

VSPFC Variable Step Power Factor Controller

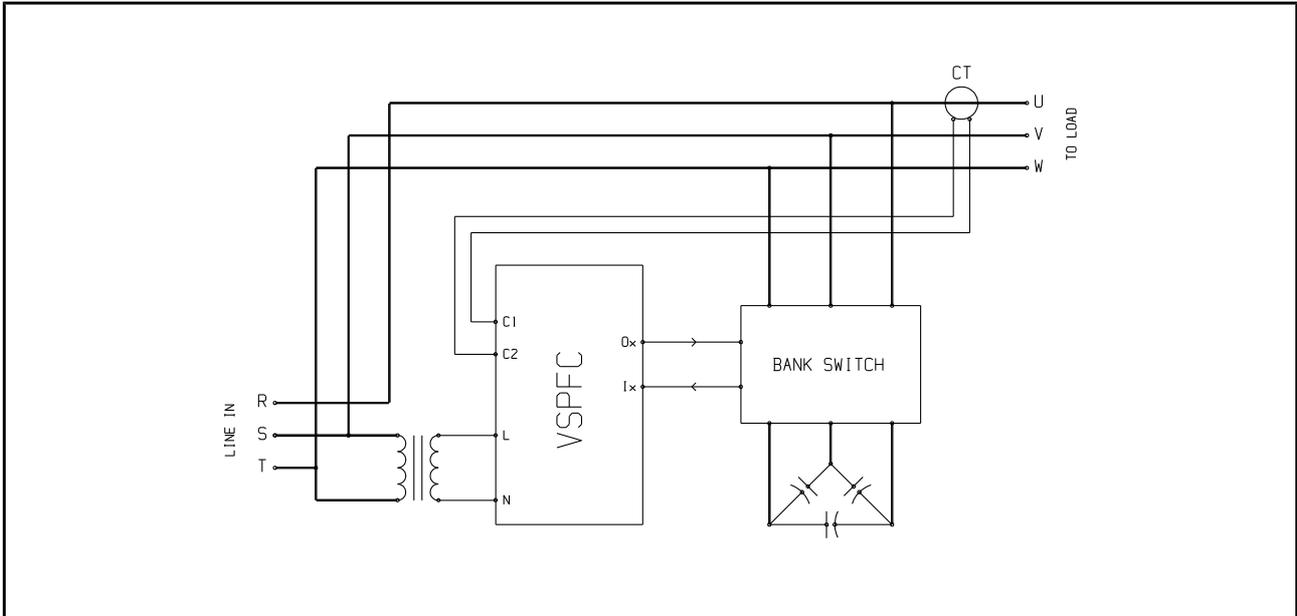
The VSPFC variable step controller provides for different capacitor banks of any size to correct power factor in practically any arbitrary minimum step and correction range size. At every sampling instant, the controller calculates the required compensation step and connects or disconnects a combination of banks whose sum is equal or closest to the calculated step value. As an example, four banks sized as x5, x2, x2 and x1 multiples of the smallest required step provide a decade of compensating operation and function as a typical ten equal step system. The maximum correction range possible with the VSPFC is when all its 12 outputs are employed in a binary weighted system (x1, x2, x4, x8 .. x2048) and equal to 4095 steps.



