

POLLABLE DATA TERMINAL NO. 1A SD-3B232-01

DESCRIPTION

ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION SYSTEM

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1. GENERAL

1.01 The Pollable Data Terminal (PDT) is used in the Engineering and Administrative Data Acquisition System or stands alone with a local Teletypewriter to collect traffic data in small central offices.

1.02 The PDT consists of control and counting circuits which accept peg count and usage data from traffic usage recorders, totalizers, traffic register circuits, or other circuits that generate a -48 Vdc to ground contact closure with a 50 percent duty cycle of 20 msec on and 20 msec off. The PDT contains an active memory (for accumulation) and a passive memory (for storage). The memories are interchanged at the end of a counting period. The newly designated active memory is cleared and the passive memory is available for polling or, optionally, the data stored in the passive memory

may be read out automatically. The data being read out of the passive memory is simultaneously reentered to permit repeated printouts before the next data memory interchange when necessary.

1.03 The PDT is a modular unit which contains a data set and a maximum of 250 registration circuits when fully equipped. Power is obtained from -48 volt central office battery. The PDT requires approximately 13 inches of space on a standard 23-inch frame.

2. CIRCUIT DESCRIPTION

2.01 The PDT inputs are provided via input cards with 32 inputs per card. A 128-input PDT is equipped with four input cards. Registration capacity can be increased to a maximum of 250 by adding the optional subassembly which contains a dual memory and four additional input cards.

2.02 Each data input is scanned once every 9.09 milliseconds. A 128 bit static shift register memory stores the busy/nonbusy state of each input during every scan and compares it in the subsequent scan to determine whether there is new data. This last look memory function insures against multiple registrations.

2.03 The active memory accumulates the valid counts passed by the last look memory. The active memory consists of sixteen 128-bit static shift registers which can accumulate up to 9,999 counts per data input during a single collection interval.

2.04 While the active memory is accumulating counts, the count totals accumulated in the previous counting period are stored in the passive memory. The passive memory is read out on a nondestruct basis affording repeats if necessary. The count totals are read out one total at a time until all the totals have been read out.

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2.05 The PDT can be equipped with an optional answer only type data set (113B-L1) suitable for direct connection to a standard 2-wire switched telephone line. A lamp on the control panel of the PDT is lighted when the data set is off-hook.

2.06 A monitoring circuit forces the data set on-hook if the carrier signal from the data set is lost for more than 10 seconds while the data set is in the off-hook state.

3. COUNTING MODES

A. Local Mode

3.01 Using a strap option, the PDT can be arranged to automatically transfer memories after the completion of each selected counting period (hour or half-hour). In this mode the passive memory is automatically read out to a local or remote TTY or processor. If a local TTY is provided, it should be equipped with motor control options; a remote TTY should be equipped with an idle line motor control unit.

B. Collect Data Mode

3.02 In the collect data mode, the PDT starts accumulating data on the next half-hour following the receipt of a collect data (CD) command. The CD command may be originated by a remote processor or generated by a collocated program timer. When the CD command is received, a memory transfer occurs on the next half-hour and data accumulation begins. The memories are interchanged at the end of the counting period and the accumulated totals present in the passive memory are available for polling. Data accumulation stops when the memory interchange occurs. The collect data mode provides a collect and hold for one period of data per CD command. The receipt of another CD command during the accumulation period directs the PDT to continue operation for another period immediately following the first; however, the first period data must be read out before the second period ends.

C. Select Data Mode

3.03 The select data mode is similar to the collect data mode for the first period of data collected. The next select data (SD) command received directs the PDT to accumulate data for another period. However, at the end of this period

the memories are not interchanged and the active memory holds its data. Further data accumulation is stopped and any subsequent SD commands are ignored. This mode permits data collection for one or two selected periods and retains the data until it is collected by the processor. Once the data has been read out, the PDT must be reset by a clear-to-normal command before any new data can be collected. The SD commands can be generated by a remote processor or a collocated program timer preset for the desired periods of interest, thus allowing the processor to collect data during non-busy hours.

