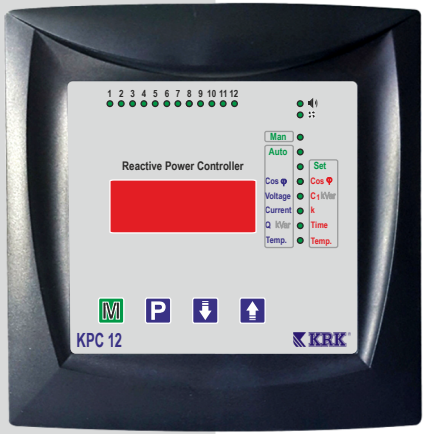
ISO 9001:2008

KRK®

ELECTRONIC CONTROL SOLUTIONS &
PANEL INSTRUMENTS

NEW

2 YIL GARANTİ



KPC 6 - KPC 8 - KPC 12 & KPC 15
REACTIVE POWER CONTROLLER
USER GUIDE

www.krk.com.tr

REV 01/2023

KRK®

CUSTOMER SUPPORT CENTER

+90 444 4 575

(From all over Türkiye)

Headquarters : info@krk.com.tr
Order : satis@krk.com.tr
Sales /Support : satis-destek@krk.com.tr
Technical Support : teknik@krk.com.tr
Fax : +90 216 612 36 40
WhatsApp : +90 553 646 57 11

GENERAL SPECIFICATIONS

- KPC xx, compensates the system according to total reactive power by measuring voltage and current from single phase. It must be used with threephase capacitors.

- Measures cosφ , current,voltage,reactive power and temperature

- Operates according to first in first out (FIFO) princible

- Target cosφ value can be adjusted to be inductive or capacitive

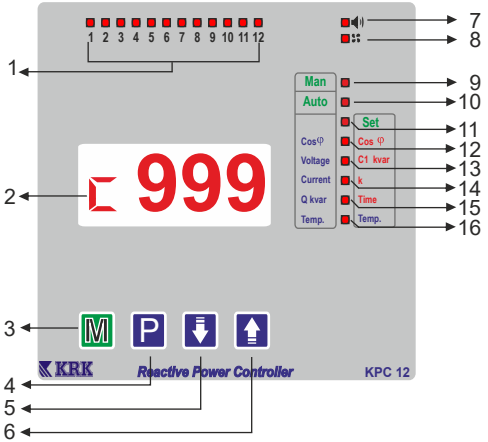
- First capacitor value, current transformer ratio, step on, step off time and temperature value can be entered

- Over conpensation, insufficient compensation and temperature alarm gives alerts

- Device sense current directions of phase

- Automatic set, easy usage

- Working without battery



1- 1,2,3.....12: Shows the steps which capacitor is switched on.

2- End.Cap: ı : It shows that Cosφ value is inductive.
c : It shows that Cosφ value is capacitive.

3- M **Auto/Set/Man.:** With this button you can choose Auto mode, Set mode or Man mode

4- P **Parametre:** It's used for selecting a parameter that is wanted to be adjusted

5- **:** In manuel mode, it is used for switch off the step. In Set mode, it is used for decreasing the value displayed.

6- **:** In Manuel mode is used for switch on the step. In Menu mode, it used for increasing the value displayed.

7- **:** shows that the alarm output is turned on.

8- **:** shows that fan is started to cool the panel.

9- Man : Shows that the controller is in Manuel mode.

10- Auto : shows that the controller is in Automatic mode.

11- Set : shows that the controller is in Set mode.

12- Cosφ: In Auto mode, the value displayed is cosφ value. In Set mode, it shows that Target Cosφ parameter is selected to adjust.

13- Voltage/C1 : In Auto Mode and Manuel Mode shows related phase voltage. In Set mode you can enter first capacitor value.

14- Current/k : In Auto mode and Manuel mode shows system current value. In Set mode, current transformer ratio is entered.

15- Q/Time : In Auto mode and Manuel mode shows system total reactive power. In Set mode step-on / step-off time is entered.

16- Temp/Temp : In Auto mode and Manuel mode shows panel temperature. In Set mode panel temperature value is entered.

USING THE CONTROLLER

1- Operating mode select: "M" button is used for selecting mode. If ''Auto'' lights, the controller is in automatic mode and compensate the system. In Auto mode the device try to reach target cosφ value. If ''Man'' lights, manually steps on or step off can be choosed. In Set mode, user can make adjustment of the controller.

