
TeleVideo[®]
Remote Workstation
Processor
Technical Reference

PREFACE

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1. INTRODUCTION

GENERAL

The TeleVideo Remote Workstation Processor (RWP) consists of a case with power supply and four backplane slots. The RWP supports up to four TS 800R Remote Workstations. Each TS 800R Remote Workstation consists of an intelligent processor board, located in the remote workstation processor, and remotely-located TeleVideo 950 terminals. The terminals communicate with the RWP through modems. A diagram of a typical system configuration is shown in Figure 1-1.

The remote workstation processor gives processing capability to a 950 terminal, through the intelligent processor board, and through access to a TeleVideo service processor, such as the TS 806/20 or TS 816/40. The link between the 950 terminal and the remote workstation processor is RS-232C serial I/O, while the link between the remote workstation processor and the service processor is RS-422, TeleVideo Systems Service Processor Protocol.

The intelligent processor board contains a Z80A microprocessor, memory, and serial I/O devices. Standard main memory is 64 kilobytes, expandable to 128 kilobytes.

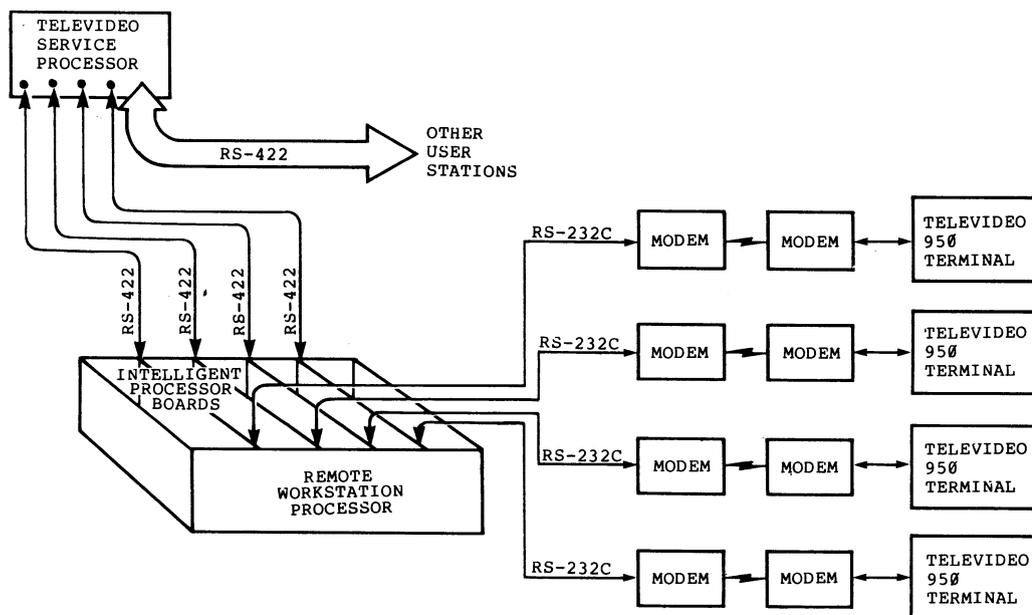


Figure 1-1. Remote Workstation Processor System Diagram

A BIZCOMP model 1012TV modem, manufactured by the Business Computer Corporation, may be purchased separately and mounted piggyback to the intelligent processor board. Due to power supply limitations, the BIZCOMP modem cannot be mounted inside the 950 terminal case. This modem is not supported by TeleVideo. Other modems, such as the Microbaud #80512, may be used external to the remote workstation processor or 950 terminal case. These modems are also purchased separately and are not supported by TeleVideo.

REFERENCES

The following publications contain information on the remote workstation processor.

- * Remote Workstation Processor User's Manual (TeleVideo)
- * TeleVideo Model 950 CRT Terminal Installation and User's Guide (TeleVideo)
- * TeleVideo 950 Terminal Maintenance Manual (TeleVideo)
- * Zilog Data Book (Zilog)

2. FUNCTIONAL DESCRIPTION

GENERAL

The RWP contains up to four intelligent processor boards. Figure 2-1 shows a block diagram of the RWP, with connectors to the intelligent processor board.

INTELLIGENT PROCESSOR BOARD

Each intelligent processor board contains a Zilog Z80A microprocessor, associated Z80A peripherals, RS-422 and RS-232C serial I/O channels, and up to two optional additional RS-232C serial I/O channels.

Central processor functions are carried out by a Z80A microprocessor. The CPU communicates with the system using a 16-bit address bus, and an 8-bit data bus. System interrupts are daisy chained with the CPU in the following priority order:

- | | | |
|-----------|---|----------------------------------|
| (highest) | 1 | Z80A DMA |
| | 2 | Z80A SIO (RS-422 Port) |
| | 3 | Z80A SIO (RS-232C Port) |
| | 4 | Z80A CTC |
| | 5 | Z80A DART (Channel A) (optional) |
| (lowest) | 6 | Z80A DART (Channel B) (optional) |

A Z80A DMA direct memory access controller device operates in burst mode to transfer data between memory locations, memory and the board serial I/O ports, and between serial I/O ports.

Main memory is configured in 64K x 1 dynamic RAM devices. Standard main memory is 64 kilobytes, expandable to 128 kilobytes. Standard read-only memory is a single 4K x 8 type 2732A EPROM device. This memory may be expanded to 8, 16, or 32K by using an additional EPROM socket and alternate devices, as shown in Table 2-1.

Table 2-1. Read-Only Memory Expansion

| Device | SEL A | SEL B | Read-Only Memory Size | Address 1 | Address 2 |
|-------------------|-------|-------|--------------------------|-----------|-----------|
| One 2732A | 1 | 1 | 4K x 8 | %1000 | N/A |
| Two 2732A | 1 | 1 | 8K x 8 | %1000 | %2000 |
| One or Two 2764 | 0 | 1 | 16K x 8 | %2000 | %4000 |
| One or Two 27128* | 0 | 0 | 32K x 8 | %4000 | %8000 |

*Also cut trace A-B (W7), connect jumper C-D (W4)

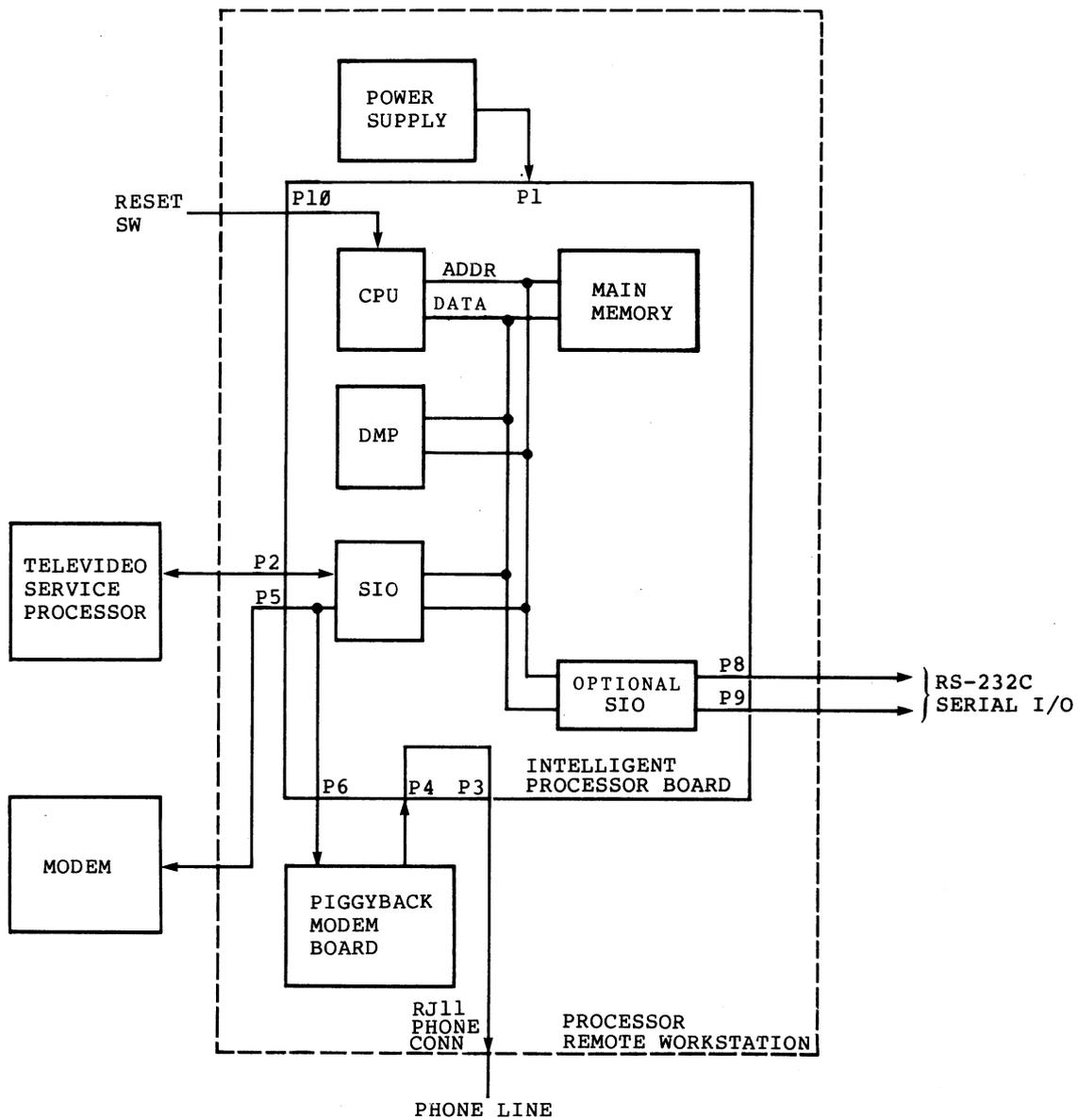


Figure 2-1. Remote Workstation Processor Block Diagram

The SEL A and SEL B lines referred to in Table 2-1 are traces adjacent to the memory control signals decoder. These lines must be cut or jumpered to produce the logic levels shown in the table. When 27128 EPROM devices are installed, the trace cuts and connections footnoted to the table allow decoding of address line AB13.

Main memory can be configured into one of four memory maps, as shown in Figure 2-2. The configuration is software selectable using the -PROM and -BANK 1 lines from the diagnostic LED decoder. When the -PROM line is active low, read-only memory is selected. When -BANK 1 is active low, bank 1 of memory is selected. The bank 2 memory, when selected by -BANK 1 high, occupies 56K of the CPU address space. When using bank 2, the 8K space from 56K through 64K remains in bank 1 to allow future implementation of the operating system.

Standard memory is shown in Figure 2-2A. Address 1 and Address 2 refer to the boundaries of installed read-only memory as listed in Table 2-1. If standard read-only memory is installed, it occupies the address space between 0 and 4K. The area between 4K and 8K is accessible only when a second 2732A is installed. For the 2764 and 27128 EPROM devices, the boundaries for each device are as shown in Table 2-1. Figure 2-2B shows the memory map with read-only memory de-selected, allowing the CPU to addresses all 64K of main memory.

