# SWTPc

Southwest Technical Products Corp.

219 W. Rhapsody      SAN ANTONIO, TEXAS 78216

# 198/A PREAMP

**PUSHBUTTON TONE CONTROLS**

**GAIN MODULE DESIGN**

**MOTHER BOARD CONSTRUCTION**

**SELF POWERED—WILL
WORK WITH ANY AMPLIFIER**

We are proud to offer a preamp and control center that is equal in quality and performance to our new "Tiger .01" amplifier. Both input and tone control settings are pushbutton switch selected. This makes it possible to get the exact amount of compensation you want every time, just as in professional studio equipment. When no compensation is wanted, the amplification is absolutely flat.

All controls have been designed to make their function as obvious as possible, so that the chances of a mistake in settings will be minimized. Loudness compensation and tape monitor functions are provided.

All gain needed is provided by four of our plug-in #195 op amp circuits. These plug into two "mother boards" that contain all the switching and equalization components. The result is vastly simplified wiring and easy construction.

The kit is complete with a brushed gold finished front panel and the wood grain finished cover shown. Two switched convenience AC receptacles are provided on the back.

#198A Preamp Kit . . . . . . .$109.50 PPd in U.S.

## SPECIFICATIONS

Sensitivity . . . . Phono and Mic 2.0 mv for 1 Volt
Others 100 mv for 1 Volt output

Maximum Output. . . . . . . . . . . . . . . 5.0 Volts

Freq. Response . . . .Flat ±1 dB 10 to 100,000 Hz

Distortion . . . . . Less than .05% Harmonic or IM

Noise . . . . . . . . . . Phono and Mic 65 dB down
All others 70 dB down

Size. . . . . . . .9 5/8 wide x 5 high x 10 3/8 deep

Shipping Weight. . . . . . . . . . . . . . . . . . 6 lbs.

**Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas**

# TIGERSAURUS 250

The most powerful amplifier we make for those who want "beastly" amounts of power. We didn't cut any corners, or skimp on any of the parts that went into the design of this animal. The power transformer is a huge 24 pound chunk of iron and copper. The output stage uses eight (8) 200 Watt transistors with a combined rating of 360 Volts @60 Amps. The heatsink for this output stage has over 550 square inches of heavy, efficient extruded aluminum fins. In most applications, if there is a free air circulation around the case, no external fans or blowers should be required.

The circuit features our unique all push-pull system and completely complementary output stage. The driver is the same cross coupled, complementary differential type as used in our famous "Tiger .01". The kit also features a large-three inch lighted output level meter and a robust 25 amp rated rectifier in the power supply. The front trim panel is dusky chrome finished.

For those who are using speakers that can take this kind of power, or for those really big PA jobs this is "THE" amplifier to use.

#210 Tigersaurus Amplifier Kit
Shipping weight 32 lbs.. . . . . **$199.95 PPD in U.S.**

