# POWER FAILURE DETECTOR (PFD)

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## 21 Dec. 1991

**Objectives :**
      In case of power failure, all UNIX systems and the device (PFD) gets power from UPS. Yhis (PFD) system checks the regular power availability for 10 min. If it fails to detect in 10 minutes, the device will tell UNIX system via PC to issue shutdown command. After halting UNIX systems, device will switch off the UPS to UNIX by controlling Solid State Relay (SSR) through which it is getting power. Now if the device detects regular power, after 2 minutes the device will turn on UNIX system and it starts booting. In case of short power failures (2 to 5 minutes power failure ), the UNIX system will not be unnecessarily powered off.

**Diagram :**
    The arrangement of the system is as follows :
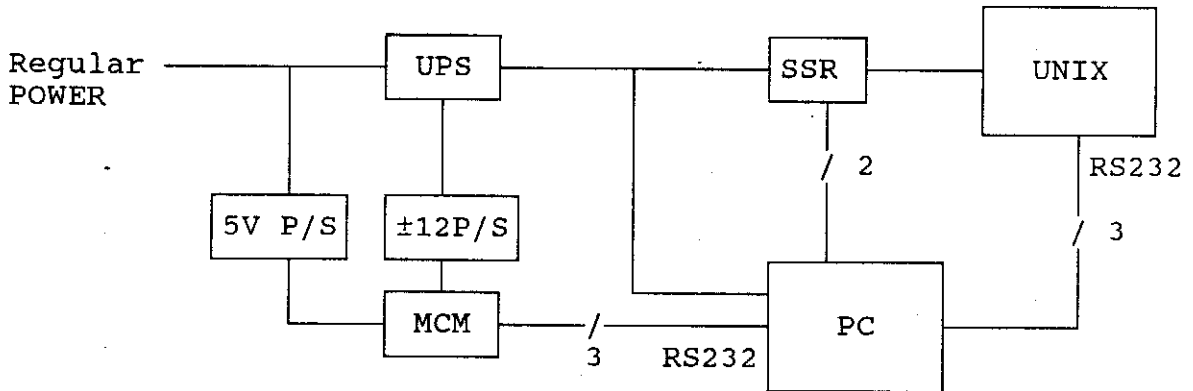


    Thus system requirements are :
1. PC having two serial ports for RS232 communication, a parallel port to control SSR and a drive.
2. MCM card having PROM programmed for PC-MCM communication. Necessary ±12V supply for MCM card.
3. 5V power supply and a appropriate Solid State Relay.
4. Daemon (program) running on UNIX system to whom all the messages will be conveyed by PC program.

**Description/Working :**
      With the above arrangement shown, the system is ready to fulfill its objectives if developed programs are running on PC and UNIX .
      The program running on PC asks MCM card to scan for regular power. If program find that regular power is not available for 10 minutes (i.e. systems are on UPS for 10 minutes), it conveys to the program running on UNIX system to shutdown the UNIX. Before halting the UNIX system, it sends message to PC that UNIX is going down. After software halting of the UNIX system, PC will turn off the UPS supply to UNIX through SSR.

If program on PC detects regular power, it waits for 2 min. and then turn on the supply to UNIX via SSR. On power on, UNIX system starts booting.

The developed system is tested by :
1. Putting regular power off for very small time.
2. Allowing systems on UPS for 10 minutes.
3. After halting the system, immediately supplying the regular power.

The system is working faithfully for such conditions.

## Possible modifications :

1) We can monitor temperature, humidity etc. by connecting appropriate circuit to monitoring device. By modifying programs on DOS and UNIX , these information can be conveyed and shutting down of the system can be controlled.

2) In the above type of system (PFD), booting and halting of the UNIX system is automated by monitoring and then taking decision on power failures. But if only turning off the system software and hardware wise after 10 minutes power failures, PC can be eliminated. By this method, one has to manually bring UP the UNIX system everytime.

This requires direct communication between UNIX and MCM with modifications in PROM program on MCM card. And all decision making software on UNIX should made with timer addition at MCM digital o/p to switch off SSR after some time on halting the UNIX system.