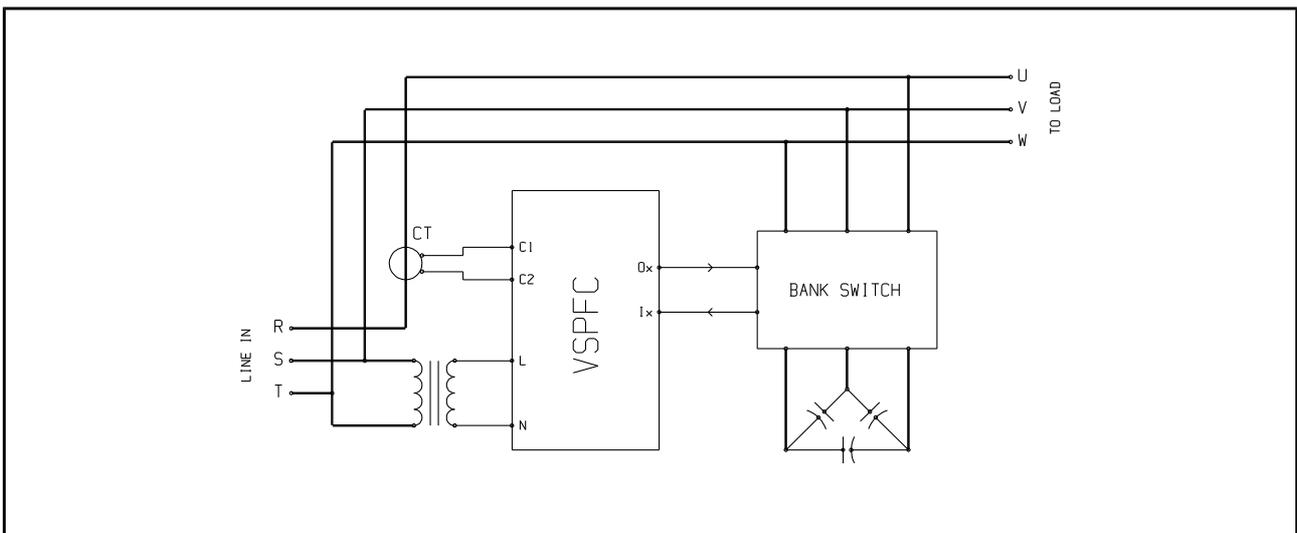
The VSPFC Variable Step Power Factor Controller

VSPFC Feature Summary	
Variable compensating capacitance step	Variable compensating capacitance step can be any combination of the driven banks, effectively realizing an up to 4095 step system.
Compensating or regulating mode	Operates in compensating or regulating mode with the detecting current transformer (CT) either on the line or load side.
Connection	Single- or three- phase connection.
Twelve bit inputs and outputs	Twelve bit inputs and outputs to drive up to twelve capacitor bank switches with individual or group fault/error feedback.
Option to use one bit output to drive a fan	Specific bit output can be assigned to drive a fan as a function of the connected bank size sum.
Current detection with standard transformer	5A CT secondary interface detects the CT apparent current and its phase-detected component (locked to the VSPFC supply voltage).
Dual standard serial port	Dual standard serial communication port: EIA(RS)232 for local communications and/or EIA(RS)485 for connection to Quamatic (and similar byte oriented) networks and remote sensors.
Functional front panel	Five digit plus sign LED display with four operator switches on the front panel protected to IP54 and covered by a polyester membrane.
Fully programmable	Fully programmable parameters and function can be set via the front panel or the serial port.
Supplies all relevant quantities	Provides all quantities relevant to power factor control applications regardless of mode (regulating or compensating) and installation type (single- or three-phase) for the line and the load.
Complete integration	Complete integration within a Quamatic or similar network or other supervisory systems via an assigned bit input and output pair.
Operation by non-specialist personnel	Simple, self-contained, unattended operation by non-specialist personnel.
Standard dimensions	Standard front panel cut-out dimensions (per DIN 43700).