Figure 2-2C shows the memory map with bank 2 and EPROM both selected. The CPU now addresses bank 2 of main memory, except for the upper 8K of space from %E000 through %FFFF which remains in bank 1. The boundaries for read-only memory are as shown in Table 2-1 for each type of EPROM device. Figure 2-2D shows the memory map with bank 2 selected and EPROM de-selected. Again, the upper 8K of space remains in bank 1. The remainder of the address space is in bank 2 of main memory.

I/O port enables are decoded in a 32 x 8 ROM decoder addressed from lines AB2 through AB7. Table 2-2 contains a summary of the I/O port address scheme for the intelligent processor board. Refer to the system User's Manual for detailed instructions on using these ports.

A single Z80 SIO device contains both the service processor interface and the user station interface. Channel A of the SIO contains the RS-422 synchronous SDLC link to the service processor. This channel operates according to the TeleVideo Systems Service Processor Protocol. Data is transmitted and received over this link at 800 kilobaud. Channel B of the SIO contains the RS-232C link to the user station. This channel is configured as a DTE unit for a modem. The modem outputs are

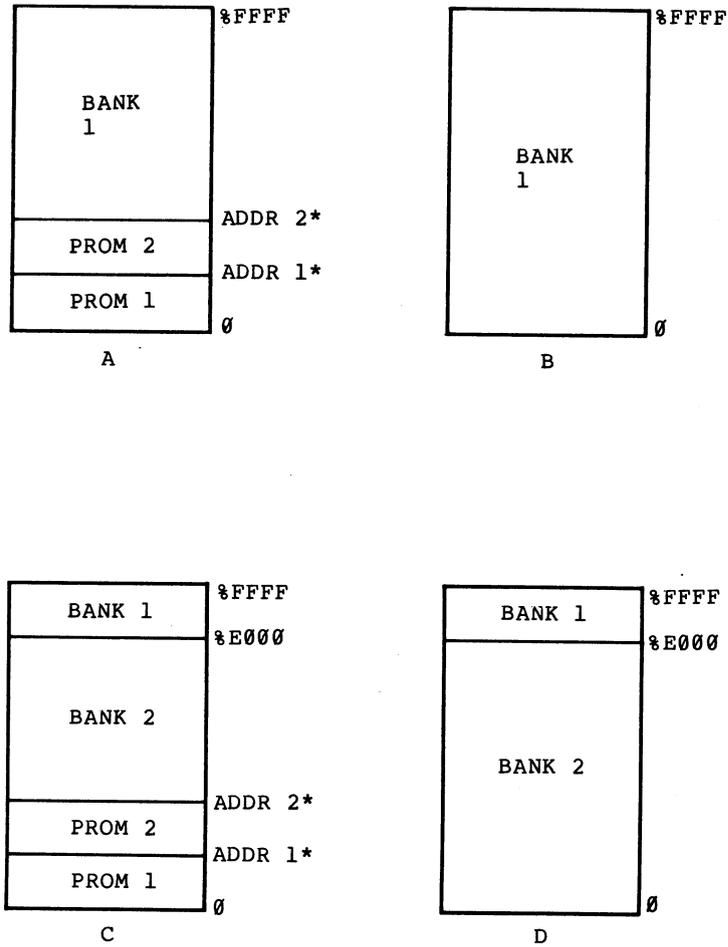


Figure 2-2. Memory Maps for Remote Workstation Processor

Table 2-2. I/O Port Addresses

| Address | Description |
|---------|---|
| %00 | Status Switch Buffer |
| %08 | CTC Channel 0 |
| %09 | CTC Channel 1 |
| %0A | CTC Channel 2 |
| %0B | CTC Channel 3 |
| %0C | SIO Channel A Data (RS-422) |
| %0D | SIO Channel B Data (RS-232C) |
| %0E | SIO Channel A Control |
| %0F | SIO Channel B Control |
| %10 | DMA Enable |
| %20 | DART Channel A Data (RS-232C) |
| %21 | DART Channel B Data (RS-232C) |
| %22 | DART Channel A Control |
| %23 | DART Channel B Control |
| %60 | Diagnostic LED Indicators 4 and 1 <u>D0</u> <u>D1</u> <u>Indicator</u> 1 1 Indicators off 0 1 Indicator 4 on 1 0 Indicator 1 on 0 0 Indicators on |
| %61 | Diagnostic LED Indicators 3 and 2; RS-422 Enable <u>D0</u> <u>D1</u> <u>Indicator</u> 1 1 Indicators off; RS-422 Enable 0 1 Indicator 3 on; RS-422 Enable 1 0 Indicator 2 on 0 0 Indicators on |
| %62 | Modem Sync/Async Select/Carrier Detect LED <u>D0</u> <u>D1</u> <u>Function</u> 0 - Asynchronous Mode 1 - Synchronous Mode - 1 Front Panel Carrier Detect off - 0 Front Panel Carrier Detect on |
| %63 | PROM Disable/Bank 2 Enable <u>D0</u> <u>D1</u> <u>Function</u> 0 - PROM Enable 1 - PROM Disable - 0 Bank 2 Disable (Bank 1 Enable) - 1 Bank 2 Enable (Bank 1 Disable) |
| %68 | Clear Break |

Table 2-3. Interval Timer Settings for Baud Rates

| Baud Rate | 16x Rate | Divisor |
|-----------|----------|---------|
| 50 | 800 | 6144 |
| 75 | 1200 | 4096 |
| 110 | 1760 | 2793 |
| 135 | 2152 | 2284 |
| 150 | 2400 | 2048 |
| 300 | 4800 | 1024 |
| 600 | 9600 | 512 |
| 1200 | 19200 | 256 |
| 1800 | 28800 | 171 |
| 2000 | 32000 | 154 |
| 2400 | 38400 | 128 |
| 3600 | 57600 | 85 |
| 4800 | 76800 | 64 |
| 7200 | 115200 | 43 |
| 9600 | 153600 | 32 |
| 19200 | 307200 | 16 |

available internally on connector P6, or externally on connector P5. Circuits A, B, CA, CB, CF, DB, and DD are implemented to all full modem controls in either synchronous or asynchronous transmission modes. Baud rate for this channel is programmable to any standard data rate. Table 2-3 contains the CTC interval timer settings for each baud rate.

Two optional RS-232C serial I/O ports may be added to the board with the installation of a single Z80 DART device. These ports are asynchronous. Baud rates are programmable to standard rates as listed in Table 2-3. These channels are configured DCE, and are reserved for future use.

An 8-element DIP switch is included on the board for default configuration. This switch is read by the CPU as an I/O port through the status switch buffer. Settings for the DIP switch are given in the system User's Manual.

3. CIRCUIT DESCRIPTION

GENERAL

This section contains circuit descriptions of the major functional blocks on the intelligent processor board. A block diagram of the intelligent processor board is shown in Figure 3-1.

CLOCK GENERATOR

The major components of the clock generator are:

| | |
|-----|--------------------------------------|
| Y1 | 16 MHz Crystal-Controlled Oscillator |
| A59 | Oscillator Divider |
| Q1 | System Clock Driver |
| A61 | Timer Clock Divider |
| A63 | RS-422 Baud Rate Divider |

The 16 MHz oscillator provides the source frequency, which is divided by the oscillator divider to a -2θ signal of 8 MHz, and a system clock signal of 4MHz. The system clock signal is current amplified by the clock driver to become θ and θBF .

The 8MHz signal is divided in the timer clock divider to produce the clock triggers for the counter-timer device. Another divider uses -2θ to produce BAUD RATE 422.

CENTRAL PROCESSOR UNIT

The major components of the central processor unit are:

| | |
|---------|-------------------------------------|
| A5 | Zilog Z80A Microprocessor |
| A17,A18 | Address Buffers |
| A25,A39 | Type 2732A Read-Only Memory |
| A4 | Zilog Z80A DMA Direct Memory Access |
| A1 | Zilog Z80A CTC Counter-Timer |

The central processor unit is based on the Z80A microprocessor. This device produces addresses on lines A0 through A15, which are buffered to become AB0 through AB15. Data is carried on data bus lines D0 through D7.

A Z80A DMA device handles direct memory access transfer of data between memory locations and the RS-422 serial I/O port. This device is operated in the burst mode through interrupts to the microprocessor. After the interrupt is acknowledged the DMA requests the bus. When the bus is granted, the transfer is accomplished and the DMA releases the bus. This transfer does not interfere with memory refresh.

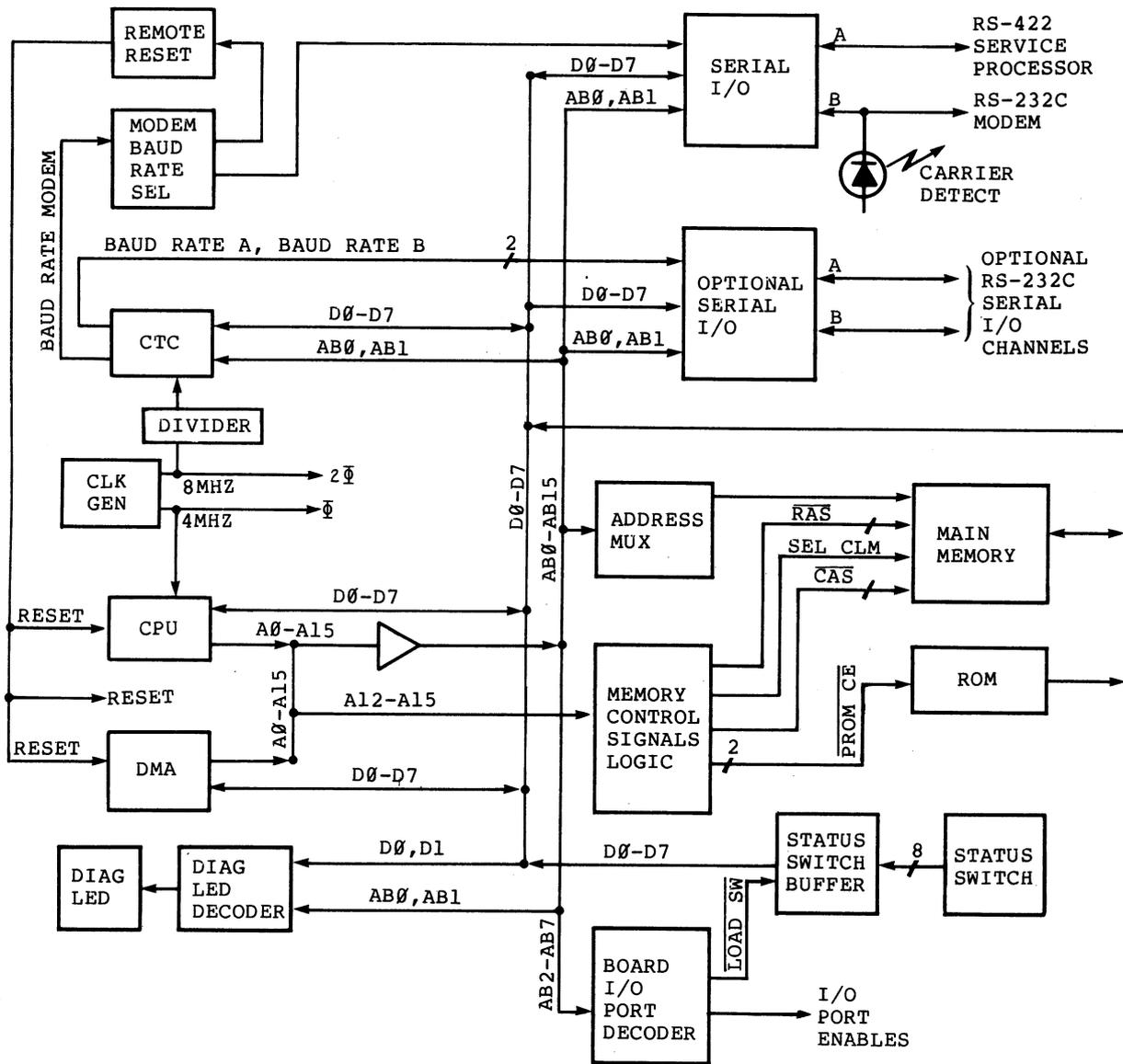


Figure 3-1. Intelligent Processor Board Block Diagram

Counter-timer functions, including a time-of-day clock interrupt and programmable baud rates, are carried out in a Z80A CTC device under microprocessor control.

