

RPCF3系列无功功率自动分相补偿控制器

RPCF3 series automatic phase discriminated reactive power compensating controller

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概述 General Description

RPCF3系列无功功率自动补偿控制器继承了RPCF系列的所有优点,同时将取样信号改为3相取样,即同时取3相电压信号、3相电流信号。避免了在3相不平衡系统中出现的功率因数已补偿到位而无功电表转速很快或反转等现象。

RPCF3 series automatic phase discriminated reactive power compensating controller has all the advantages of RPCF series, meanwhile this controller sample the signals of voltage, and current from three phases respectively, it will avoid the var meter recording quickly or inversely rotating even if the power factor has been compensated fully in three phase unbalanced system.

功能特点 Function features

- 1、以3相基波无功功率和计算投切电容容量,可避免任何形式的投切震荡,并在有谐波的情况下能正确显示电网功率因数。
- 2、功率因数测量精度高,显示范围宽。
- 3、实时显示总功率因数(PF)与基波功率因数(DPF)。
- 4、实时分别显示3相电压,电流,有功功率,无功功率,视在功率。
- 5、有12种编码输出方式供用户选择。
- 6、最多有6种补偿方案供用户选择(共补和分补的路数分配)。
- 7、最多16路输出。
- 8、人机界面友好操作方便。
- 9、各种控制参数全数字可调直观使用方便。
- 10、具有自动运行与手动运行两种工作方式。
- 11、具有过电压和欠电压保护功能。
- 12、具有掉电保护功能数据不丢失。
- 13、电流信号输入阻抗低 $\leq 0.01\Omega$ 。
- 14、目标功率因数调节范围宽滞后0.70到超前0.70。

1. On basis of 3 phases fundamental wave reactive power, calculate the reactive power to be switched on, it can avoid switching shock of any forms, it can accurately display the power factor of system with harmonic wave.

2. High measurement accuracy, wide display scope
3. Real time display general power factor and fundamental wave PF
4. Real time respectively display 3 phases voltage, current, active power, reactive power, apparent power
5. Total 12 kinds of coding output can be chosen
6. 6 kinds of schedules can be chosen by user (distribution the circuit nos of corporate compensation, or respective compensation)
7. 16 circuits of output at maximum
8. Human friendly interface, convenient operation
9. Various control setting can be adjusted digitally, directly and easily.
10. Automatic and manual operations, two modes provided..
11. Over voltage and absent voltage protection provided.
12. Data not lost even if power shut down.
13. Current signal input resistance $\leq 0.01\Omega$
14. Compensating power factor able to be adjusted: 0.70 lag~0.7 forward.

技术参数 Main Technical Parameter

- 1、额定工作电压: AC220V 3
- 2、额定工作电流: 5A
- 3、额定工作频率: 45-65Hz
- 4、显示功率因数: 滞后0.001-超前0.001
- 5、测量无功功率: 0—9999Kvar
- 6、测量有功功率: 0—9999KW
- 7、测量视在功率: 0—9999KVA
- 8、欠压保护值: AC180V
- 9、输出触点容量: AC 220V 7A
- 10、灵敏度: 20mA
- 11、显示方式: 4位红色数码管
- 12、整机消耗功率: 10VA
- 13、外型尺寸: 144mm 144mm或122mm 122mm
- 14、开孔尺寸: 138mm 138mm或113mm 113mm

15、安装方式：嵌入式安装倒齿附件固定或导轨安装

1. **rated working voltage:** AC220V 3
2. **rated working current:** 5A
3. **rated working frequency:** 45-65Hz
4. **power factor displayed:** lag 0.001-forward 0.001
5. **measured reactive power:** 0—9999Kvar
6. **measured active power:** 0—9999KW
7. **measured apparent power:** 0—9999KVA
8. **absent voltage protection:** AC180V
9. **capacity of output contact:** AC 220V 7A
10. **sensitivity:** 20mA
11. **display mode:** 4 digit red LED
12. **total consumption:** 10VA
13. **Outline size:**
144mm 144mm or 122mm 122mm
14. **Opening hole size:**
138mm 138mm or 113mm 113mm
15. **Mounting mode:** plug-in mounting by inverse thread screw or railway mounting.