D. Busy Hour (Peak) Data

3.04 The PDT may be equipped with an optional control circuit card to provide busy hour data determined from the total counts accumulated from a group of inputs. The control circuit (Fig. 2) contains an accumulator, comparator, register memory, and two input select circuits. The first 32 inputs comprise one group and the following eight inputs comprise the second group. The processor selects the controlling group.

3.05 Counts are accumulated from the activated group for an entire period. If the accumulated total equals or exceeds the stored total in the register memory at the end of the time period, a memory interchange takes place. The accumulated count replaces the previous count in the register memory.

3.06 If the count in the accumulator is less than the count stored in the register memory, the memory interchange is inhibited. The active memory in the PDT and the accumulator in the control circuit are cleared and counting resumes for the next period.

3.07 A clear-to-normal command clears the peak control circuit and returns the PDT to normal status after the busy-hour data is collected. The peak mode can be set up again with a control command to one of the two input group select circuits. The controlling group may be changed by command at any time. When this occurs the control circuit is completely cleared.

3.08 An identifying digit which indicates that peak mode data is present and which group was controlling appears in the readout.

4. CONTROL COMMANDS

4.01 All control commands to the PDT must conform to a preset format consisting of start of header, first digit of the PDT identity code, command character, a dummy character, and the end of text character. The command characters initiate the following functions:

COMMAND CHARACTER	FUNCTION
A	Clear to Idle
B	Collect Data
C	Select Data
D	Interchange Memories
E	Read Out Passive Memory
F	Set Peak Control Mode 1
G	Set Peak Control Mode 2
H	Abort Readout
I	Initiate External Scanner Test
J	Initiate PDT Busy Test
K	Start DTS Machine
L	Stop DTS Machine

5. OUTPUT FORMAT

5.01 All data transmissions from the PDT start with 2.3 seconds of rubout characters (23 characters) to provide idle line motor control start to associated TTYs used for hard copy printouts. A carriage return and two line feed characters follow the rubout characters.

5.02 Header information consists of the following:

CHARACTER	FUNCTION
SOH	Start of Header
SP	Space
IDH	Unit Identity Hundreds Digit

IDT	Unit Identity Tens Digit
IDU	Unit Identity Units Digit
SP	Space
HRT	Hours Tens Digit
HRU	Hours Units Digit
MNT	Minutes Tens Digit
MNU	Minutes Units Digit
SP	Space
MD	Mode of Operation Digit
SP	Space
DB	Data Block Size Digit
SP	Space
OLM	Off Line Memory ID Digit
CR	Carriage Return
LF	Line Feed

5.03 These 18 characters complete the header. The unit identity digits are selected by strap cross-connections which generate any identifying code 000-999. The time of day is output in half-hour increments 00:00-23:30. The mode of operation is identified by a single digit 0-9. The data block digit identifies the data block size — 0=130, 1=250. The off line memory digit 0 or 1 identifies the memory containing the data being read out.

5.04 A typical header is shown in Fig. 3 for a PDT identity 123, time of the data collection period ended 16:30, collect data mode one hour data (digit 0), data block size 130 (digit 0), and memory one being read out.

5.05 The data is read out as ten registers per line with each line preceded by a 3-digit line number. The PDT outputs the data registers as a 5-digit register. The first digit of every data register is always a zero. The last two registers of a 130-register data block are always zeroes. A single space character follows the line number and each data register. The last data register on a

line is always followed by the carriage return and line feed characters. The end of the data block is identified by the end of text character which is generated immediately after the line feed character following the last data register.

6. EIA INTERFACES

6.01 The control interface of the PDT is internally connected to the associated data set. The same connections are also brought out on a terminal field to provide connections for an external data set. Three auxiliary EIA interfaces are provided—one for introducing information into the data link; one which can be manually connected to the input or output channel of the PDT (for reverse control of another PDT or for a TTY monitor); and one which

is permanently connected to the output of the PDT for output to a TTY. Another EIA interface provides motor control for a local TTY.

7. LOCAL CONTROLS

7.01 Switches are provided on the PDT to permit local tests and adjustments (Fig. 4). These switches are used to initiate data sequence collection, interchange memories, read out the passive memory, initiate busy tests, and reset. These switches are enabled when the alarm cutoff switch is operated.