## SPECIFICATIONS

**250 Watts—4 Ohms, or 200 Watts-8 Ohms minimum RMS, with less than 0.1% Total Harmonic Distortion 20-20,000 Hz.**

| | |
|---|---|
| IM Distortion | less than .03% |
| Damping factor | Over 100 |
| Hum and noise | —95 dB |
| Sensitivity | 2.0 Volts RMS |
| Size | .18 wide x 5 high x 11 deep |
| Shipping weight | .32 lbs. |
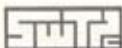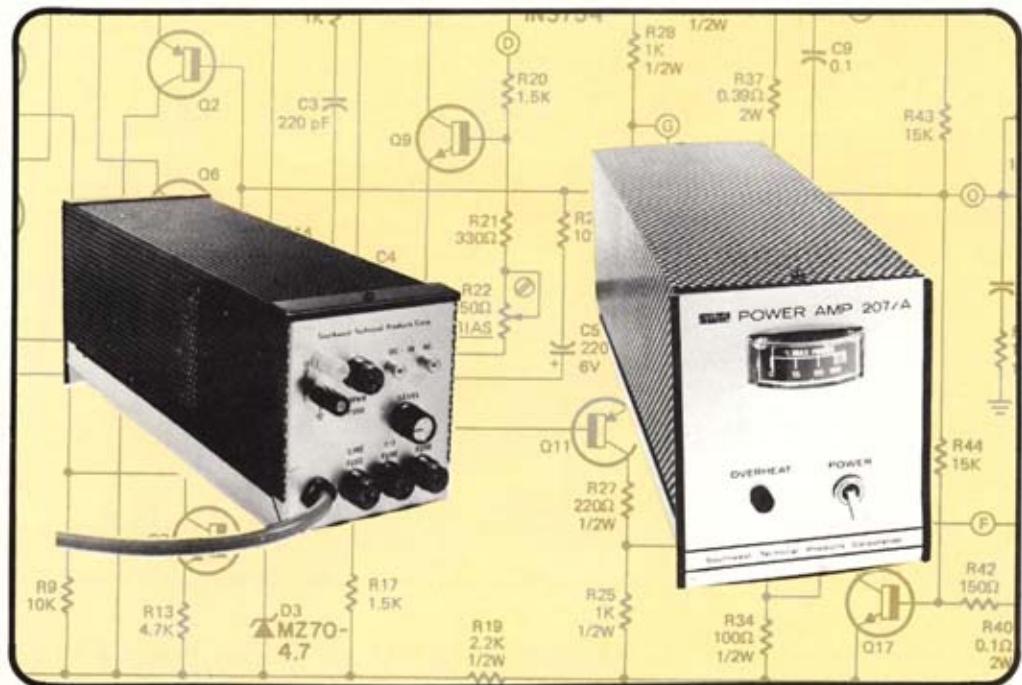
# TIGER .01
# 207/B

A new standard of performance. We know of no amplifier now available that can match the performance of our new "Tiger .01". Our new completely push-pull circuit with cross coupled push-pull feedback makes possible an IM distortion rating of less than .01% up to rated output. This is easily ten to one hundred times better than many so called Hi-Fi amplifiers. Our conservative approach of using low open loop gain and only some 40 dB of negative feedback results in an amplifier with very clean overload and clipping characteristics, no evidence of transient intermodulation distortion, and overall superior sound quality.

Test reports by two of the leading audio publications confirm these facts.

The amplifier is designed to be used as either a single channel unit for sound system and instruments, or in any multiple needed for stereo or quad systems. The front panel is quarter rack size to allow relay rack mounting of up to four of these units in a standard 19 inch relay rack.

The circuit features volt-amp and fuse protection, plus an over heat thermostat. An output meter is provided on the front panel as shown. The perforated metal cover is included in the standard kit.

#207/B Complete Kit
Shipping weight 12 lbs.. . . . .$109.50 PPd in U.S.

#207/A Assembled Amplifier
Shipping weight 12 lbs.. . . . .$145.50 PPd in U.S.

## SPECIFICATIONS
**60 Watts, Minimum RMS, into 4, or 8 Ohms with less than .05% Total Harmonic Distortion from 20-20,000 Hz.**
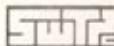
IM Distortion . . . . . . . . . . . . . less than .01%
Damping factor . . . . . . . . . . . . . . . Over 100
Hum and noise . . . . . . . . . . . . . . . —90 dB
Sensitivity . . . . . . . . . . . . . . . . 1.0 Volt RMS
Size. . . . . . . . . . .4¼ wide x 5 high x 15 deep
Shipping Weight. . . . . . . . . . . . . . . .12 lbs.
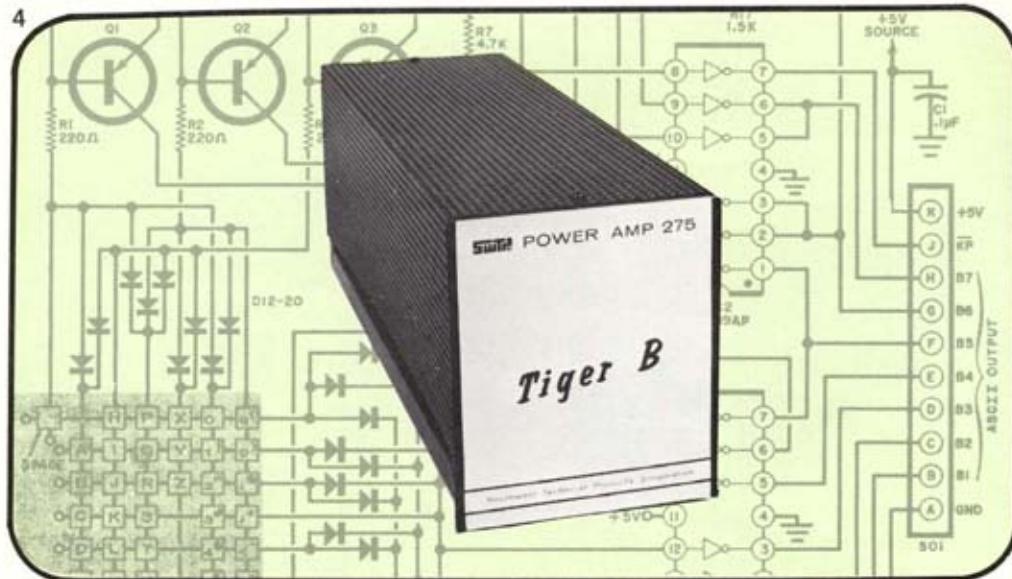
# UNIVERSAL TIGER "B"