MAIN MEMORY

The major components of main memory are:

| | |
|---------------------------------------|--------------------------------|
| A20 | Memory Control Signals Decoder |
| A45,A54 | Control Signals State Machine |
| A3,A10,A16, A24,A32,A38 | Bank 1 Main Memory |
| A44,A50 | |
| A2,A9,A15, A23,A31,A37, A43,A50 | Bank 2 Main Memory (optional) |
| A52,A53 | Memory Address Multiplexer |

The memory control signals decoder is addressed on lines A12 through A15, and on lines -PROM and -BANK1. The decoder selects between the two banks of memory using the row address signals -RAS1 and -RAS2, and between the two read-only memory devices on lines -PROM1CE and -PROM2CE, to produce the memory maps described in section 2. An additional decoder signal, -WAIT, is produced automatically with each read-only memory access.

For a memory access, the control signals state machine is held preset by MREQBF not true. When MREQBF is raised, it releases the preset state. The combination of the Q output of the third flip-flop, plus MREQBF and the bank select signal, produces -RAS. The next clocks produce the SEL CLM and -CAS signals by successively clocking through the not true state of RFSH BF. When MREQBF is released, the state machine returns to its preset state.

For memory refresh, the RFSH BF signal goes high to hold the state machine preset, while the inverted refresh signal locks out the bank select signals. With both bank select signals, plus the third flip-flop signal held high, MREQBF high activates -RAS for both banks to accomplish the refresh.

To select read-only memory, the -PROM signal is set high to enable ROM selection, and the -BANK signal selects the device. With MREQBF high, the addressed device is enabled.

Main memory consists of type 8264 memory devices, each device containing 64 kilobits of storage. Standard memory is contained in a single bank of 64 kilobytes, which may be optionally expanded to 128 kilobytes. The memory control logic signals, and the multiplexed address, produce the read or write memory access on data lines D0 through D7.

DECODERS

The major decoder components are:

| | |
|-----|------------------------|
| A14 | I/O Port Decoder |
| A36 | Diagnostic LED Decoder |
| A8 | Status Switch Buffer |
| S1 | Status Switch Pack |

The I/O port decoder decodes lines AB2 through AB7 to produce I/O device enables. The port addresses for this decoder are listed in Table 2-2.

The diagnostic LED decoder is enabled as a port address of the I/O port decoder, and is written to using the -IOWR signal of the CPU. The diagnostic LED decoder uses lines A0 and A1, and D0 and D1 to activate the diagnostic LED devices as listed in Table 2-2. In addition, this decoder produces the -ASYNC signal to change the RS-232C modem signal clock source to support synchronous or asynchronous modes, the -LED5 signal to software activate the front panel CARRIER DETECT indicator, and the two memory control signals, -PROM and -BANK1.

The status switch buffer enables the settings of the 8-section status switch pack onto data bus lines D0 through D7. The buffer is an output port of the I/O port decoder and is read with the CPU control signal, -IORD. Settings for the switch pack are given in the system User's Manual.

SERIAL I/O

The standard intelligent processor board contains a single serial I/O device with two channels: one for RS-422 communication with the service processor, and one for RS-232C communication with a terminal or modem. An additional serial I/O device may be optionally installed to provide two RS-232C channels for a printer or general purpose.

The major serial I/O components are:

| | |
|-----|-------------------------------|
| A35 | Z80A SIO Serial I/O Device |
| A28 | Differential Line Receiver |
| A34 | Differential Line Transmitter |
| A46 | Modem Data Line Receiver |
| A55 | Modem Clock Line Receiver |
| A47 | Modem Baud Rate Selector |
| A42 | Modem Line Driver |
| A57 | Remote Reset Counter |
| A45 | Remote Reset Latch |

An RS-422 serial I/O port is contained in channel A of a Z80A SIO. This channel is set up for synchronous communication using SDLC protocol at initialization. Transfer of data between this port and main memory is interrupt-driven through Z80A DMA device

direct memory access. Differential data transmission through the SIO is supported by a differential line receiver and a differential line transmitter.

Channel B of the SIO is configured as an RS-232C serial I/O channel for DTE operation with a modem. This channel contains provisions for connecting to a back-panel connector, or to a piggyback modem board. The piggyback modem is not supported by TeleVideo.

Separate line receivers are used for incoming data and clock signals. The output of the clock line receiver is applied to a modem baud rate selector, which allows either the modem signal in synchronous operation, or the programmable baud rate clock in asynchronous operation, to clock the SIO device. The SIO output is passed through a line driver to the modem.

The modem baud rate selector also interacts with the remote reset circuit. When in asynchronous mode, with the CTC supplying the baud rate clock, the occurrence of two successive twelve character period breaks without CPU intervention causes a general reset of the board.

The character periods are counted in the remote reset counter. As long as data is coming into the SIO, the counter is held cleared. When data stops, and there is carrier activity, the counter begins counting. If data does not return during the counting period to clear the counter, the clock pin of the remote reset latch is set low. Return of data clears both sections of the counter, and clocks the latch. If the CPU does not reset the latch by writing to the -CLR BREAK I/O port line, the second break of twelve characters generates a reset through a NAND function of the set latch and the inverted twelve count signal. This reset is passed through the modem baud rate selector to activate the -REMOTE RESET line and reset the board.

OPTIONAL SERIAL I/O CHANNELS

The major components of the optional serial I/O channels are:

| | |
|---------|--|
| A13 | Z80A DART Dual Asynchronous Receiver-Transmitter |
| A7,A29 | Line Receivers |
| A12,A22 | Line Drivers |

Two channels of RS-232C serial I/O may be added to the intelligent processor board by installation of an additional SIO device. These channels are configured as DCE ports in asynchronous-only operation. Each channel is programmed with separate baud rate lines from the CTC. Separate line receivers and line drivers are provided for each channel.

4. SYSTEM MAINTENANCE

GENERAL

The intelligent processor board contains self test diagnostics that are automatically run during system initialization at power-up. These diagnostics light LED indicators on the board and on the RWP front panel. When the test are completed successfully, the board loads the operating system. The diagnostic LED indicators are not visible with the RWP case closed.

A special set of diagnostics for the system is available from TeleVideo. These diagnostics provide a more detailed check of the system, with error messages that closely isolate a malfunction.

INITIALIZATION AND SELF-TEST DIAGNOSTICS

At power-on, the intelligent processor board begins executing its self-test diagnostics. First, interrupts are turned off and the remote reset latch is cleared. All diagnostic indicators are turned off. The processor then jumps to a data line and modified march test on both banks of memory. During this test diagnostic LED 1 and the front panel indicator are both lit.

The data line test loads a data byte into main memory starting at location %4000 and continuing through to %FFFF. The byte is then read back and compared for error. If there is no error, the byte is incremented and compared again until each bit of the memory location byte has been checked.

The march test fills memory from locations %4000 through %FFFF with a test pattern, then verifies the pattern, complements it, and verifies the pattern again. When completed for the first bank, the second bank is checked, if installed. During the second bank memory tests, indicators 1 and 2 are both lit, and the front panel indicator is off.

Failure of the memory test halts the diagnostics, and blinks the front panel indicator. For bank 1, indicator 1 remains lit to specify the failed test; for bank 2, indicators 1 and 2 remain lit. When the tests are successfully completed for all installed memory, the bank 1 is switched in, the indicators go out, and the processor moves to the next test.

Start of the DMA test is signalled when diagnostic LED 3 and the front panel indicator both light. This test performs a memory-to-memory move with the DMA programmed to interrupt on end of block. The size and locations of the source and destination blocks are programmed into the DMA device, the DMA is

initialized, and the move is started. After the move, the processor compares both blocks of memory by checking each location in turn. Failure of the DMA test is indicated when the test halts, indicator 3 remains lit, and the front panel indicator blinks. Successful completion is signalled when both indicator 3 and the front panel indicator go out and the processor moves to the next test.

The SIO test is run on channel B (RS-232C, modem) of the SIO. This test writes and verifies an interrupt vector to the device. The test is signalled when diagnostic LEDs 1 and 2 and the front panel indicator all light. First, SIO register 1 is written with a data pattern to prevent it from affecting the test. Next, the interrupt vector is loaded to status register 2. This register is now read back, and if there is an error, the CPU halts, indicators 1 and 2 remain lit, and the front panel indicator blinks. If no error, the SIO is reset, and the processor moves on to the next test.

The final test uses channel 1 of the CTC to perform a CPU interrupt. This test is signalled when diagnostic LED 4 and the front panel indicator both light. Channels 0 and 1 of the CTC are initially reset, and the interrupt vector address is programmed into the CTC. Channel 1 is given a command word and time constant, and the CPU performs a delay routine. After the delay, channel 1 is reset, and the CPU checks its interrupt flag. If there is no interrupt, the test halts, indicator 4 remains lit, and the front panel indicator blinks. Successful completion is signalled when both indicator 4 and the front panel indicator go out. The processor now blinks all diagnostic indicators and the front panel indicator once, and goes to the bootstrap routine.

In the bootstrap routine, the DMA and SIO devices are initialized, and the board is set up for SDLC protocol. The board sends a request block for booting the operating system to the service processor, and if successful, completes the operating system boot routine. Errors during this routine cause a reset of the DMA, SIO READY line, and SIO status register error flags. The SIO is shut down and the CPU loops on the subroutine that caused the error.