补偿方案(以RPCF3-12S为例)

Compensation schedules (RPCF3-12S as example)

补偿方案 Compensation schedule	适用情况 Application	投切方法 switching mode
12-0(全共补) all corporate compensation	三相功率基本平衡 three phases powers basically balance	以三相总无功功率为依据 according to the total reactive power of three phases.
9-1(共补九路,分补一路) corporate compensation: 9 circuits, respective compensation 1 circuit	三相功率相差不大 three phases powers have no big difference	以单相无功功率最小的一组为依据投入共补电容器; 不够或不平衡再投入分补电容器 On basis of the single phase with lowest reactive power switch on the corporate compensated capacitor(s), if not enough or unbalance, then switch on the respective compensated capacitor(s)
6-2(共补六路,分补二路) corporate compensation: 6 circuits, respective compensation 2 circuits		
3-3(共补三路,分补三路) corporate compensation: 3 circuits, respective compensation 3 circuits	三相功率严重失衡 three phases powers unbalance severely.	以单相无功功率为依据 according to the total reactive power of single phase
0-4(全分补,每相四路) all respective compensation, each phase has 4 circuits		

补偿方案、输出路数与输出端子的关系

Cooperation of compensation schedule, output circuits and output terminal

RPCF3-12S型控制器共12路输出分别编号1、2、3...12; RPCF3-16型控制器共16路输出分别编号1、2、3...16。RPCF3在不同补偿方案和不同输出回路下将按A相分补第一回路、第二回路...; B相分补第一回路、第二回路...; C相分补第一回路、第二回路...的顺序分配输出控制端子; 若用户设定的路数总数小于硬件所能支持的最大回路时, 空余的端子在最后面(参考下表以RPCF3-12S为例, A: A相; B: B相; C: C相; G: 共补)。

Output circuits No. of RPCF3-12S controller is marked as 1, 2, 3...12, RPCF3-16 has total 16 circuits, marked as 1, 2, 3...16. Under different compensation schedule and different output circuit for RPCF3 controller, push the buttons of respective compensated circuit No. 1, No.2,... of A phase, B phase, C phase and corporate compensated circuit No1, No2... and etc. If the circuit number to be set by user is less than the maxi circuits existing in the controller, the vacant terminals left in the end. (RPCF3-12S as sample referring to the following sheet:A: A phase, B: B phase, C: C phase, G:corporate compensation).

举例1 Example 1

参数设定值 value setting	补偿方案: 6-2; 共补路数: 6; 分补路数: 2 Compensation schedule: 6-2, corporate compensation: 6 circuits, respective compensation: 2 circuits											
输出端子编号 Output terminal series Number	1	2	3	4	5	6	7	8	9	10	11	12
控制相位 Control phase	A1	A2	B1	B2	C1	C2	G1	G2	G3	G4	G5	G6

举例2 Example 2

参数设定值 value setting	补偿方案: 6-2; 共补路数: 5; 分补路数: 1 Compensation schedule: 6-2, corporate compensation: 5 circuits, respective compensation: 1 circuits											
输出端子编号 Output terminal series Number	1	2	3	4	5	6	7	8	9	10	11	12
控制相位 Control phase	A1	B1	C1	G1	G2	G3	G4	G5	空	空	空	空

注: A1表示A相第一回路, B1表示B相第一回路, C1表示C相第一回路, G1表示共补第一回路, 其余的以此类推。

NB: A1 stand for A phase, No 1 circuit, B1 stand for B phase, No 1 circuit, C1 stand for C phase, No 1 circuit, G1 stand for corporate compensation, No 1 circuit,