The latest version of our famous "UT" amplifier. We have added our complementary differential input circuit to this rugged old standby and dressed it up in a pretty new box; but, otherwise, it is still the same all purpose basic amplifier. The "Universal Tiger" is cleaner than the majority of hi-fi amplifiers being offered. The cost is low enough to use it in PA, organs, background music, and sound system of all types. The package size allows mounting of four of these amplifiers side-by-side in a standard 19 inch relay rack.

The kit has step-by-step instructions, wiring charts and pictorial wiring diagrams. All parts are our usual first quality, standard number parts, made by the world's leading manufacturers. The majority of the construction is on beautiful fibreglass circuit boards.

The circuit features our outstanding complementary differential input system and current drive to fully complementary output devices. The circuit has volt-amp output protection, speaker fuse, power supply and line fuses. Compare our state of the art circuits to anything else available.

For those who want more features, we offer an accessory kit that allows addition of a front panel switch, overheat indicator and output meter—along with a level control on the rear panel.

We think that in "Tiger B" we have one of the most versatile amplifiers made; and, the price has to be the bargain of the decade.

#275 Universal Tiger Amplifier Kit
(single channel) . . . . . . . . . **$93.50 PPd in U.S.**

#275A Assembled. . . . . . . .**$125.50 PPd in U.S.**

#AC-275 Accessory Kit
(output meter, switch, etc.) . . **$14.50 PPd in U.S.**

## SPECIFICATIONS
**90 Watts into 4 Ohms, 75 Watts into 8 Ohms Minimum RMS with less than 0.1% Total Harmoic Distortion from 20-20,000 Hz.**

| | |
|---|---|
| IM Distortion | less than .03% |
| Damping factor | Over 100 |
| Hum and Noise | —90 dB |
| Sensitivity | 1.0 Volt RMS |
| Size | 4¼ wide x 5 high x 15 deep |
| Shipping Weight | 12 lbs. |

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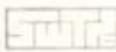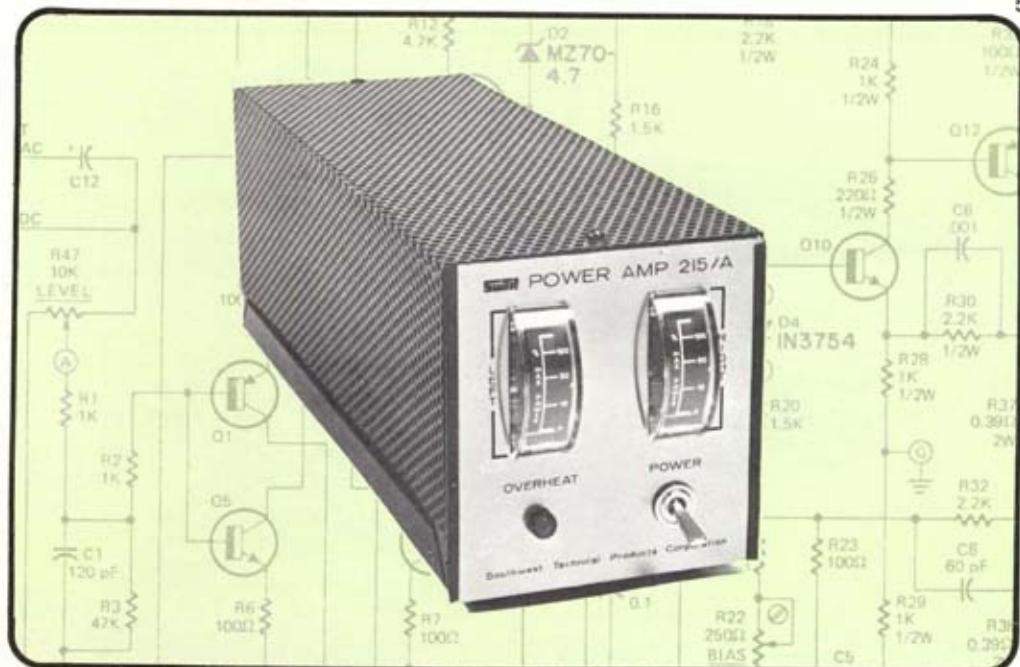
entire circuit, except for the output transistors, is built on a plug-in fibreglass circuit board for extra easy construction. The usual pictorial wiring diagrams, wiring charts and step-by-step instructions are provided in the kit.