A:CONNECTOR PIN ASSIGNMENTS

CONNECTOR P1 (POWER SUPPLY)

| PIN NUMBER | SIGNAL DESIGNATOR | SIGNAL DESCRIPTION |
|---------------|----------------------|-----------------------|
| 1 | -12V | -12 Volts |
| 2 | ----- | not used |
| 3 | GND | Ground |
| 4 | +5V | +5 Volts |
| 5 | +12V | +12 Volts |

CONNECTOR P2 (RS-422 SERIAL I/O)

| PIN NUMBER | RS-422 DESIGNATOR | RS-422 DESCRIPTION |
|---------------|----------------------|-----------------------|
| 1 | GND | Chassis Ground |
| 2 | TxD | Transmit Data + |
| 3 | RxD | Receive Data + |
| 4 | RTS | Request to Send+ |
| 5 | CTS | Clear to Send + |
| 6 | -TxC | Transmit Clock - |
| 7 | -RxC | Receive Clock - |
| 8 | GND | Signal Ground |
| 9 | -TxD | Transmit Data - |
| 10 | -RxD | Receive Data - |
| 11 | -RTS | Request to Send - |
| 12 | -CTS | Clear to Send - |
| 13 | TxD | Transmit Clock + |
| 14 | RxC | Receive Clock + |
| 15 | TEST | Test |

CONNECTOR P3
(RJ11 PHONE JACK)

| PIN NUMBER | SIGNAL DESIGNATOR | SIGNAL DESCRIPTION |
|------------|-------------------|--------------------|
| 1 | --- | not used |
| 2 | --- | not used |
| 3 | RING | Ring |
| 4 | TIP | Tip |
| 5 | --- | not used |
| 6 | --- | not used |

CONNECTOR P4
(INTERNAL MODEM PHONE LINE)

| PIN NUMBER | SIGNAL DESIGNATOR | SIGNAL DESCRIPTION |
|------------|-------------------|--------------------|
| 1 | RING | Ring |
| 2 | TIP | Tip |

CONNECTORS P5, P8, P9
(RS-232C SERIAL I/O)

| PIN NUMBER | RS-232C DESIGNATOR | RS-232C DESCRIPTION | P5 | P8,P9 |
|------------|--------------------|---------------------|-----|-------|
| 1 | AA | Protective Ground | GND | GND |
| 2 | BA | Transmitted Data | TXD | RXD |
| 3 | BB | Received Data | RXD | TXD |
| 4 | CA | Request to Send | RTS | RTS |
| 5 | CB | Clear to Send | CTS | CTS |
| 6 | CC | Data Set Ready | | DSR |
| 7 | BA | Signal Ground | GND | GND |
| 8 | CF | Data Carrier Detect | DCD | DCD |
| 15 | DB | Transmit Clock | TxC | |
| 17 | DD | Receive Clock | RxC | |
| 20 | CD | Data Terminal Ready | DTR | |

CONNECTOR P6
(INTERNAL MODEM)

| PIN NUMBER | SIGNAL DESIGNATOR | SIGNAL DESCRIPTION |
|------------|-------------------|---------------------|
| 1 | GROUND | Ground |
| 2 | +5V | +5 Volts |
| 3 | -12V | -12 Volts |
| 4 | --- | not used |
| 5 | RXD AUX | Received Data |
| 6 | TXD AUX | Transmit Data |
| 7 | +12V | +12 Volts |
| 8 | CTS AUX | Clear to Send |
| 9 | --- | not used |
| 10 | DCD AUX | Data Carrier Detect |
| 11 | SYNC/ASYNC | Mode Control |
| 12 | --- | not used |
| 13 | TXC | Transmit Clock |
| 14 | GROUND | Ground |
| 15 | +5V | +5 Volts |
| 16 | -12V | -12 Volts |
| 17 | --- | not used |
| 18 | CLK MOD | Modem Data Clock |
| 19 | --- | not used |
| 20 | +12V | +12 Volts |
| 21 | --- | not used |
| 22 | DTR AUX | Data Terminal Ready |
| 23 | --- | not used |
| 24 | --- | not used |
| 25 | RXC | Receive Clock |
| 26 | --- | not used |

CONNECTOR P10
(RESET)

| PIN NUMBER | SIGNAL DESIGNATOR | SIGNAL DESCRIPTION |
|------------|-------------------|--------------------|
| 1 | --- | not used |
| 2 | --- | not used |
| 3 | RESET | Reset |
| 4 | GROUND | Ground |
| 5 | --- | not used |

B:SYSTEM REPAIR PRICE AND SPARE PARTS PRICE LISTS

This section contains the Repair Price List for Computers and the Systems Spare Parts Price List in effect at the printing date of this manual. Use these lists for estimating repairs: prices are subject to change without prior notice.

Repairs Price List for Computers

March 1, 1983

| DESCRIPTION | PRICE |
|---|-----------|
| Logic Board TS 800 (Obsolete) | \$ 135.00 |
| Logic Board TS 800A, 802, 802H | 150.00 |
| Logic Board TS 801 (Obsolete) | 175.00 |
| Logic Board TS 806, 806/20 | 250.00 |
| Logic Board TS 816, 816/40 | 350.00 |
| Logic Board TS 1602G, 1602GH | 400.00 |
| Graphics Board TS 1602G, 1602GH | 175.00 |
| Floppy Controller (Daughter Board) TS 802, 802H | 50.00 |
| Winchester Disk Controller (5" Drive & 40MB 8" Drive) | 175.00 |
| Tape Controller TS 806C | 95.00 |
| Interface Board TS 816U | 50.00 |
| Keyboard TS 800, 800A, 802, 802H | 50.00 |
| Keyboard TS 1602G, 1602GH | 50.00 |
| Power Supply Module TS 800, 800A | 50.00 |
| Power Supply TS 802, 802H, 806, 806H, 816, 1602G | 110.00 |
| Video Module TS 800, 800A, 802, 802H, 1602G, 1602GH | 50.00 |
| Floppy Disk Drive 5" | 160.00 |
| Winchester Disk Drive 5" | 160.00 |
| Winchester Disk Drive 8" | 450.00 |
| Tape Drive | 300.00 |
| Picture Tube Broken P31 | 214.00 |
| Picture Tube Broken P39 | 230.00 |
| Top Case Broken TS 802, 800A, 1602G | 80.00 |
| Bottom Case Broken TS 802, 800A, 1602G | 100.00 |
| Top or Bottom Case Broken Computer Boxes TS 806, 816 | 80.00 |
| Front or Rear Panel Broken | 60.00 |
| Basic Repair charge (This additional amount charged when an entire system is returned for repair) | 70.00 |

TeleVideo will bill per above price schedule when no trouble is found in the module returned for repair.

Out of Warranty

Customer to return defective replaceable module freight prepaid to the factory, 1170 Morse Avenue, Sunnyvale, CA 94086. TeleVideo will send replacement repaired module, billing per above price schedule plus return freight.

Prices subject to change without notice.

TeleVideo Systems, Inc.

1170 Morse Avenue • Sunnyvale, CA 94086

Eastern Region—(212) 308-0705 • Northeast Region—(617) 369-9370 • Midwest Region—(312) 969-0112
 South Central Region—(214) 258-6776 • Southwest Region—(714) 752-9488 • Northwest Region—(408) 745-7760
 Southeast Region—(404) 447-1231 • European Sales—(31) 075-28-7461 TLX:844-19122
 U.K./Scandinavian Sales—(44) 0908-668778 TLX:851-825151

Systems Spare Parts Price List

TELEVIDEO COMPUTER SYSTEMS
SPARE PARTS PRICE LIST

05-10-83

| PART NUMBER | PRICE | DESCRIPTION |
|----------------|-------|-------------|
|----------------|-------|-------------|

MANUALS [class A]

| | | |
|---------|-------|--|
| 2004200 | 20.00 | Guide, Installation & User's TS 800A |
| 2003700 | 20.00 | Guide, Installation & User's TS 802 |
| 2003900 | 20.00 | Guide, Installation & User's TS 802H |
| 2248100 | 20.00 | Guide, Installation & User's TS 803 |
| 2133700 | 20.00 | Guide, Installation & User's TS 1602G |
| 2133800 | 20.00 | Guide, Installation & User's TS 1602GH |
| 2248600 | 20.00 | Guide, Installation & User's TS 1603 |
| 2003000 | 10.00 | Guide, Installation & User's TS 806 |
| 2226500 | 20.00 | Guide, Installation & User's TS 806/20 |
| 2004700 | 10.00 | Guide, Installation & User's TS 806C |
| 2002300 | 10.00 | Guide, Installation & User's TS 806H |
| 2232000 | 20.00 | Guide, Installation & User's TS 806H/20 |
| 2004100 | 10.00 | Guide, Installation & User's TS 816 |
| 2226400 | 20.00 | Guide, Installation & User's TS 816/40 |
| 2150300 | 50.00 | Guide, User's TELEPLAN |
| 2200200 | 20.00 | Manual, Operator's Tele3780 |
| 2219700 | 40.00 | Manual, TeleDBMS |
| 2003200 | 25.00 | Manual, Mmmost |
| 2003400 | 50.00 | Manual, CP/M |
| 2162400 | 50.00 | Manual, CPM/86 |
| 2150400 | 40.00 | Manual, TeleVideo - COBOL |
| 2133900 | 50.00 | Manual, Maintenance TS 800A, 802, 802H |
| 2230700 | 50.00 | Manual, Maintenance TS 806/20, 806, 806C & H |
| 2131400 | 50.00 | Manual, Maintenance TS 816 |
| 2259000 | 50.00 | Manual, Maintenance TS 1602G/GH |
| 2291000 | 50.00 | Manual, Maintenance TS 803 |

KITS [class B]

| | | |
|---------|--------|--|
| 2000700 | 300.12 | Kit, Spare Parts, Logic Board 8 Bit Systems * |
| 2252100 | 703.50 | Kit, Spare Parts, Logic Board 16 Bit Systems * |
| 2202900 | 244.80 | Kit, Spare Parts, Logic Board WDC * |
| 2203000 | 199.59 | Kit, Spare Parts, Logic Board FDC * |
| 2252000 | 401.40 | Kit, Spare Parts, Graphics Board TS 1602G * |
| 2280700 | 153.28 | Kit, Spare Parts, Video Mod ts 800A * |
| 2202800 | 90.88 | Kit, Spare Parts, Mechanical TS 802/800A* |
| 2228400 | 235.72 | Kit, Spare Parts, Data Cables TS 816's* |
| 2270800 | 223.08 | Kit, Spare Parts, Data Cbls TS 806 & User Stat * |

* Contents of Kits at end of List

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 PART PRICE DESCRIPTION
 NUMBER

