

PA4-04 PROGRAM ANALYZER FOR MCS-4 DEVELOPMENT SYSTEM

The PA4-04 Program Analyzer is a compact (9" x 9" x 1.5") portable unit providing a powerful real-time analysis capability for MCS-4™ users. It was designed as an MCS-4 development tool and for convenient field service of micro-computer systems. Applications consist of software and system debugging, CPU data logging, program event detector, address comparator, binary display unit, and trouble shooting in the field.

The analyzer connects to the 4004 CPU via a 16 pin DIP-CLIP and displays all of the significant CPU parameters. LED displays thus latch and display the contents of the four bit data bus displaying the address sent out by the CPU, the instruction received back from ROM and the execution by the CPU. Displays also indicate which CM-RAM line is active and what the last RAM/ROM point is (SRC-instructions). In the free running mode this display is naturally changing as the program runs.

Provisions have been made for examining the contents of the data bus and the status of the CPU at selected points in the program. This is done by entering the selected instruction number into the SEARCH ADDRESS switches provided on the front panel. Now as the program runs the PA4-04 will

latch the data at the selected instruction number. The display will hold until the reset button is hit (which also applies a reset pulse to the MCS-4 system being operated on).

While the display of the search address is latched, the next instruction can be examined by hitting the NEXT INSTRUCTION switch. Pushing the INCREMENT button will increment the program one more count and this can be continued indefinitely. The previous instruction can be examined by using the DECREMENT switch in the same fashion.

A switch selectable pass counter provides interrogation of program loops by delaying the display until after a preset number of passes (1 to 15) have been made through the preset SEARCH ADDRESS.

SEARCH CONTROL and TEST switches provide additional features for easy program debugging.

All displayed parameters are also accessible in buffered TTL form via external 16 pin DIP sockets on the back panel. This allows for external monitoring needed for data logging applications.

The PA4-04 requires a single external power supply (+5V DC, 2.0A) which is connected to banana plug provided on the back panel.