Compare the specification of this amplifier with any other amplifier offered in this power range. Compare the features, and then compare the prices.

#215 Stereo Amp. Kit . . . . . $105.50 PPd in U.S.

## 215

Our #215 amplifier is for those who want the superior performance of "Tiger .01" but who do not need, or want 60 Watts per channel. The #215 has the same complementary differential, all push-pull circuit as "Tiger .01" and the same type triple in the output stage. The only difference is in the maximum power output. You get two channels of super clean power in a neat package, with output meters for each channel. The
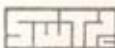
### SPECIFICATIONS

**25 Watts, Minimum RMS, per channel into 8 Ohms with less than 0.05% Total Harmonic Distortion from 20-20,000 Hz.**

| | |
|---|---|
| IM Distortion | less than .01% |
| Damping Factor | Over 100 |
| Hum and Noise | 85 dB |
| Sensitivity | 0.75 Volt |
| Size | 4 3/8 wide x 4½ high x 13½ deep |
| Shipping Weight | 9 lbs. |
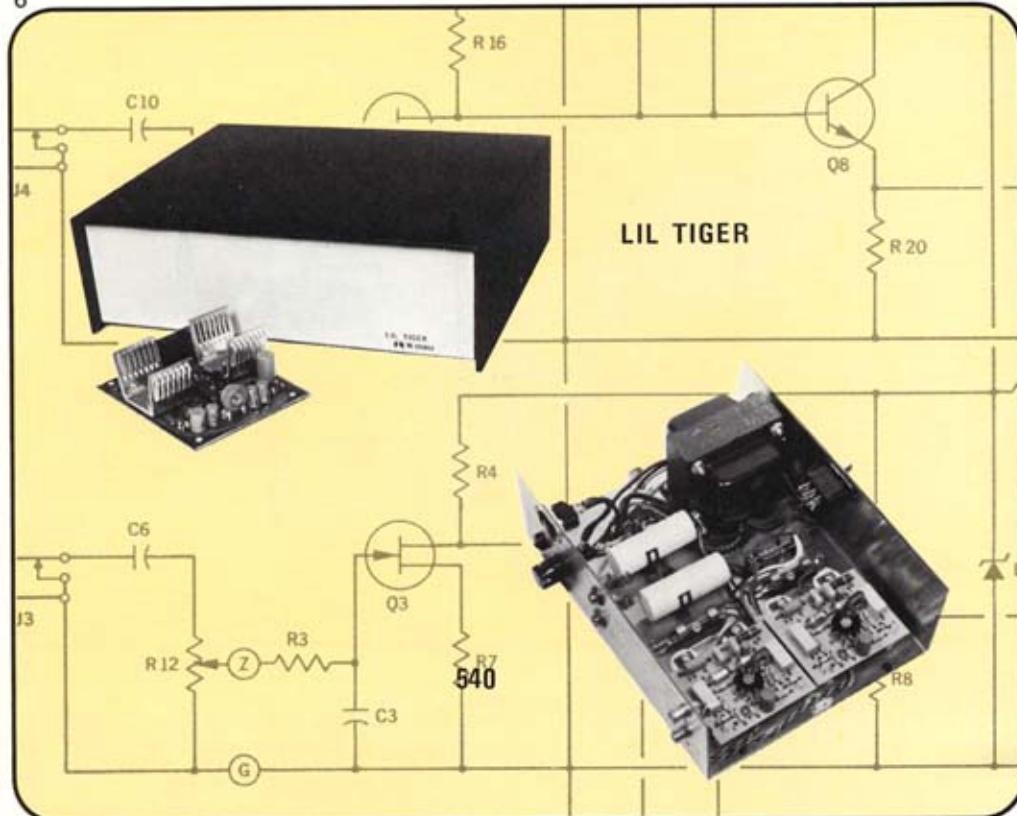
# LIL TIGER

