation**

The **VAR-Min** Control automatically learns and compensates for voltage changes at switching. It uses this  $\Delta V$  to prevent unnecessary cycling.

- Automatically adapts to bank voltage changes due to capacitors going on or off line.
- Predicts what the voltage will be if the switches are operated.
- Allows cap bank control based on present as well as predicted voltages

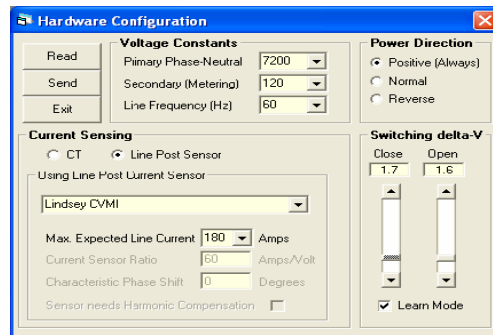
**Absolute bank switch position detection**

Automatically detects capacitor bank switch positions. Does **not** rely on "last commanded state" for switch status and logical decisions.

- Uses internal sensing through the close and trip wires to "know" for sure whether the switches are closed or open
- Avoids logical errors due to loss of memory
- Begins accurate operation at installation with no initialization

**Configuration Templates for all types of bank and sensor equipment**

The VAR-Min can be configured for any of current sensor. It can also work with various control voltages and 50 or 60 Hz Power direction control allows for either direction of current phasing.



**Automatic time, weekend, date and holidays time clock.**

The **VAR-Min** Control automatically accounts for pre-defined holidays. It also uses the time, date and weekends.

- Allows user to adjust for increase of power usage associated with holidays and weekends.
- Eliminates periodic maintenance needed for holidays and daylight savings adjustments.

**Compact size**

The **VAR-Min** Control has a durable Nema 4 enclosure and weighs approximately 4 lbs

- Compact for easy installation.
- Perfect size for distribution poles.
- Easy transportation.
- Several mounting options