7.02 The PDT contains a crystal-controlled clock to provide the time of day associated with the collected data. Switches are provided to adjust the clock to local time.

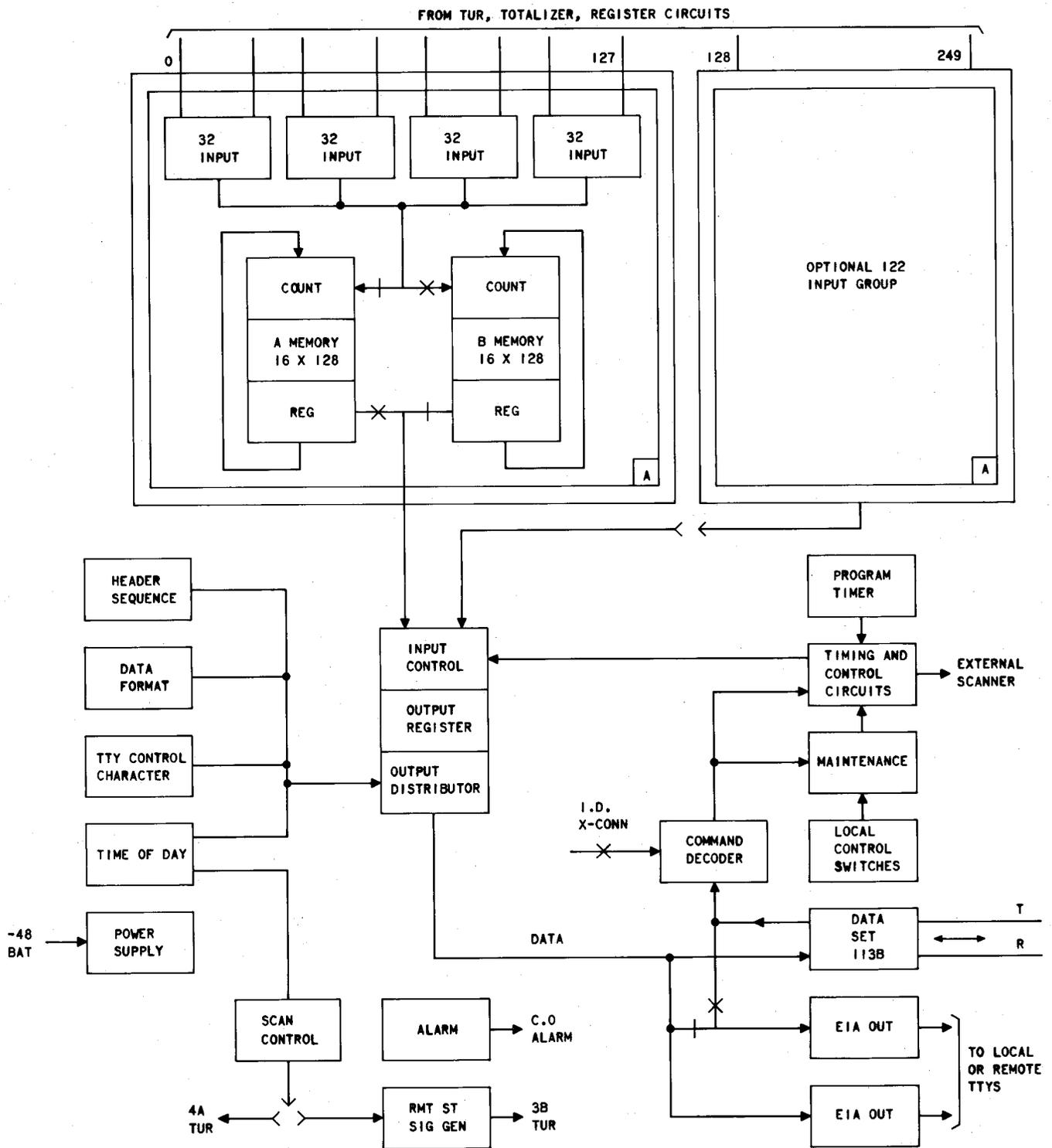


Fig. 1—PDT Block Diagram

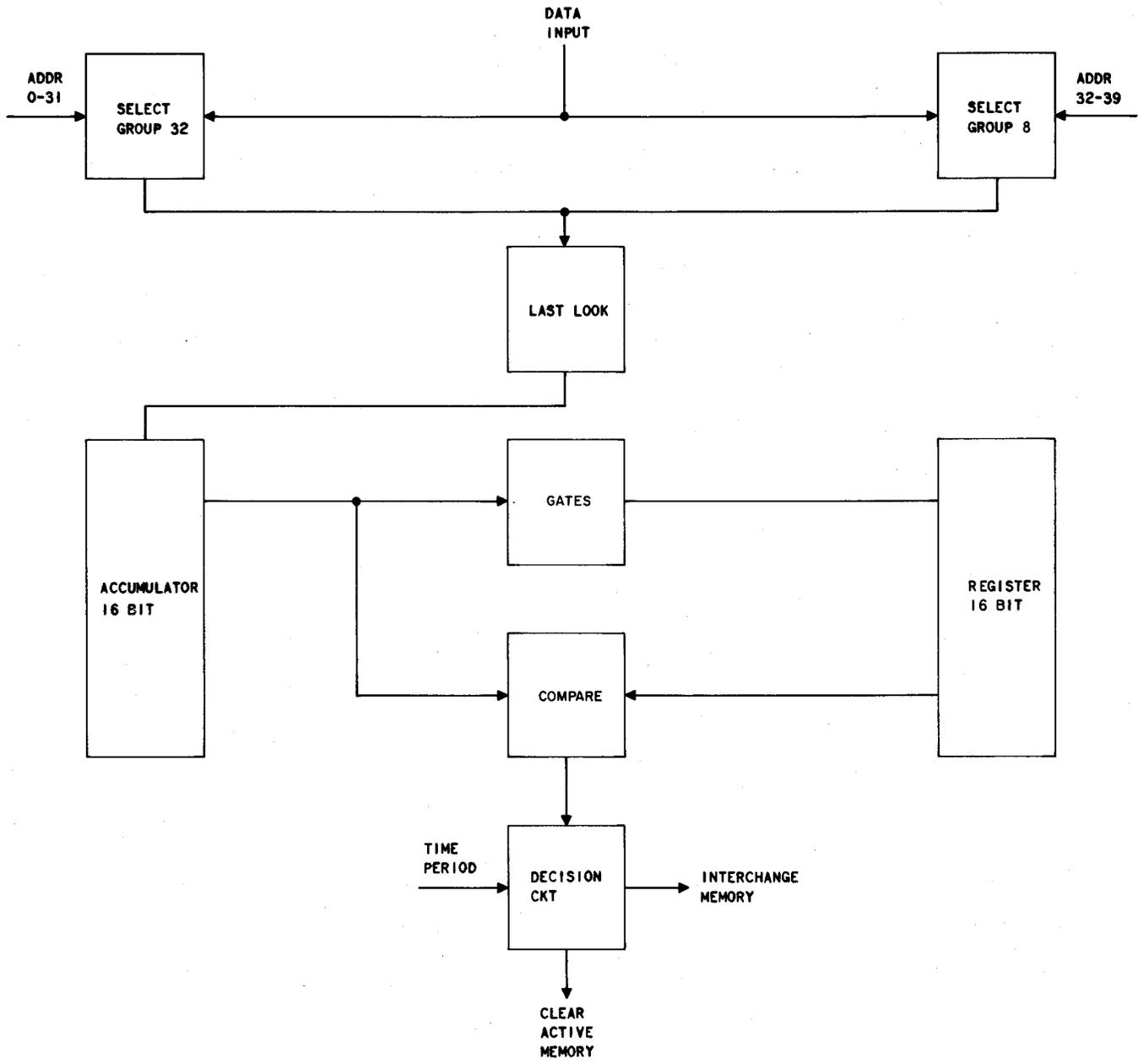