MAJOR ASSEMBLIES/PRINTED CIRCUIT BOARDS [class B]

| | | |
|---------|----------|---|
| 2198900 | 1,474.14 | PCB Asy Mod 8" Flpy TS 801 |
| 2018000 | 1,199.67 | PCB Asy Logic Board TS 800A,802 |
| 2018001 | 1,199.67 | PCB Asy Logic Board TS 802H |
| 2226000 | 1,047.78 | PCB Asy Logic Board TS 803,800 |
| 2020400 | 2,157.93 | PCB Asy Logic Board TS 1602G |
| 2022000 | 1,529.10 | PCB Asy Logic Board TS 1603 |
| 2012000 | 1,251.12 | PCB Asy Logic Board TS 806 TS 806/20 |
| 2017501 | 658.32 | PCB Asy Logic Board TS 806C |
| 2012500 | 1,765.83 | PCB Asy Logic Board TS 816 |
| 2012501 | 1,403.05 | PCB Asy Logic Board TS 816/40 |
| 2013000 | 360.00 | PCB Asy Logic Board TS 816U |
| 2195800 | 93.00 | Video Module TS 800A,802 |
| 2226900 | 72.00 | Video Module TS 803,1603 |
| 2013500 | 866.19 | PCB Asy 5" Winchester Disk Controller (806, 806/20) |
| 2013501 | 866.19 | PCB Asy 8" Winchester Disk Controller (816/40) |
| 2017000 | 210.75 | PCB Asy Floppy Disk Cont TS 802 (Daughter Bd) |
| 2019000 | 656.87 | PCB Asy Graphics TS 1602G |
| 2109200 | 654.00 | Power Supply Switching 100W TS 806,806/20 |
| 2109201 | 827.34 | Power Supply Switching 150W TS 802,802H,1602G |
| 2129202 | 954.00 | Power Suppy Switching 200W TS 816,806C |
| 2191500 | 103.00 | Power Supply 3A/5V TS 800A (TS 800 OBS) |
| 2227500 | 275.04 | Power Supply 120W TS 803,1603 |
| 2227400 | 63.84 | Power Supply Transformer TS 1603,803 |
| 2304000 | 288.00 | Power Supply (OPC) TS 1602/SGH,802S |
| 2304800 | 288.00 | Power Supply (OPC) TS 803H,1603H |
| 2294000 | 288.00 | Power Supply (OPC) TS 806S/20 |
| 2299100 | 324.84 | Power Supply (OPC) TS 816/40 |

STORAGE DEVICES [class C]

| | | | | | |
|---------|----------|--------------------------------|-----|----|-------------|
| 2099200 | 591.00 | Floppy Drive 48 TPI D/S 5 1/4" | .5 | MB | Full Height |
| 2221300 | 399.00 | Floppy Drive 48 TPI D/S 5 1/4" | .5 | MB | Half Height |
| 2252300 | 489.00 | Floppy Drive 96 TPI D/S 5 1/4" | 1.0 | MB | Half Height |
| 2198800 | 1,800.00 | Disk Drive Winchester 5 1/4" | 20 | MB | |
| 2099400 | 4,140.00 | Disk Drive Winchester 8" | 23 | MB | |
| 2220300 | 4,575.00 | Disk Drive Winchester 115V 8" | 40 | MB | |
| 2220100 | 4,575.00 | Disk Drive Winchester 230V 8" | 40 | MB | |
| 2099500 | 2,100.00 | Tape Drive W/Codec Bd | 14 | MB | |

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PART PRICE DESCRIPTION
NUMBER

MISC. MAJOR PARTS [class D]

| | | | |
|---------|--------|---|-------------------|
| 2049300 | 179.00 | Picture Tube Black/Green 12" P31 | |
| 2173800 | 192.00 | Picture Tube Black/Green 12" P39 Graphics (1602G) | |
| 2218700 | 192.00 | Picture Tube Black/Green 14" P31P | |
| 2090200 | 175.00 | Detachable Keyboard TS 800A/802 * | |
| 2183701 | 210.00 | Detachable Keyboard TS 1602G * | |
| 2183700 | 210.00 | Detachable Keyboard TS 803/1603 * | |
| 2099800 | 70.20 | Case Bottom | TS 806/806-20/RWP |
| 2099900 | 70.20 | Case Top | TS 806/806-20/RWP |
| 2100600 | 110.00 | Case Top | TS 802/1602G |
| 2100700 | 85.00 | Case Bottom | TS 802/1602G |
| 2100800 | 40.00 | Bezel | TS 802/1602G |
| 2141700 | 70.20 | Case Bottom | TS 800A |
| 2141800 | 97.80 | Case Top | TS 800A |
| 2141900 | 20.00 | Bezel | TS 800A |
| 2103100 | 70.00 | Case Top | TS 816/816-40 |
| 2103200 | 180.00 | Case Bottom | TS 816/816-40 |
| 2188300 | 16.32 | Case Back Cover Crt | TS 803/1603 |
| 2188500 | 71.16 | Case Main Elect. | TS 803/1603 |
| 2188600 | 66.00 | Case CRT | TS 803/1603 |
| 2188800 | 15.48 | Bezel | TS 803/1603 |
| 2189100 | 10.68 | Case Arm Top | TS 803/1603 |
| 2189200 | .12 | Case Arm Bottom | TS 803/1603 |
| 2218800 | 1.44 | Thumb Wheel Adj | TS 803/1603 |
| 2291100 | 26.10 | Power Cord | TS 803/1603 |

* ORDER APPROPRIATE LABELS FROM LABELS/LOGO'S (PAGE 7)

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| PART NUMBER | PRICE | DESCRIPTION |
|-------------|-------|-------------|
|-------------|-------|-------------|

FIRMWARE

| | | |
|---------|--------|---|
| 8000002 | 16.92 | IC 2332 Char Gen Upper Character Cell |
| 8000003 | 16.92 | IC 2332 Char Gen Lower Character Cell |
| 8000009 | 23.28 | IC 8048 With Program ROM for Keyboard TS 800A/802 |
| 8000016 | 15.0 | IC character Gen. for Graphics Systems |
| 8000018 | 34.50 | IC 2716 System Program EPROM Kybd TS 800A/802 |
| 8000045 | 37.50 | IC System Program EPROM Z80 Portion TS 800A/802 |
| 8000046 | 37.50 | IC System Program EPROM Lower Terminal Firmware |
| 8000047 | 37.50 | IC System Program EPROM Higher Terminal Firmware |
| 8000050 | 37.50 | IC System Program EPROM Z80 Portion TS 802H |
| 8000024 | 55.80 | IC System Program EPROM 450ns TS 806 |
| 8000053 | 30.90 | IC System Program EPROM 450ns TS 816 |
| 8000106 | 30.90 | IC System Program EPROM 450ns TS 816/40 |
| 8000054 | 30.90 | IC System Program EPROM 450ns TS 806C |
| 8000093 | 24.00 | IC System Program EPROM 450ns TS 1602G/GH |
| 8000080 | 5.40 | IC Memory Decode TS 1602G |
| 8000079 | 5.40 | IC I/O Decode TS 1602G |
| 8000027 | 55.80 | IC Diagnostic EPROM TS 806 |
| 8000052 | 55.80 | IC Diagnostic EPROM TS 806C |
| 8000096 | 55.80 | IC Diagnostic EPROM TS 816 |
| 8000107 | 55.80 | IC Diagnostic EPROM TS 816/40 |
| 8000035 | 23.70 | IC L2-7 System Program ROM WDC (74S472 512 X 8) |
| 8000036 | 23.70 | IC MX-7 System Program ROM WDC (74S472 512 X 8) |
| 8000037 | 23.70 | IC FX-7 System Program ROM WDC (74S472 512 X 8) |
| 8100024 | 100.00 | Listing System Program TS 806 * |
| 8100045 | 100.00 | Listing 800A, 802, [Z80 Portion] * |
| 8100046 | 500.00 | Listing 800A, 802, 802H [6502 Portion] * |
| 8100050 | 100.00 | Listing TS 802H [Z80 Portion] * |
| 8100053 | 100.00 | Listing System Program EPROM TS 816 W/Code * |
| 8100054 | 100.00 | Listing System Program EPROM TS 806C * |
| 8100093 | 100.00 | Listing System Program EPROM TS 1602G/GH * |

* Require non-disclosure agreements and letter of intended use.

CABLES/CONNECTORS/WIRE ASSEMBLIES

| | | |
|---------|-------|--|
| 2005700 | 25.44 | Cbl Asy, Keyboard TS 800A/802 |
| 2006800 | 14.22 | Cbl Asy, 20 Pin 12" TS 802H WDC To Winchester |
| 2006900 | 18.60 | Cbl Asy, 34 Pin 15" TS 802H Daughter Bd/Floppy WDC/Winch |
| 2007001 | 32.28 | Cbl Asy, 40 Pin 16" TS 802H Daughter Bd To WDC |
| 2007300 | 29.16 | Cbl Asy, 34 Pin 14" TS 802 Daughter Bd To Floppy |
| 2006100 | 11.88 | Cbl Asy, 40 Pin 2" TS 802/H Logic to Daughter Bd |
| 2006901 | 18.96 | Cbl Asy, 34 Pin TS 806 Logic To Floppy/WDC To Winch |
| 2007000 | 20.28 | Cbl Asy, 40 Pin 13" TS 806 Logic To WDC |
| 2006801 | 14.52 | Cbl Asy, 20 Pin 15" TS 806-816/40 WDC To Winchester |
| 2006501 | 11.34 | Cbl Asy, 16 Pin 8" TS 806 RS 422 To Logic |
| 2006600 | 36.00 | Cbl Asy, 34 Pin 7" TS 806 Parallel Printer |
| 2006400 | 24.12 | Cbl Asy, 50 Pin 16" TS 816 WDC To Winchester |

