

Series PC5400

Primary Circuit

The input is connected to the primary switching system via RFI filter 2 and bridge-connected rectifier 3. The filter reduces switching noise that is conducted into the primary supply system.

The switching system is a push-pull circuit in full bridge connection. Switching transistors 6a to 6d are controlled by circuit 8 alternately conducting with variable pulse width, connecting the input voltage with alternating polarity to the primary windings of transformer 5. This, in combination with choke 3, allows a switching at "zero voltage", which reduces switching spikes and improves efficiency. The signal across shunt 7 is used for current limiting for the protection of the semiconductors against excessive current – if necessary the unit will be switched off and can be restarted by pressing the button 25 "RESET".

Circuit 10 senses the input voltage. If a given min./max. level is reached, the switching transistors 6a to 6d are blocked. If the input voltage returns into limits, the unit turns on automatically.

The auxiliary converter 20 supplies the voltages for primary and secondary control circuits 8, 18.

Control circuit 24 causes a switch-off at too high internal temperature. After cooling down, the unit restarts automatically.

Secondary Circuit

The voltage of the primary windings is transformed to the secondary side in the turns ratio of the windings, is then rectified by diodes 11a and 11b and filtered by choke 12 in conjunction with capacitor 14. The average value of the voltage across the capacitor depends on the input voltage and the on/off-ratio of the switching transistors. It is conducted to the output terminals across ripple filter 16. The output voltage is connected via external sense leads to the voltage control circuit 18. There it is compared with a reference, and the error signal controls via an opto-coupler the switching transistors at the primary side.

For overvoltage protection (OVP) circuit 17 senses internally the output voltage and turns off the switching transistors via an opto-coupler if a certain adjustable level is reached. The circuit automatically returns to normal operation with a delay of approximately 0.5s, but continues to inhibit the operation if the voltage limit is exceeded again. If the unit does not return to normal operation within 5-10 seconds, it then will be switched off and can be restarted by pressing the button 25 "RESET".

External over voltages cannot be limited hereby.

For current limiting, the signal across the current transformer 13 starts to reduce the output voltage if the current exceeds a certain limit. For the reason of dynamic stability this circuit responds with some delay, whereas the primary limiting circuit interferes nearly instantaneously for fast protection of the semiconductors. An auxiliary winding in combination with rectifier 21 makes the supply of the temperature controlled fans 22.

LED 23 signals operation of the unit, LED 26 fault.