**15 Watts, Minimum RMS, per channel into 8 Ohms with less than 0.5%Total Harmonic Distortion from 20-20,000 Hz.**

| | |
|---|---|
| IM Distortion | less than 0.5% |
| Hum and Noise | —80 dB |
| Sensitivity | 1.5 Volt |
| Size | 9½ wide x 3 high x 8 deep |
| Shipping Weight | 7 lbs. |

# 540

**15 Watts, Minimum RMS, per channel into 8 Ohms with less than 0.5% Total Harmonic Distortion from 20-20,000 Hz.**

| | |
|---|---|
| IM Distortion | less than 0.5% |
| Hum and Noise | —80 dB |
| Sensitivity | 0.5 Volt |
| Size | 9½ wide x 3 high x 8 deep |
| Shipping Weight | 7 lbs. |

In the 20 Watt per channel class we offer you a choice of two amplifiers. For those who have a situation where only a single polarity of supply voltage is available, or who want to build a "classic"; we have Lil Tiger. For those who want the latest design, we have our "540" with IC driver system. Both amplifiers have excellent characteristics and both are packaged in the same chassis with the same power transformer, so the choice of design is yours. Both amplifiers use complementary output transistors and both are constructed on fibreglass circuit boards.

Step-by-step assembly instructions and pictorial wiring diagrams are included in the kits. Construction is open for easy access to parts being assembled.

#140 or #540 Amplifier Kit (specify) one channel Circuit Board and Parts only
Shipping weight 10 oz...... **$15.95 PPd in U.S.**

#140 or #540 Complete Stereo Amplifier (consisting of two of the above kits, hassis and power supply)
Shipping weight 7 lbs. ..... **$49.95 PPd in U.S.**
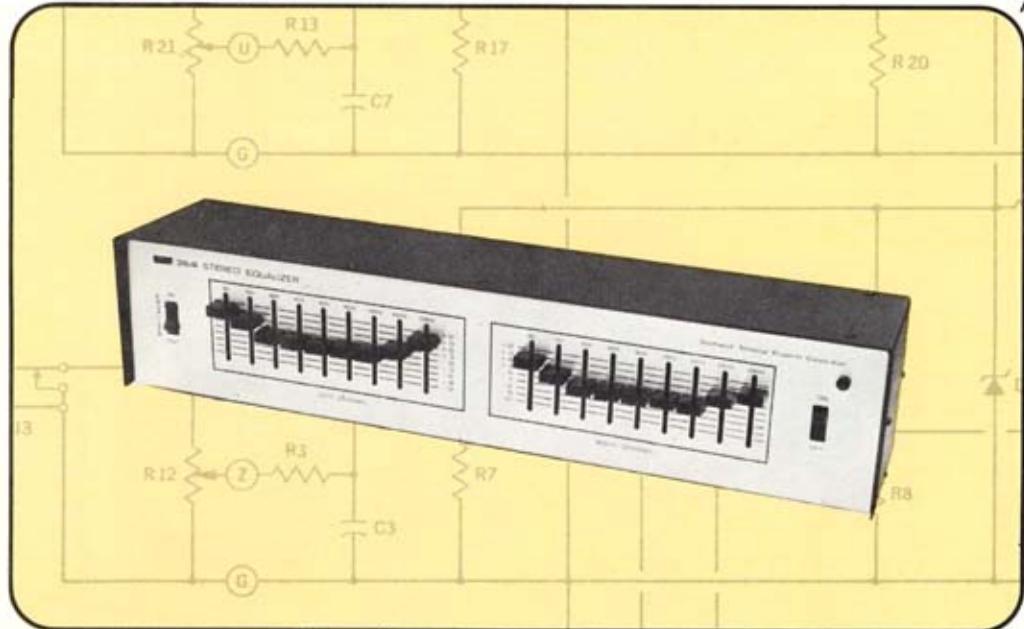
# STEREO OCTAVE EQUALIZER