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| PART NUMBER | PRICE | DESCRIPTION |
|----------------|--------|---|
| 2006201 | 20.10 | Cbl Asy, 14" TS 816U To Logic, Logic To Tape |
| 2006601 | 30.54 | Cbl Asy, 34 Pin 8" TS 816 Parallel Printer |
| 2006500 | 32.70 | Cbl Asy, 16 Pin 3" TS 806C RS 422 Internal |
| 2007100 | 51.00 | Cbl Asy, 50 Pin 3" TS 806C Logic Board To Tape Drive |
| 2007101 | 42.00 | Cbl Asy, 20 Pin 12" TS 806 Internal For TS 806H |
| 2007800 | 73.08 | Cbl Asy, 34 Pin 16" TS 806 Internal For TS 806H |
| 2128500 | 19.32 | Cbl Asy, 20 Pin 10" TS 806H External to TS 806 |
| 2006300 | 23.40 | Cbl Asy, 34 Pin 10" TS 806H External to TS 806 |
| 2007600 | 42.60 | Cbl Asy, 20 Pin 12" TS 806H Internal for Winchester |
| 2007700 | 54.00 | Cbl Asy, 34 Pin 10" TS 806H Internal for Winchester |
| 2135700 | 15.84 | Cbl Asy, 50 Pin TS 1602G Logic to Graphics |
| 2007002 | 38.22 | Cbl Asy, 40 Pin 21" TS 816/40 Logic to WDC |
| 2006204 | 27.42 | Cbl Asy, 50 Pin 10" TS 816/40 Logic to Tape/Logic to 816U |
| 2006200 | 21.30 | Cbl Asy, 50 Pin 8" TS 816/40 Logic to WDC |
| 2006404 | 31.50 | Cbl Asy, 50 Pin 22" TS 816/40 WDC to Winchester |
| 2224300 | 28.00 | Cbl Asy, 34 Pin 4" TS 816/40 Parallel Printer |
| 2235400 | 81.60 | Cbl Asy, 25 Pin TS 816/40H External to TS 816/40 |
| 2160700 | 158.46 | Cbl Asy, 50 Pin TS 816/40H External to TS 816/40 |
| 2235500 | 39.72 | Cbl Asy, 25/20 Pin TS 816/40 Internal for TS 816/40H |
| 2160800 | 150.06 | Cbl Asy, 50/57 Pin TS 816/40 Internal for TS 816/40H |
| 2161000 | 57.66 | Cbl Asy, 50/57 Pin TS 816/40H Internal for Winchester |
| 2235600 | 42.36 | Cbl Asy, 25/20 Pin TS 816/40H Internal for Winchester |
| 2008600 | 28.00 | Harness Asy, Power TS 802H |
| 2007900 | 28.00 | Harness Asy, Power Cable 16" TS 806 |
| 2136500 | 28.00 | Harness Asy, Power Cable 12" TS 806 |
| 2008000 | 12.84 | Harness Asy, Power Cable 24" TS 816 |
| 2008101 | 69.60 | Harness Asy, Tape Cassette Power-1 |
| 2008201 | 28.08 | Harness Asy, Tape Cassette Power-2 |
| 2176200 | 50.00 | Harness Asy, Power TS 816 |
| 2008800 | 28.00 | Harness Asy, Winchester Serv. Board TS 816 |
| 2008900 | 28.00 | Harness Asy, Tape Cassette Power 1 & 2 |
| 2136702 | 41.88 | Harness Asy, TS 816/40 |
| 2192901 | 40.44 | Harness Asy, TS 816/40 |
| 2008400 | 10.20 | Harness Asy, 1.00 Reset Switch 3 Pin 14" |
| 2008401 | 20.40 | Harness Asy, 1.00 Reset Switch 3 Pin 15" |
| 2008700 | 30.36 | Harness Asy, Power Floppy General 14" |
| 2097900 | 2.22 | RJ11 Connector Female PCB Mount (AMP) |
| 2141200 | 3.89 | RJ12 Connector Female PCB Mount 6 Pin |
| 2208400 | 2.82 | RJ12 Modular Jack |
| 2098000 | 9.60 | Connector 15 Pin D-Sub Female PCB Mount RS422 |
| 2163100 | 24.24 | Connector 15 Pin S-Sub Metal Female PCB Mount RS422 |
| 2097800 | 10.62 | Connector 25 Pin D-Sub Female PCB Mount RS232 |
| 2165300 | 29.04 | Connector 25 Pin D-Sub Metal Female PCB Mount RS232 |
| 2098100 | .72 | Connector 3 Pin Header - Straight |
| 2216400 | 1.92 | Connector 10 Pin Header - Straight |
| 2098103 | 3.06 | Connector 16 Pin Header - Straight |
| 2098104 | 2.76 | Connector 20 Pin Header - Straight |
| 2098106 | 4.56 | Connector 34 Pin Header - Straight |
| 2098107 | 4.68 | Connector 40 Pin Header - Straight |
| 2098108 | 7.56 | Connector 50 Pin Header - Straight |

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| PART NUMBER | PRICE | DESCRIPTION |
|-------------|-------|-------------------------------------|
| 2174401 | 8.10 | Connector 50 Pin Header - Angle |
| 2098300 | 1.80 | Connector 2 Position Jumper |
| 2098703 | 1.74 | Connector 2 Pin Right Angle Molex |
| 2098800 | .72 | Connector 2 Pin Straight Wafer |
| 2098801 | 3.72 | Connector 3 Pin Straight Wafer |
| 2098802 | .72 | Connector 5 Pin Straight Wafer |
| 2098700 | 1.02 | Plug 5 Pin Molex Right Angle Wafer |
| 2001200 | 11.34 | Jack Socket Connector Kit |
| 2109000 | 19.87 | Power Cord 3 Conductor 3 Prong 6 FT |

CRYSTALS

| | | |
|---------|-------|--------------------------------------|
| 2098602 | 6.60 | Crystal 1.8432 MHz |
| 2216500 | 18.00 | Crystal 4 MHz |
| 2098603 | 4.80 | Crystal 8.0000 MHz |
| 2098605 | 3.54 | Crystal 13.6080 MHz |
| 2048800 | 18.00 | Crystal 15 MHz |
| 2042800 | 27.00 | Crystal 16 MHz (MOT, CTS, HYT) |
| 2098604 | 4.50 | Crystal 20.000 MHz |
| 2035200 | 37.08 | Crystal 23.814 MHz K1114A (MOT, CTS) |
| 2099700 | 1.02 | Insulator Mounting Pad For Crystal |

FANS

| | | |
|---------|-------|---------------------------------------|
| 2099000 | 35.28 | Fan 115V/230V AC 36-47 CFM (AIR OVER) |
| 2141500 | 52.50 | Fan Box 230V AC TS 802/802H |
| 2245800 | 56.28 | Fan Box 115V AC TS 1602G/GH |
| 2245700 | 67.20 | Fan Box 230V AC TS 1602G/GH |

BEZEL'S/CASE ASSEMBLIES

| | | |
|---------|-------|--------------------------------------|
| 2142000 | 40.00 | Panel Front TS 806 |
| 2142100 | 40.00 | Panel Front TS 806C |
| 2142200 | 40.00 | Panel Front TS 806H |
| 2105401 | 40.00 | Panel Back TS 806 |
| 2105500 | 40.00 | Panel Back TS 816 |
| 2105600 | 40.00 | Panel Front TS 816 |
| 2100102 | 10.00 | Shroud Connector TS 800A |
| 2100500 | 10.00 | Shroud Connector TS 802/1602G |
| 2219800 | 5.00 | Card Guide TS 802 |
| 2100300 | 15.00 | Cover Fan TS 816 |
| 2105700 | 28.80 | Panel Floppy Cover TS 802H (Plastic) |

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PART PRICE DESCRIPTION
NUMBER

MISCELLANEOUS SPARES

| | | | |
|---------|-------|--------------------------------|---------------|
| 2101600 | 64.80 | Chassis Mounting | TS 806/806H |
| 2101900 | 5.88 | Panel Cover Hard Disk | TS 806 |
| 2103500 | 19.98 | Cover Top Power Supply | TS 802 |
| 2152800 | 6.72 | Speaker (8 ohm) With Connector | |
| 2150100 | 41.70 | Filter A.C. Line SAE HP2-2 | |
| 2001300 | 2.88 | Bail Mount Enclosure | |
| 2101900 | 5.88 | Panel Shield Winchester Disk | TS 806 |
| 2204900 | 2.89 | Shield Board | TS 816 |
| 2225200 | 31.80 | Bracket | TS 816/40 WDC |

LABELS/LOGO'S

| | | | |
|---------|------|--|---------------|
| 2105000 | 1.50 | Label Logo Plastic "TeleVideo" Systems | |
| 2191300 | 2.40 | Label Logo Plastic "TeleVideo" Printer | |
| 2105104 | .72 | Label Keyboard | TS 800A |
| 2105105 | .72 | Label Keyboard | TS 802 |
| 2105106 | .72 | Label Keyboard | TS 802H |
| 2208500 | .72 | Label Keyboard | TS 1602G |
| 2208600 | .72 | Label Keyboard | TS 1602GH |
| 2105300 | .96 | Label Back Panel "RS 232" | TS 806-806/20 |
| 2105301 | .96 | Label Back Panel "Terminal" | TS 806-806/20 |
| 2154402 | 1.50 | Label Back of Unit | TS 800A |
| 2142900 | .90 | Label S1 | TS 800A |
| 2142901 | .90 | Label S2 | TS 800A |

BOXES/PACKING MATERIAL

| | | | | |
|---------|-------|---------------|----------|-----------------|
| 2208800 | 25.00 | Carton Inner | Shipping | TS 802/TS 1602G |
| 2143600 | 16.86 | Carton Outer | Shipping | TS 802/TS 1602G |
| 2143700 | 20.52 | Carton Inner | Shipping | TS 806 |
| 2208900 | 31.98 | Carton Outer | Shipping | TS 806 |
| 2143800 | 26.22 | Carton Inner | Shipping | TS 816 |
| 2209000 | 31.98 | Carton Outer | Shipping | TS 816 |
| 2185700 | 3.18 | Corner Blocks | Shipping | Carton |
| 2208200 | 16.00 | Carton | Shipping | Hard Disk |
| 2214401 | 12.00 | Formed Foam | | TS 806 |
| 2237300 | 10.00 | Formed Foam | | TS 800A |

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MINIMUM ORDER \$500.00

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SPARE PARTS KITS PRICE

2280700 Kit, Spare Parts, Power - Video Module TS 800A \$ 153.28
2042200 2N3906 Vertical Amplifier
2046500 2N3904 Vertical Drive
2200000 2N4401 Horizontal Drive
2047100 2N5551 Reference Amplifier
2046700 KTC1627A 75Volt Regulator
2201400 DS135D/IN391
2047500 IN914
2200800 Yoke Deflection With Connector
2201200 Transformer Horizontal Drive
2200900 Linearity Coil 5.40uh
2201300 Transformer Flyback (High Voltage)
2201000 Inductor 27uh
2126900 Voltage Regulator LAS 16CB 2A/13.8Volts
2186200 Resistor CF 390 Ohms 1/2Watt 5%
2201600 IN759A Zener Diode
2199300 Capacitor 220uf 16Volt Electrolytic
2197300 Capacitor .1uf 600Volt Mylar
2047300 2SC2233 MJE13006
2280800 Diode 30S2 I.R. 3 Amp
2126600 Voltage Regulator LAS L1405 3 Amp 5 Volt

2000700 Kit, Spare Parts, Logic Bd 8 Bit Systems \$ 300.12
2042600 26LS32 RS422 interface
2042400 26LS31 RS422 interface
2050600 SIO/2 serial communications chip
2050800 CTC counter timer chip
2051000 CPU Z80A central processor unit
2051200 DMA direct memory access chip
2051600 64K dynamic RAM (4 each)
2029200 75188N
2029400 75189N

2228400 Kit Data Cables TS 816's \$ 235.72
2006201 Logic to Tape/Logic to 816U
2006400 Logic to Winchester 816
2006801 816/40 WDC To Winchester
2006601 816 Parallel Printer to Logic
2007002 816/40 logic to WDC
2006204 816/40 Logic to Tape/Logic to 816U
2006200 816/40 Logic to WDC
2006404 816/40 WDC to Winchester
2224300 816/40 Parallel Printer

2203000 Kit, Spare Parts Logic bd FDC \$ 199.59
2040200 WD2143-01 four phase clock logic
2040400 WD1691 floppy support logic
2040600 FD1793-02 (93816 fair amd) floppy controller

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SPARE PARTS KITS PRICE

2270800 Kit Data Cables User Stations and TS 806's \$ 223.08
2006800 802H WDC To Winchester
2007001 802H Daughter Board To WDC
2007300 802 Daughter Board To Floppy
2006100 802 Logic to Daughter Board
2135700 1602G Logic to Graphics Board
2006900 802H Daughter Board To Floppy/ WDC To Winchester
2006501 806 RS422 to Logic
2006901 806 Logic To Floppy/ WDC To Winchester
2007000 806 Logic To WDC
2006801 806 WDC To Winchester
2006600 806 Parallel Printer

2202800 Kit, Spare Parts, Mechanical TS802/800A \$ 90.88
2005700 cord for keyboard
2223700 3 amp 125V fuse (25 each)
2199400 keyswitch
2096800 10 position side dip switch
2223300 1 amp 250V fuse (25 each)
2182100 RS232 connector
2097900 RJ-11 connector
2098000 RS422 connector
2100500 connector shroud

