

NEWTON+ POWER FACTOR CORRECTION RELAY

The NEWTON+ controls the automatic system for correction of the power factor. It is a KVAR based controller which controls up to eight capacitor banks optimally to achieve near unity power factor and also measures/calculates various electrical parameters. NEWTON+ is meant for use in three phase four wire electrical systems based on single phase sensing. The main features of the NEWTON+ are :

MEASUREMENT

Need voltage input from any phase & neutral. Need a CT input from the mains as well as from Capacitor Bank (for VAR mode operation). NEWTON+ displays Volt, Amps, system KW, system KVAR, system PF, THD & up to 7th ODD harmonics for Voltage & Current on 128x64 display.

EASE OF INSTALLATION

CT primary and secondary of Mains as well as Capacitor, PT Gain and target PF are site programmable. NEWTON+ supports auto phase correction feature through programming mode with support of reference three phase capacitor bank. NEWTON+ has an autosense feature, which senses the sizes of the capacitor banks connected on each stage automatically with/without capacitor CT. No need to program bank sizes manually.

LOW CURRENT OPERATION

In FIFO/SFIFO control, operation requires 1% or 5% of the main load based on programming mode configuration.

CONTROL ACTION

NEWTON+ supports bigger font for system Power Factor display with inductive/capacitive symbol for LAG/LEAD indication. NEWTON+ supports setting of target PF on lag as well lead side for all type of control action. Out of all supported control action, VAR is intelligent control action. Target PF value is just used to calculate the capacitive VAR required to be added/removed to achieve the desired PF. e.g. If the target PF is unity, means that the target VAR in the system is zero. If system KVAR is 200 lagging, then the controller needs to add 200 KVAR of capacitor banks to reach zero VAR.

The calculation of the reactive power in the system is done by taking instantaneous samples of all voltage and current waveforms, in all four quadrants. These values are then subjected to DSP techniques to add a frequency independent 90° phase shift to current samples.

The product of these voltage and current samples then generate signed VAR value. VAR controller then takes into calculation the prevailing system KVAR, the prevailing bank KVAR and the bank sizes of each stage, and then switches ON/OFF the combination which is closest to the needed VAR. This assumes a balanced loading of the electrical system.

For unbalanced load conditions, ACCUVAR model is re-commended.



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TECHNICAL DATA SHEET

PARAMETER			
TYPE	NAME	STATISTICS	
INPUT	Supply	One Phase and Neutral of 3P4W system	
	Voltage	Direct Voltage Input : Up to 300V L-N Burden : 0.5 VA	
	Current	Secondary Current Input : 5A or 1A CT Ratio : Site Selectable Range of Reading : 5-5000A Burden : 0.5VA Overload : 5A CT = 6A RMS Continuous 1A CT = 1.2A RMS Continuous	
	Auxiliary Power Supply	Self Powered from mains. Wide operating voltage SMPS : 80VAC - 300VAC, 45-55Hz	
OUTPUT	Relay	Switching Voltage : Max. 250 VAC Switching Power : Max. 1000W Expected Mechanical Life : >10 X 10 ⁶ switching operations Expected Electrical Life : > 4 X 10 ⁶ switching operations @ (Load=200VAC, Cosφ=0.5)	
	MEASUREMENT True RMS Basic Parameters	Voltage	Accuracy : 0.5% of Reading
		Current	Accuracy : 0.25% of Reading
		Capacitor Current	CT Ratio : Site Selectable Accuracy : 1.0% of Reading Range of Reading : 20-2000A
Power Factor		Accuracy : 1.0% of Reading (IPF I ≥ 0.5) Range of Reading : 0.05 to 1.00 Lag/ Lead	
MISCELLANEOUS	Dimensions	Bezel	96 x 96 mm
		Panel Cutout	92 X 92 mm
		Depth of installation	65 mm
	Operating temp	10°C to 50°C	
	Weight	0.4 Kgs (Approx.)	
	Min. Operating Current	1% or 5% in FIFO/SFIFO mode	

CONNECTION DIAGRAM