## NINE INDEPENDENT CONTROLS PER CHANNEL

## ONE OCTAVE RESPONSE PER CONTROL

## UP TO ±12 dB CORRECTION

The one everyone has been asking for. Our octave equalizer is finally ready. It may have taken a while; but, we wanted to be able to offer an equalizer that was not only outstanding in performance but one that was also reasonable in cost.

As shown in the photograph, our equalizer has nine (9) independent single octave controls per channel. Each control can either boost or cut frequencies in that particular octave up to ±12 dB. Controls for each channel are separate; so the equalizer can be used to adjust each speaker exactly correct with no compromises due to ganged controls for the two channels.

The filter circuits are operational amplifier active filters. There are no inductors to pick up hum or cause ringing problems. This equalizer can be added to your system between the preamp and amplifier, or it can be connected into the tape monitor system of your preamp.

In the flat position, the frequency response is ±1.0 dB from 5 Hz to 50 KHz. Distortion is typically less than 0.1%. An octave equalizer is the ideal way of compensating for room response. It also makes it possible to compensate for small recording problems that only a narrow band filter could correct. You can bring up weak mid bass, eliminate presence peaks, etc. without affecting the rest of the music.

Our equalizer comes in an all metal enclosure with a black vinyl covered top. The front panel is satin red-gold finished. The circuit is self-powered from its own internal power supply. 110-120 Volts AC 50-60 Cycles. Size: 21¾ wide x 4 7/8 high x 5 deep.

EQ-1 Octave Equalizer Kit
Shipping weight 7 lbs. . . . . . $119.50 PPd in U.S.
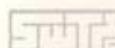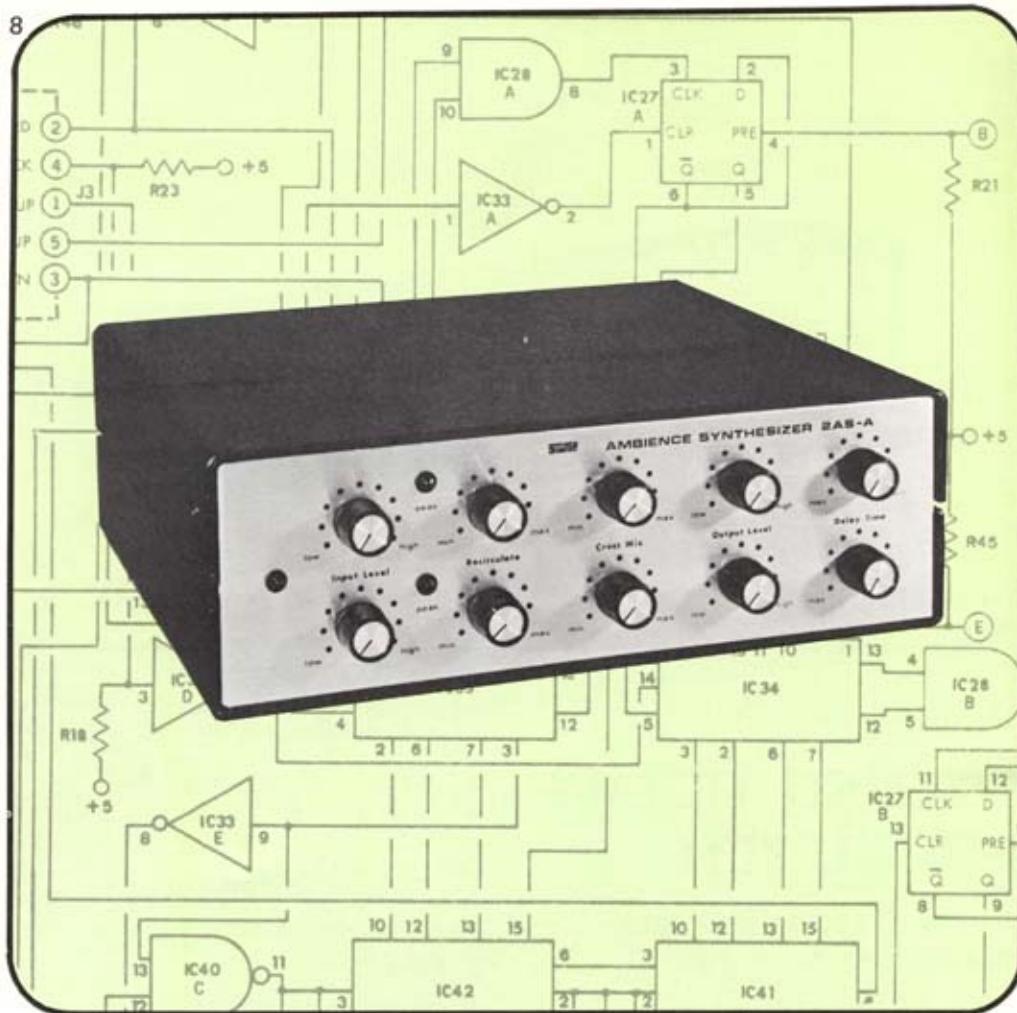
# 2AS-A AMBIENCE SYNTHESIZER