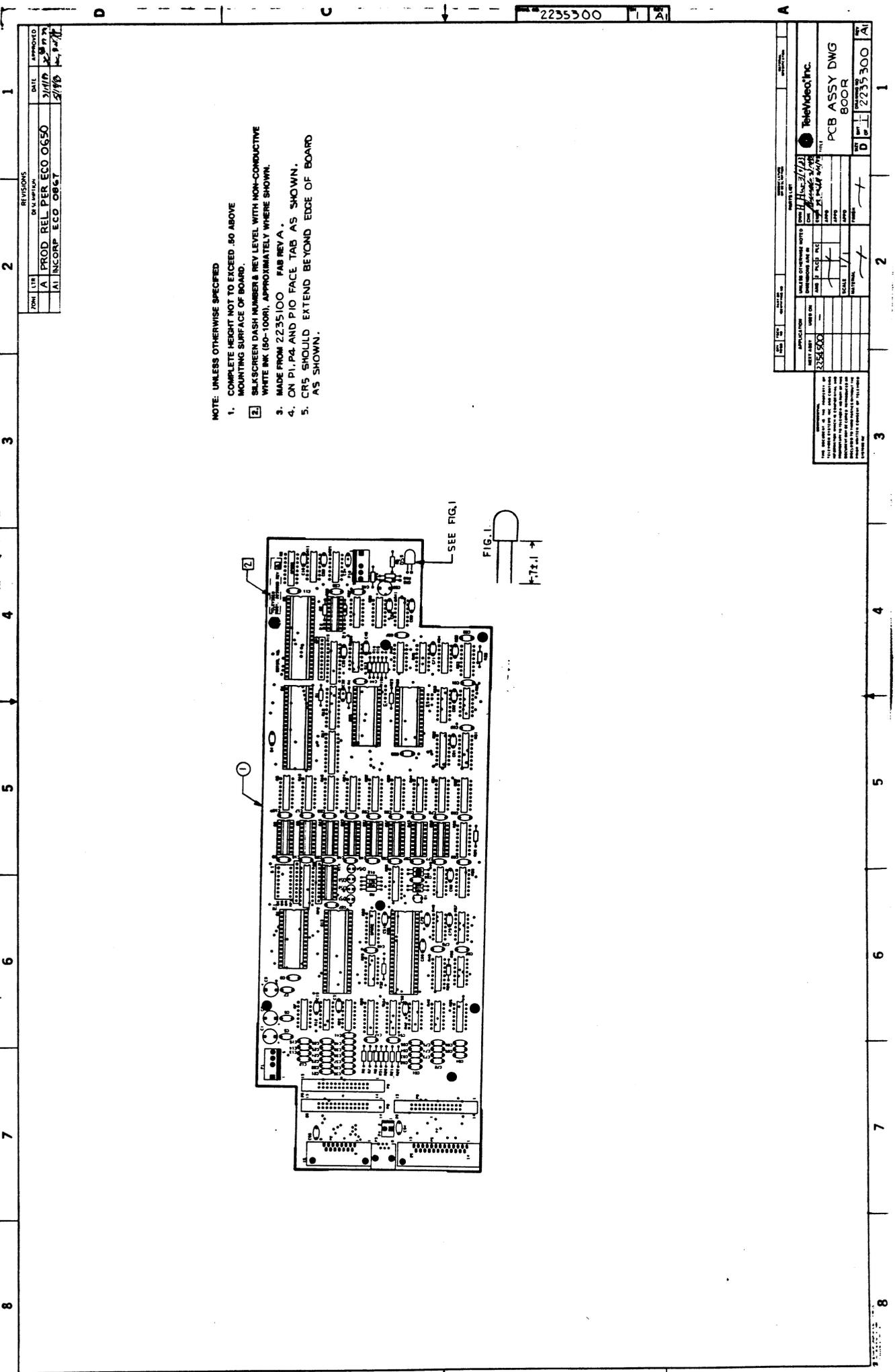
2202900 Kit, Spare Parts Logic bd WDC \$ 244.80
2056200 parallel converter
2056400 MFM converter
2056600 AM detector
2056800 CRC generator/checker
2057000 parallel to serial converter
2057200 delay line

2252000 Kit, Graphics Board \$ 401.40
2057400 IC Gate Array Graphics/1603
2139800 IC 7220 Graphic Display Controller
2139200 IC Dynamic RAM 4116 16K x 1 (120ns) [4 each]

2252100 Kit, Spare Parts, Logic Board 16 Bit Systems \$ 703.50
2051600 64K dynamic RAM (4 each)
2029200 75188N
2029400 75189N
2042600 26LS32 RS422 interface
2042400 26LS31 RS422 interface
2054000 IC 8284A Clock Generator
2054200 IC 8288 Bus Controller
2054400 IC P8088 CPU IAPX 88/10
2054600 IC 8274 USART
2054800 IC 8254 Program Interval Timer
2055000 IC 8259A Priority Interrupt Controller
2055200 IC 8089 IOP

C: DRAWINGS

This section contains board assembly drawings and logic diagrams. When ordering parts, use the component type or value shown in the diagrams to refer to the TeleVideo part number listed in the Appendix B Spare Parts Price List. The prices listed in the Spare Parts Price list are for estimating only.



2235300 I A

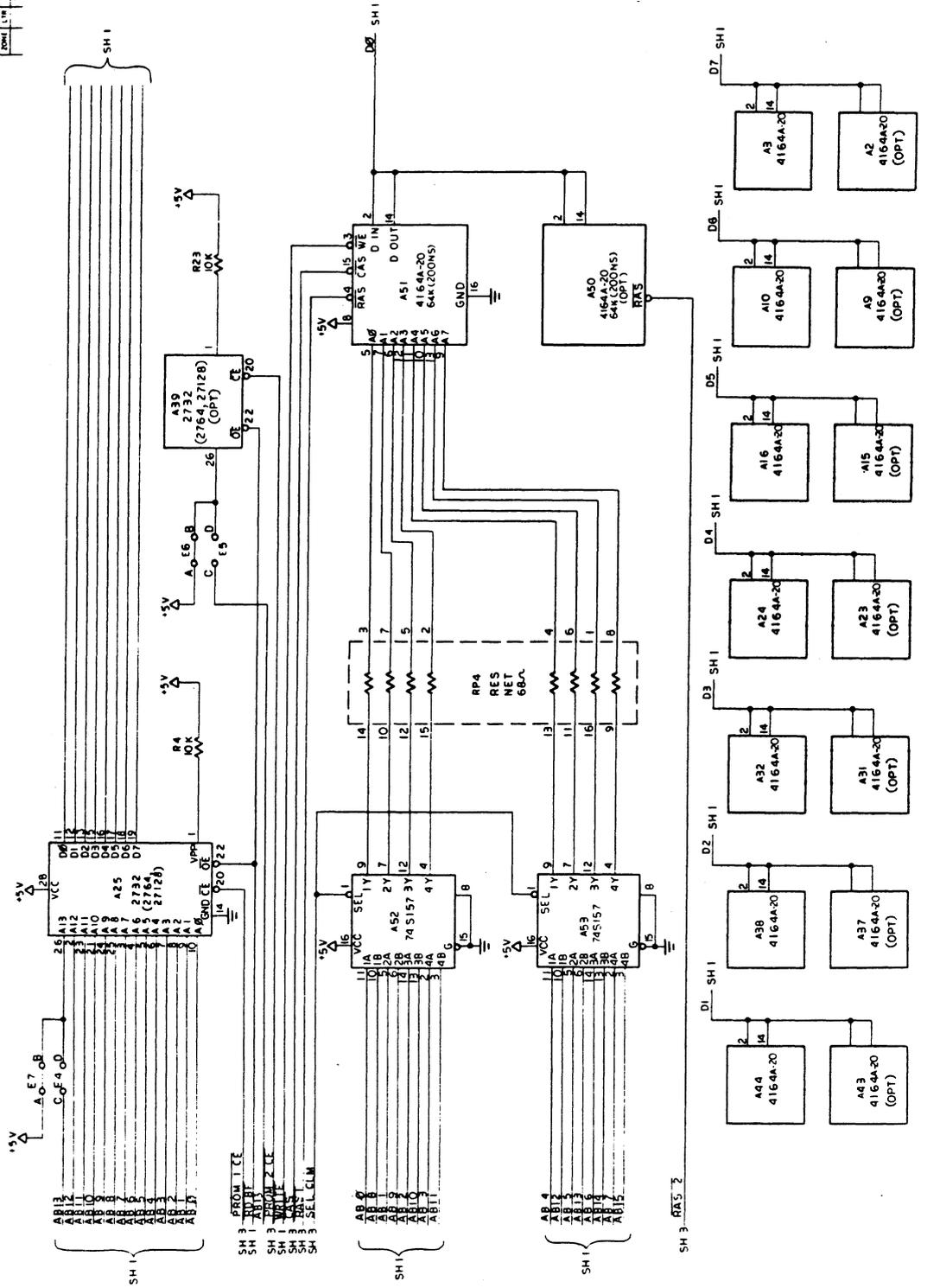
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|-----------|----|---------|-------------|
| NO. | BY | | |
| 1 | AI | 2/11/78 | [Signature] |
| 2 | AI | 2/11/78 | [Signature] |

- NOTE: UNLESS OTHERWISE SPECIFIED
 1. COMPLETE HEIGHT NOT TO EXCEED .80 ABOVE MOUNTING SURFACE OF BOARD.
 2. SILK SCREEN DASH NUMBER & REV LEVEL WITH NON-CONDUCTIVE WHITE INK (50-100M), APPROXIMATELY WHERE SHOWN.
 3. MADE FROM 2235300 FAB REV A.
 4. ON P1, P4 AND P10 FACE TAB AS SHOWN.
 5. CR5 SHOULD EXTEND BEYOND EDGE OF BOARD AS SHOWN.

| | | | |
|-----------------|-------------|------------|-------------|
| DATE | 2/11/78 | BY | [Signature] |
| DESIGNED BY | [Signature] | CHECKED BY | [Signature] |
| APPROVED BY | [Signature] | DATE | 2/11/78 |
| TELEVIDEO, INC. | | | |
| PCB ASSY DWG | | | |
| BOOR | | | |
| 2235300 | | | |