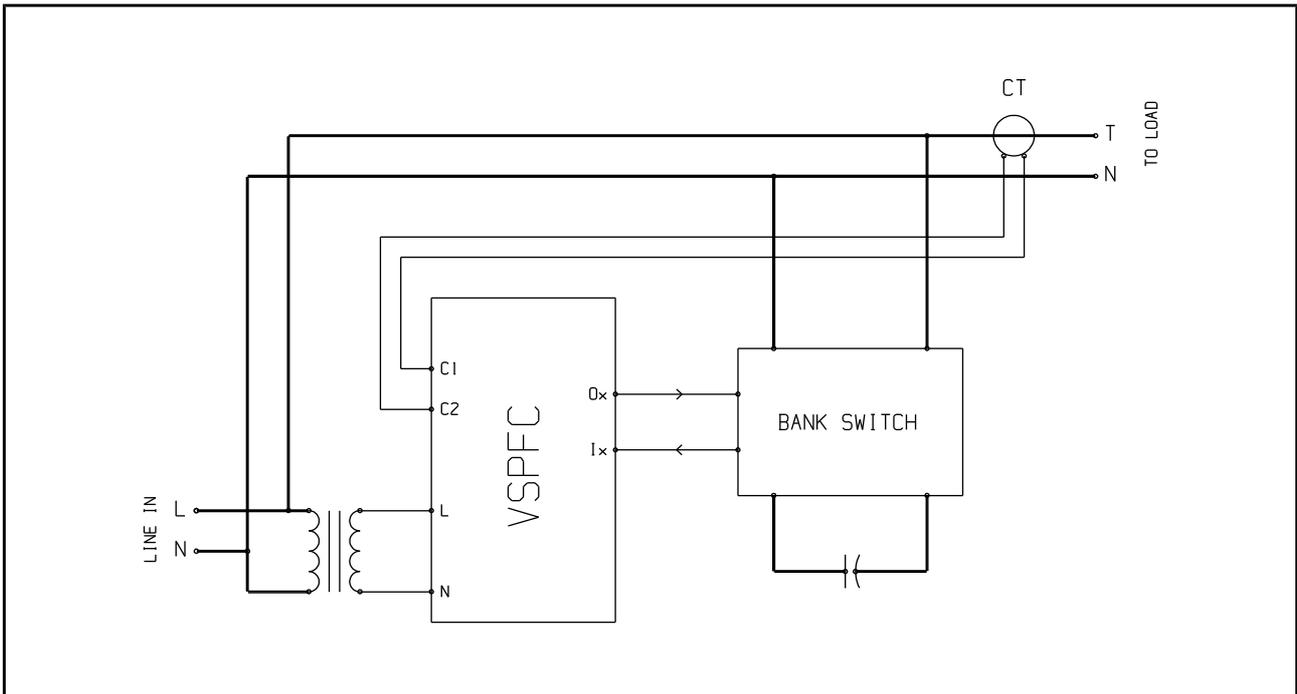
The VSPFC operates in regulating or compensating mode. In regulator mode the current is detected at the line side and equals to the sum of the load and connected capacitor currents. In this mode the Controller switches capacitor banks in and out of the line to minimize reactive current at the line side. In compensator mode the current is detected at the load side and is equal only to the load current. In this mode the Controller switches the banks in and out of the line to compensate the detected reactive load current as closely as feasible by the available bank sizes.



Three-phase VSPFC system operating in compensation mode. The current transformer (CT) detects the load current only. The transformer at the VSPFC supply is used to isolate the system power and control circuits and/or when the line voltage is other than the VSPFC supply. The capacitor bank switches can interface bidirectionally with the VSPFC.

