Internal Diagnostics Buss

The CPP contains an internal diagnostic buss (IDB) that is used solely for monitoring a number of operational parameters within the CPP. The analog to digital converter used in the CPP is a dual input device. One input is dedicated to collecting data for signals connected to the CPP, and the other is used to continually monitor internals signals on the IDB. The A/D converter is controlled by a microcontroller. The unit is digitizing all inputs every second, and sends data to the CPP upon request.

Concurrently, the microcontroller is digitizing and testing the signals on the IDB. After the CPP has received all signal data from the A/D microcontroller, the CPP requests the condition of the internal tests. The Microcontroller either sends an all clear signal or downloads the readings of signals that may are close to being out of range. In such conditions, the CPP prints a message and logs the condition in the error log. The error log can be retrieved at anytime with an E keyin.

The CPP has a power supply that provides +5v, and ±12v. All PC Boards in the CPP, except the main processor board use the +5 volts as a supply voltage. The main processor board uses an ac signal derived from the power supply and rectifies, filters and regulates this input to derive its + 5v supply. This done for two reasons; first, it allows the board to be powered from a battery or solar panel, and second, the CPP uses the frequency on the incoming ac signal to synchronize its internal time keeping clock. The CPP automatically detects and synchronizes to either 50 or 60 Hz signals. When this signal is coming from an electric utility, is provides a very stable time keeping base. This synchronization feature can be switched out when the ac signal is not very stable, for example when operating from an ac generator.

The ±12v is provided as rear panel signals to be used as power supplies for external sensors, such as meteorological sensors, or for excitation voltages.

The IDB contains the following signals.

1. +5v
2. Main processor +5v
3. +12v
4. -12v
5. Main processor battery
6. PCMCIA battery
7. Thermistor
8. Common analog signal

The CPP contains an internal thermistor for monitoring the temperature inside the CPP chassis. The CPP does not dissipate enough power to be of concern, but external operating conditions can result in large temperature swings. The temperature reading is indicative of the shelter temperature.

One analog input is applied to both sections of the A/D converter. The microcontroller compares reading from both sections of the A/D converter to verify proper operation.