2- Switching on / off the steps: When ''up'' button is pressed, one step is switched on. Related step light is on. When ''down'' button is pressed switched off the step.

3- Target cosφ adjustment: Press ''M'' buton to choose Set. Target cosφ adjustment is selected by parameter button. Using down and Up butons, target cosφ can be adjusted. If you wait 10 second adjusted value is written to the memory and return to the Auto mode.
4- C1 First capacitor Power: ''M'' buton is used for selecting Set mode. Press ''P'' button to choose ''C1'' and enter first capacitor value.
5- k adjustment: Press ''M'' button to choose Set mode.Press'' P'' button to choose ''k'' and enter current transformer ratio. If any button is not pressed for 10 seconds, adjusted value is written to the memory.
6- Switched-on time (ton) adjustment : Set mode is selected by ''M'' buton. ton adjustment is selected by parameter button. Using Up/Down buttons, switched-on time can be adjusted in 1..99 seconds range. If any button is not pressed for 10 seconds, adjusted value is written to the memory and return to the Auto mode.
7- Switched-off time (toff) : Set mode is selected by ''M'' button. ''toff'' adjustment is selected by parameter button. Using Up/Down buttons, switched-on time can be adjusted in 1..99 seconds range. If any button is not pressed for 10 seconds, adjusted value is written to the memory.

8- Temperature adjustment : Set mode is selected by "M'' button. Temperature adjustment is selected by parameter buton. Using Up/Down buttons, temperature can be adjusted. If any button is not pressed for 10 seconds, adjusted value is written to the memory.

ALARMS

1- Insufficient compansation alarm: If the controller swithes on all the steps and it does not reach to system's target cosφ value. It ligts insufficient compensation alarm. If this continues 60 sec and alarm is turned on (1 sec.) .

.

2- Over compansation alarm: If the controller is swithes off all the steps and it's cosφ value is bigger than systems target cosφ value, it lights over compensation alarm. If this continues 60 sec and alarm is turned on (1 sec).

3- Over temperature alarm : If panel temperature exceeds adjusted value fan output is actived 5 second later. If panel temperature is under 5 C of adjusted value fan output is passive.

TARGET COSφ TABLE

	Target CosØ					
CosØ (Ind)	0,80	0,85	0,90	0,95	1,00	(Cap.) 0,95
0,40	1,54	1,67	1,81	1,96	2,29	2,62
0,42	1,41	1,54	1,68	1,83	2,16	2,49
0,44	1,29	1,42	1,56	1,71	2,04	2,37
0,46	1,18	1,31	1,45	1,60	1,93	2,26
0,48	1,08	1,21	1,34	1,56	1,89	2,22
0,50	0,98	1,11	1,25	1,40	1,73	2,06
0,52	0,98	1,03	1,16	1,31	1,64	1,97
0,54	0,81	0,94	1,08	1,23	1,56	1,89
0,56	0,73	0,86	1,00	1,15	1,48	1,81
0,58	0,66	0,78	0,92	1,08	1,41	1,74
0,60	0,58	0,71	0,85	1,01	1,33	1,65
0,62	0,52	0,65	0,78	0,94	1,27	1,60
0,64	0,45	0,58	0,72	0,87	1,20	1,53
0,66	0,39	0,52	0,66	0,81	1,14	1,47
0,68	0,33	0,46	0,59	0,75	1,08	1,41
0,70	0,27	0,40	0,54	0,69	1,02	1,35
0,72	0,21	0,34	0,48	0,64	0,96	1,28
0,74	0,16	0,29	0,43	0,58	0,91	1,24
0,76	0,11	0,23	0,37	0,53	0,86	1,19
0,78	0,05	0,18	0,32	0,47	0,80	1,13
0,80	-	0,13	0,27	0,42	0,75	1,08
0,82	-	0,08	0,21	0,37	0,70	1,03
0,84	-	0,03	0,16	0,32	0,65	0,98
0,86	-	-	0,11	0,26	0,59	0,92
0,88	-	-	0,06	0,21	0,54	0,87
0,90	-	-	-	0,16	0,48	0,80
0,92	-	-	-	0,10	0,43	0,76
0,94	-	-	-	0,04	0,36	0,68
0,96	-	-	-	-	0,29	0,61
0,98	-	-	-	-	0,20	0,52

INSTALLATION OF COMPANSATION SYSTEM

Example: Cosφ=0,80 ve 50kVA There is a system that has cos =0,80 and 50 kVA total power. What are the total capacitor power ? How can we do capacitor power distrubition ?