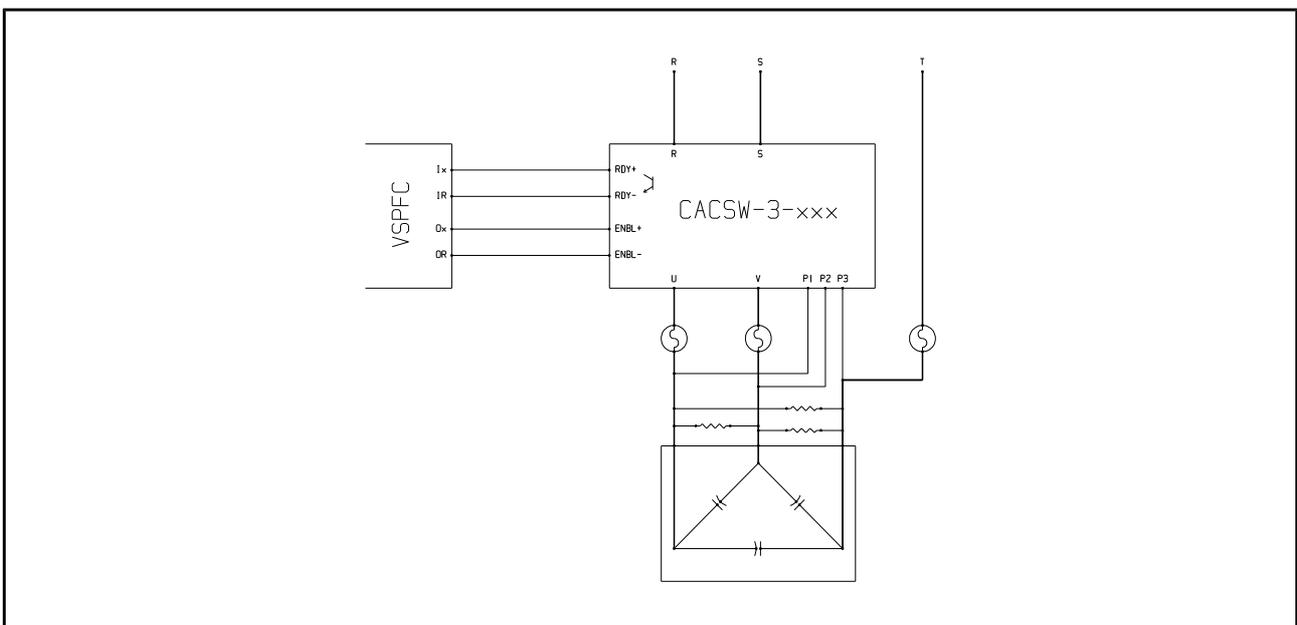


Three-phase VSPFC system operating in regulation mode. The current transformer (CT) detects the load current plus any compensating capacitor bank current. The transformer at the VSPFC supply is used to isolate the system power and control circuits and/or when the line voltage is other than the VSPFC supply. The capacitor bank switches can interface bidirectionally with the VSPFC.



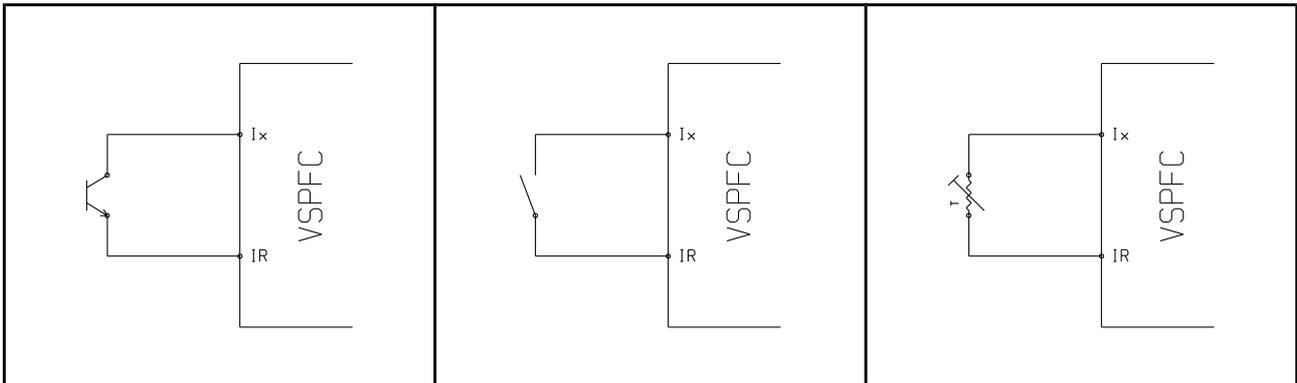
Single-phase VSPFC system operating in compensation mode. The current transformer (CT) detects the load current only. The transformer at the VSPFC supply is used to isolate the system power and control circuits and/or when the line voltage is other than the VSPFC supply. The capacitor bank switches can interface bidirectionally with the VSPFC.

The Controller bit outputs feature 24 VDC optotransistors commoned in NPN (current sink) type. They are protected against overvoltage transients and are isolated from all other Controller supply potentials.



Direct VSPFC interface to a CACSW capacitor bank switch. The CACSW is driven by the VSPFC, detects the capacitor fuses state and reports it via its "Ready" output.

The VSPFC bit inputs are of NPN (current sink) type and are used to interface to any capacitor bank switch status feedback or enabling signal. They are internally connected to the galvanically isolated internal interface power supply and are protected against overvoltage transients.



VSPFC enable bit inputs driven by an open collector, NPN, current sink source (left), switch or relay contacts (middle) and PTC thermistor (right).



Ready-to-install, completely assembled systems are available on a custom order basis.

Ordering Information	
Model	Description
VSPFC-115	Variable step power factor panel controller, 115 VAC, 50-60 Hz supply.
VSPFC-230	Variable step power factor panel controller, 230 VAC, 50-60 Hz supply.

Supplied by