STANDARD ROM and STANDARD RAM are connected to the microprocessor via the AD- bus. The addresses are latched in the M-ASIC first.

The microprocessor contains five 8-bit I/O ports. Port 3 and 4 share their bits with the Address/Data bus. The other I/O ports 0, 1 and 2 are used for various purposes. For example: operating the RS-232-C interface, battery sense, switching the power on/off, switching the backlight on/off, etc.

***Keypad circuitry.***
The keypad switches are arranged in a matrix. The microprocessor controls the rows and reads the columns of the keypad matrix via the M-ASIC. If no key has been pressed, all ROW lines are set low. As the column lines are connected to the +5V supply via pull-up resistors located in the M-ASIC, the microprocessor reads high levels on all column lines.

Suppose that key SOFT-1 is pressed. Then column line COL1 goes low and the microprocessor detects that a switch in column 1 is pressed. Now the row lines are sequentially made high, and the microprocessor watches column line COL1 to see for which row line the COL1 line goes high. As key SOFT-1 is pressed, a high level on row line 1 will cause column line COL1 to go high.

***Optically isolated RS-232-C interface***
The serial communications circuitry, which is built into the microprocessor, is used to operate the infrared (IR) RECEIVER and TRANSMITTER of the ScopeMeter. For this purpose a stripped version of the RS-232-C protocol is used.

Only the TXD (transmit data) and RXD (receive data) lines from the RS-232-C standard are used. The IR transmitter LED H1201 is driven directly from the TXD-not pin of the microprocessor. If a "0" is transmitted, the LED lights.

The IR receiver uses operational amplifier N1301 to power the collector of phototransistor H1202. If any IR light is received, the phototransistor will drive V1207 in saturation. This results in a "low" RXD line, interpreted by the microprocessor as a "1".

***Battery sense circuitry***
The battery voltage -VBAT generated on the analog unit is amplified by -2/3 at operational amplifier N1301. The resulting signal BAT_LEVEL is connected to an A/D converter input of the microprocessor. In this way the microprocessor can monitor the battery voltage level. If the battery voltage level drops below 4.3V, the microprocessor generates the BATTERY LOW indication on the LCD. If the level drops below 3.9V, the ScopeMeter switches off.

***Analog ASIC bus***
The Analog ASIC (A-ASIC D2301, see circuit diagram A2a/A2b, figure 10.5/10.6) or A-ASIC, as used in the following text, is controlled by the microprocessor. The microprocessor uses the signals CDAT, CCLK and DTAEa,b,c to set the A-ASIC and the attenuator sections on the analog A2 PCB. These signals together form the CONTROL bus on the analog A2 PCB.

***ON/OFF circuit.***
To switch the ScopeMeter on/off, transistor V2542 in the power supply part on the Analog Board A2 must be made conductive/non-conductive (refer to section 3.4.9). If transistor V1503 is non-conductive, the POWER ON line (X1201:1) is open (high impedance). As a result V2542 is non-conductive as its gate-source voltage is zero (N-channel enhancement FET).