The 2AS-A Ambience Synthesizer recreates the feeling of space, or ambience that is present in a large hall due to echos from the sides and back of the room being delayed long enough in time to be distinguished from the direct sound from the stage. These delayed sounds give the feeling of size and space that is completely missing when a stereo system is used in a small room. The missing ambience sounds can be recreated by new low distortion semiconductor delay devices. By simply adding the 2AS-A and two small speakers and power amplifiers to your system you can restore much of the sense of spaciousness that music normally has when performed in a large hall.

The ambience synthesizer has controls to set the amount of delay, the amount of mixing of the two channels and level control. The kit is housed in a heavy aluminum chassis with a 120/240 Volt selfcontained power supply. Size is 11½ x 10 x 4.

2AS-A Ambience Synthesizer
Kit . . . . . . . . . . . . . . . . **$250.00 PPD in U.S.**
Shipping Weight. . . . . . . . . . . . . . . . . **9 lbs.**
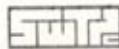
**Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas**
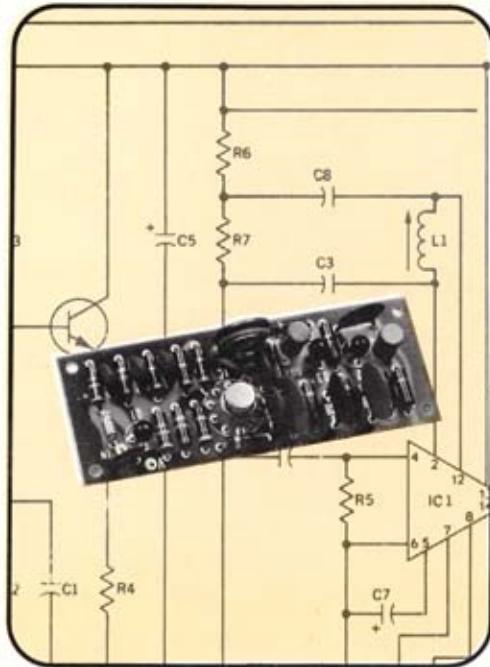
# SCA MULTIPLEX ADAPTOR

**Now get "Music Only" FM Programs**

Sensational new approach to detection of the multiplexed subcarrier used by many FM stations. This adaptor may be used with any FM radio or tuner. New "phase locked loop" integrated circuit provides both the filtering and FM detector needed to receive these broadcasts. Our kit is complete with instructions for installing the adaptor in your tuner. Power required is 12.0 Volts DC @ 100 mA.

Use of the "phase locked loop" system results in a circuit with superior rejection of unwanted interfering signals, better fidelity and requires no inductors, or tuned circuits.

**Note—Commercial use of this circuit for background music systems is illegal.**

#PLLAS - Assembled
Shipping weight 2 lbs. . . . . . $35.50 PPd in U.S.

