

PC528 SINGLE PHASE THYRISTOR POWER CONTROLLER OPERATING INSTRUCTIONS

1) Installation

The PC528 Single Phase Phase Angle Thyristor Units should be mounted to allow airflow through the heatsink naturally as shown on the dimensional drawing (fig. 1). The fan was install to improve the heat dissipation and long term reliability. The maximum ambient temperature should not exceed 50 Deg. C.

A PC528 has test points to enable various parameters of the controller to determine the control setting for a particular load. A replacement unit can be pre-set with the same parameters, in order to reduce the set up time. The measurement of these test points will be explained in the relevant sections.

2) Protection Fuse

High Speed semi-conductor fuses are fitted for protecting the semi-conductors, external fuses with appropriate ratings are necessary for protecting cables from the power source to the thyristor unit and to the load. Same type or similar fuses should be used for replacement.

FOR UNITS UP TO 600V SUPPLY

Current Rating	Number of fuses	Fuse current rating	Ferraz part no.	EQUIVALENT TYPE
75A	2	63A	6,6URS17/63 (R 075892)	63ET or 63FE
100A	1	160A	6.6URT217/160 (K 075909)	160EET or 160FET

3) Wiring

The PC528 should be connected according to the wiring diagram as shown in fig. 2. The size of cables for controlling signals should be larger than 0.5 mm sq. and the cable to L1, L2 (N) and cables to the load must be sufficient to withstand the maximum current rating of the LOAD and meet the IEE WIRING REGULATIONS.

For the L1, LOAD & L2 terminals, the cable crimp terminals must not be on top of the plain & spring washers, they should be in direct contact with the terminals. The torque required to secure these terminals is 2.5 to 3 Nm.

3a) Supply Voltage Selection

The PC528 has a multi-tap low voltage transformer for supplying control circuits. Check the supply voltage and select the required transformer tapping as shown in fig. 3 accordingly. All PC528 are factory set for 480Vac supply.

Please note that a PC528 is auto-adjust for operating from 47 to 63Hz, no adjustment is required for different Countries supply frequencies.

4) Set-up procedure

Fig. 4 shows the position of various pots and test points position.

After connecting the load to the PC528, set the input signal to minimum (0V). Switch on the mains supply. The POWER ON LED should illuminate. Since a PC528 is designed to have a minimum output voltage/current with zero volt input signal, it should be a minimum output voltage. Gradually increase the input signal and check that the voltage or current increases smoothly.

An adjustable input ramp for gradually ramping up the input signal is incorporated in the PC528. If the input signal increases suddenly, the output voltage or current will gradually increase to avoid a sudden surge of output power. If no ramp is required, adjust the ramp pot fully anti-clockwise.

4b) Ramp Up Adjust

The ramp up period is factory set to minimum (Ramp Up Pot fully anti-clockwise) such that when the input signal changes from zero to maximum, the time required for the output voltage and current to increase from zero to maximum without delay. If longer ramp period is required, adjust "Ramp Pot" clockwise to increase the ramp up period.

4c) ALL STANDARD PC528s ARE FACTORY SET UP AS FOLLOWS

- a) Adjust SPAN and ZERO pots at middle position.
- b) With the input at minimum (0V), switch on the mains supply to the PC528.
- c) With an input of 0V, adjust the ZERO pot until the output current to have the desired min. voltage or current level.
- d) With the input at 10V, adjust the output current to have 100% output current.
- e) Repeat steps c) and d) until the output is at its minimum and maximum.

Test point, TP3, VC signal

This is the control signal which determine the output voltage or current. The procedure to adjust and record VC signal is as follow.

- a) With a digital voltmeter, confirm that the voltage between 0V and +10V on the input terminal is within +9.90V to +10.10V.
- b) As reference to 0V, with 0V input signal, measure and record the VC voltage.
Factory set to have 5.0V at VC by adjusting ZERO pot.
- c) As reference to 0V, with 10V input signal, measure and record the VC voltage.
Factory set to have 7.0V at VC by adjusting SPAN pot.
- d) These two VC voltage can be use to set up the other PC528 with the same input to output characteristics.

5) Current limit

- a) First set LIM pot to fully counter clockwise.
- b) Set input signal to give full power.
- c) Use a current meter to monitor the desired output current.
- d) Gradually adjust LIM pot clockwise, to increase the current limit level to the desired value. If long ramp up period is set, allow sufficient time for the input to ramp up to its maximum value before adjusting LIM pot.
- e) This completes the current limit setting.

TP6, current limit signal, labeled as VLIM signal

After the desire current level was set, with reference to the 0V, TP1, measure and record the voltage at TP6, VLIM signal. This voltage value can be used to set up another PC528 with the same output current specification with similar current limit value within +/-2%.

Factory set to have 6.0V at VLIM as reference to the 0V.

Specification

Supply voltage	380V, 415V, 440V & 480V (+/- 10%)
Supply frequency	47Hz to 63Hz
Operating temp.	0 to 50 Deg. C
Storage temp.	-10 to 80 Deg. C
Input signal	0-10V
Current ratings	75A, 100A
Adjustable ramp up time	0.2 sec. to 6 sec.
Fix ramp down time	0.2sec. nominal

Ordering Information You are welcome to order by description or product code.

PC528 - INPUT - SUPPLY VOLTAGE - OUTPUT CURRENT - CURRENT LIMIT - 00

		<u>CODE</u>
INPUT	0V - 30%; 10V – 100%	15
SUPPLY VOLTAGE	MULTI-SUPPLY 380/415/440/480V	38/41/44/48
OUTPUT CURRENT	75A 100A	75 100
CURRENT LIMIT		50