Fig. 2—Peak Control Circuit

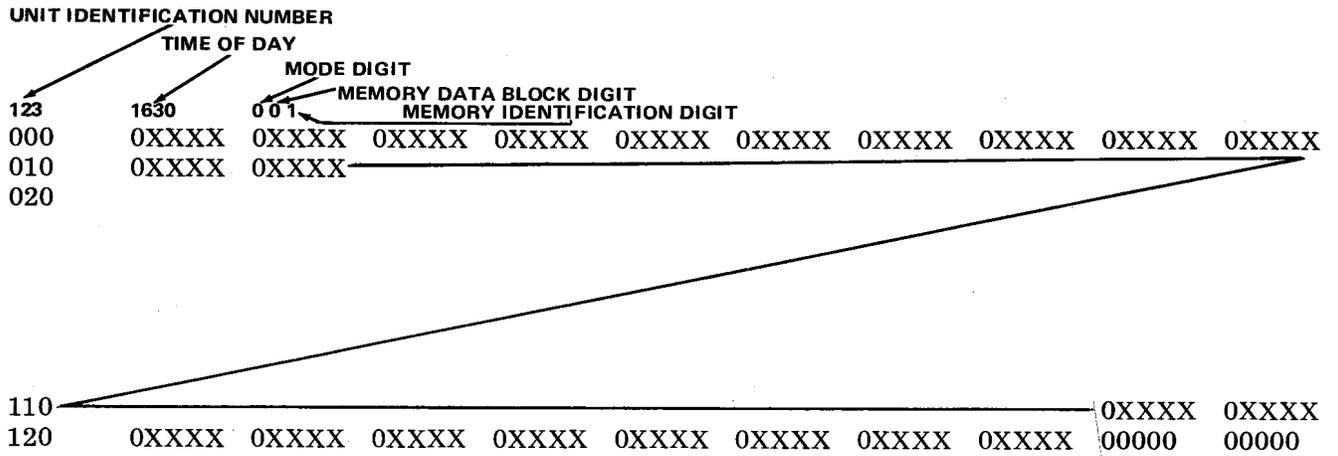


Fig. 3—Output Format

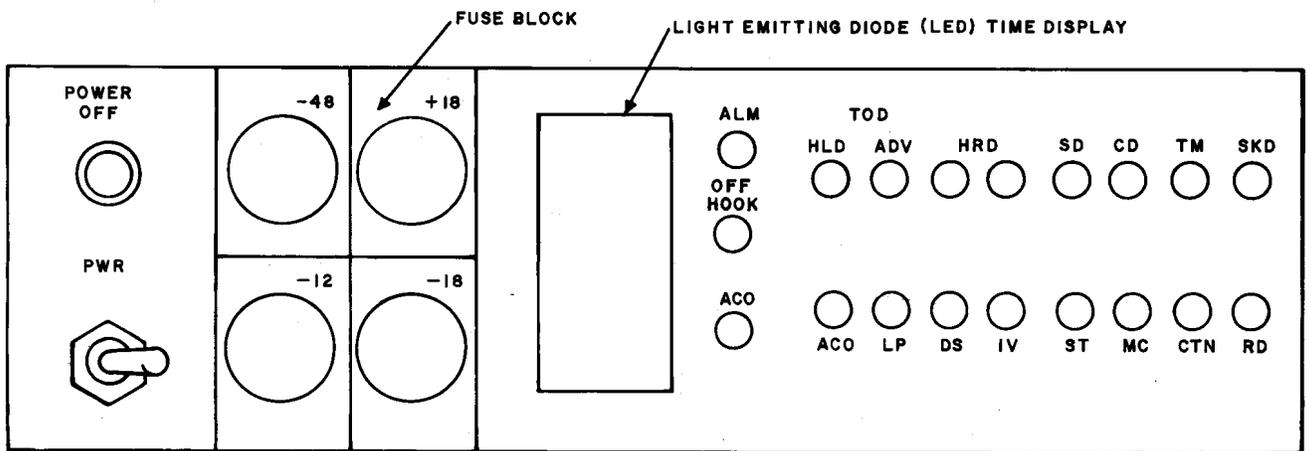


Fig. 4—PDT Control Panel