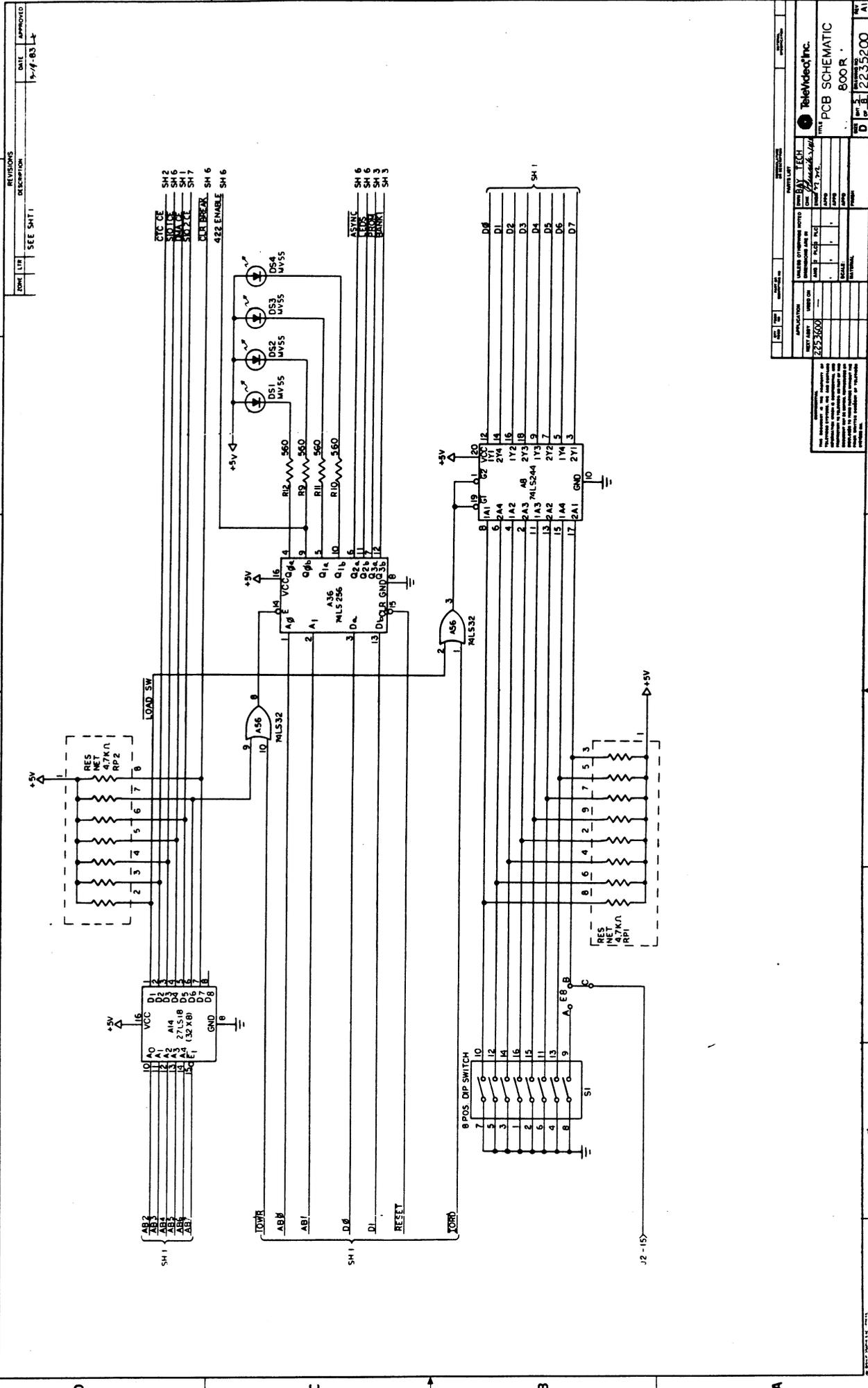
8 7 6 5 4 3 2 1

| REV. NO. | DESCRIPTION | DATE | APPROVED |
|----------|-------------|--------|----------|
| 1 | SEE SH 1 | 1-7-83 | |



| | |
|------------|---------------|
| PARTS LIST | |
| QTY | DESCRIPTION |
| 1 | PCB |
| 1 | PCB SCHEMATIC |
| 1 | BOOR |
| 1 | 2235200 |
| 1 | AT |

2235200 4 A



| REV. NO. | DATE | APPROVED |
|----------|----------|----------|
| 1 | 12-17-83 | Lt |

| REV. NO. | DATE | APPROVED |
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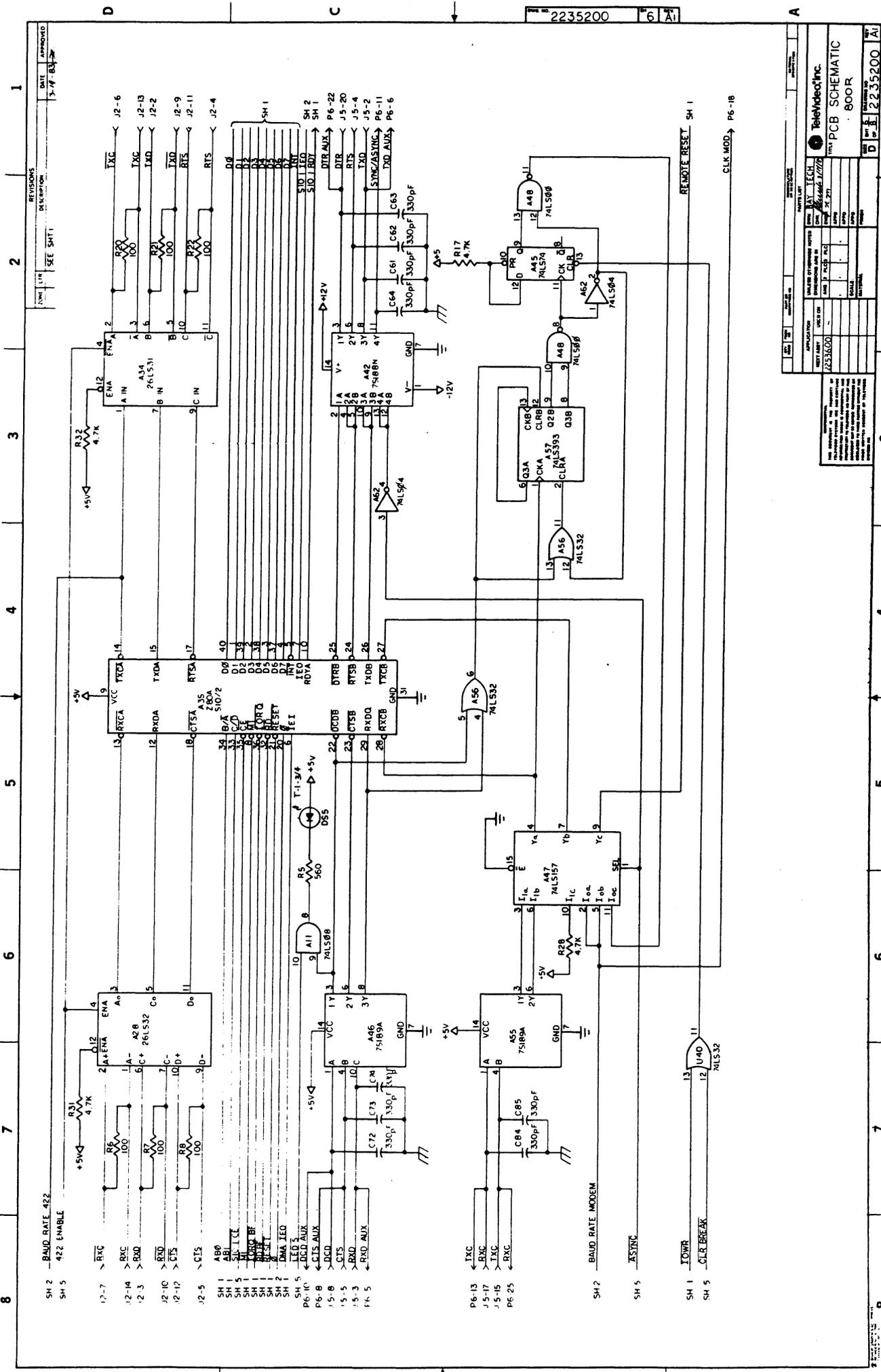
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| REV. NO. | DATE | APPROVED |
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| 1 | 12-17-83 | Lt |

2235200 5 A1

2235200 5 A1

| REV | DESCRIPTION | DATE | APPROVED |
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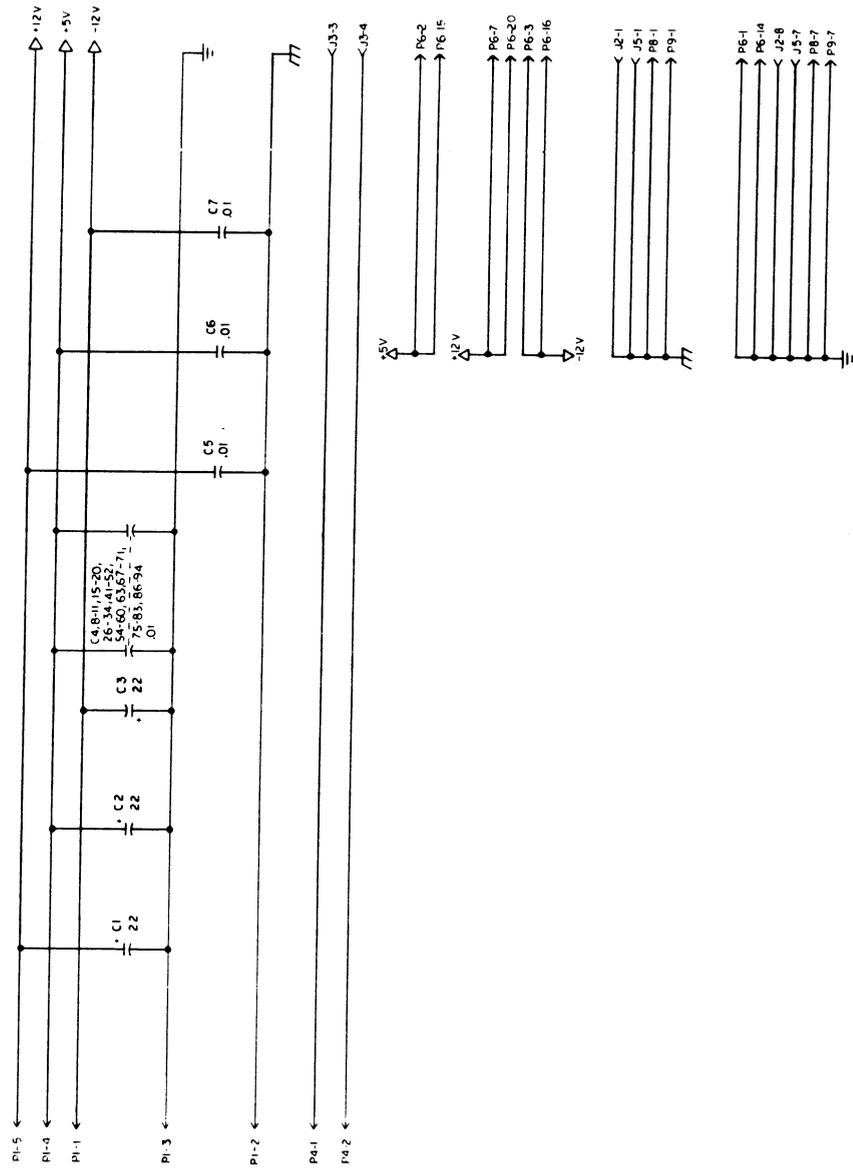
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| ZONE | LT# | REVISIONS | DATE | APPROVED |
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| | | SEE SHIT | 3/7/83 | |



| REV | DATE | DESCRIPTION |
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| D | 12/23/80 | 800R |

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TELEVIDEO, INC.
PCB SCHEMATIC
800R