Solution : Total power S=50 kVA

P=SxCosφ = 50x0,80 = 40 kW

Cosφ 0,80 value is reached to target cos =1 value by using multiplier that is taken from 'Target Cosφ Table'.

Multiplier that is taken from table is 0,75.

Reactive Power Q=PxMultiplier=40x0,75=30kVAR is found.

Current 50/(220x3)=75 A

Current transformer is selected as a near value to the upper 100/5

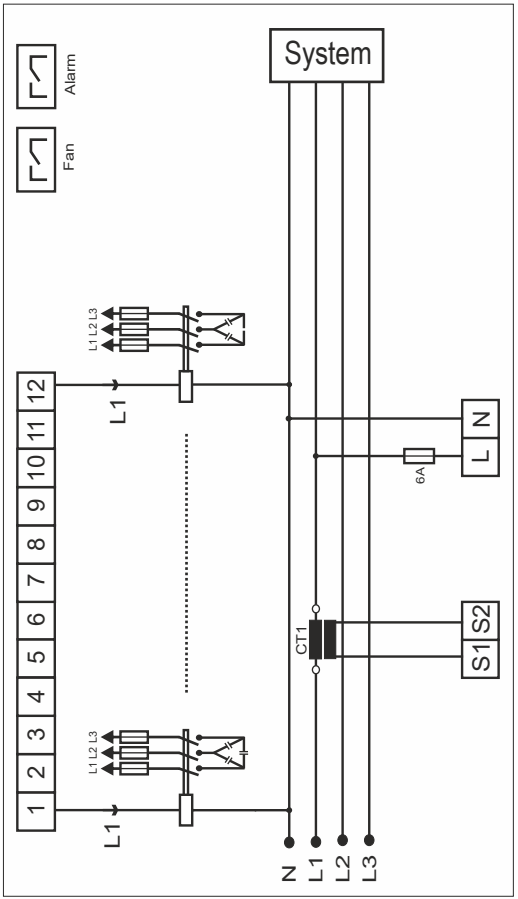
For 6 steps if we think this way 1 2 4 4 8 16 ; in total 33 electrical steps are obtained.

First step's capacitor power 30 kVAR /33 = 0,9 k VAR

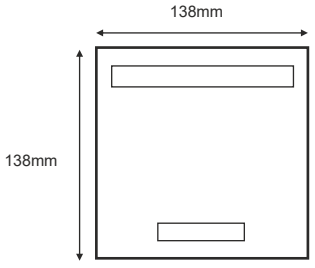
Nearest value 1 kVAR is selected.

1 1,5 2,5 5 10 15 = 35 kVAR is found.

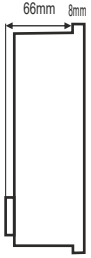
CONNECTION DIAGRAM



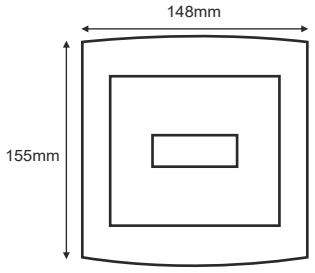
DIMENSIONS



Back



Side



Front

TECHNICAL SPECIFICATIONS

Supply Voltage	: 220Vac±%20(L1-N), 50 Hz
Power Consumption	: <5VA
Current Transformer	: .../5A
Current Meas. Range	: 10 mA.. 7A
Temperature Meas. Range	: -10..100 °C
Control Output	: Relay, 5A/250Vac(Resistive Load)
Cosφ Range	: 0,95(Ind.)...0,95(Cap.)
Step Delay	:
Switch-on time ton	: 1..99 sec.
Switch-off time toff	: 1..99 sec.
Comp. Alarm Delay	: 60sec.
Temperature Setting Range	: 30..65 °C
Factory Set Values	: Cosφ=1,00; k=20 ; C1=1,000 kVAR ton=2sec.; toff=2sec. Temperature=50 °C (Alarm ON)
Ambient Temperature	: -5...+55 °C
Display	: 3 Digits Red Display
Protection Class	: In Front: IP54 In Rear: IP20
Weight	: 0,90 kg