### SPECIFICATIONS

| | |
|---|---|
| Input Impedance . . . . . . . . . . . . . | 5 Meg. Ohms |
| Output Level . . . . . . . . . . . . . . . . | 1.0 Volt |
| Detection Range . . . . . . . . . . . . . | 50-80 KHz |
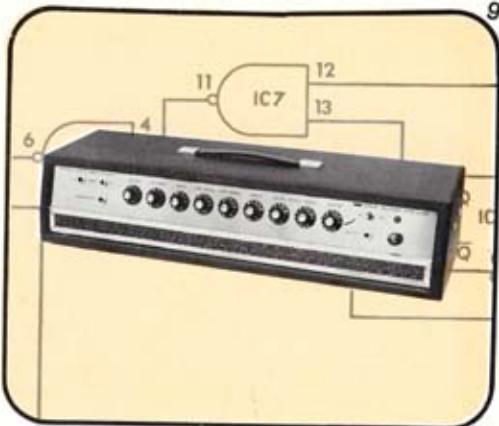
# GUITAR and INSTRUMENT PREAMP

## NEW "NOTCH" TYPE TONE SYSTEM
## THE ULTIMATE IN FLEXIBILITY

The #211 instrument preamp combines the latest in tone controls "the notch system" with active filters to give the ultimate in tone flexibility. The rejection notch makes it possible to greatly reduce the range of fundamental sound from your instrument and allow only the harmonics and overtones to be amplified. In addition, the active filter system allows you to completely eliminate bass, or treble frequencies; or to mix them together in any proportion. Here at last is a front end that can be used for almost any instrument. It is ideal for bass, but also has all the flexibility and features you need for lead instruments.

The #211 is powered by an internal supply requiring only 110-120 Volts AC. The preamp will drive almost any power amplifier, PA, or sound system. Maximum output is over 5.0 Volts RMS in a 10K load. The preamp is housed in a black vinyl cabinet with silver trim. The cabinet is finished and ready for the electronic portion of the kit. Cabinet is 25 x 6½ x 7½.

#211 Guitar and Instrument Preamp Kit
Shipping weight 7 lbs. . . . . . $106.50 PPd in U.S.

**Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas**

**LESS THAN .01% DISTORTION**
**NOISE — 75 db BELOW FULL OUTPUT**
**± 1 db from 1 to 500,000 Hz**
**FOR PHONO CARTRIDGES, TAPE**
**HEADS, OR MICROPHONES**

# THEREMIN ELECTRONIC MUSICAL INSTRUMENT

A modern, solid state version of the Theremin all electronic musical instrument. Two antenna plates, operated by hand capacity, control the pitch and volume of the sound. Add this to your combo for a really unique and different sound.

Our revised version of this instrument now has fully shielded coils and a new tuning circuit. Adjustments are fast and noncritical. The rugged vinyl covered cabinet matches our MMM Instrument amplifier.

#142 Complete kit for Theremin—with cabinet & Antenna . . . . . . . . . . . . . **$28.95 PPd in U.S.**

## SPECIFICATIONS

Controls . . . . . . . . . . Pitch - Zero set - Volume
Approximate Sound Range . . 30 to 15,000 Cycles
Volume Range. . . . . . . . . 50 to 60 dB Change
Power. . . . . . . . . . . . Internal 9 Volt Battery
Shipping Weight. . . . . . . . . . . . . . . . . 4 lbs.

# 195 PREAMP

We are happy to be able to offer a really outstanding preamp module for those who enjoy building up their own systems. The #195 preamp is designed using integrated circuit techniques; but, by using descrete components, much better characteristics are obtained. It is impossible to get really superior noise figures in an IC preamplifier due to the processing steps that are required, each of which tends to add noise. It is also impossible to get precise resistor values and difficult to make both NPN and PNP transistors on the same chip. Our seven transistor circuit is a basic op amp type system. You add the equalization needed for your application, just as you would with an IC' op amp module. The 2 x 2 fibreglass circuit board is designed so that it may be wired, or plugged into PC edge connectors. Distortion is less than .01% at any audio frequency. Suggested power supply is ±15 Volts DC @ 10 Ma. which may be obtained from any of our power amplifiers except #140.

#195 Preamp Kit
Shipping weight 8 oz. . . . . . . **$11.50 PPd in U.S.**
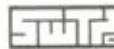
Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas
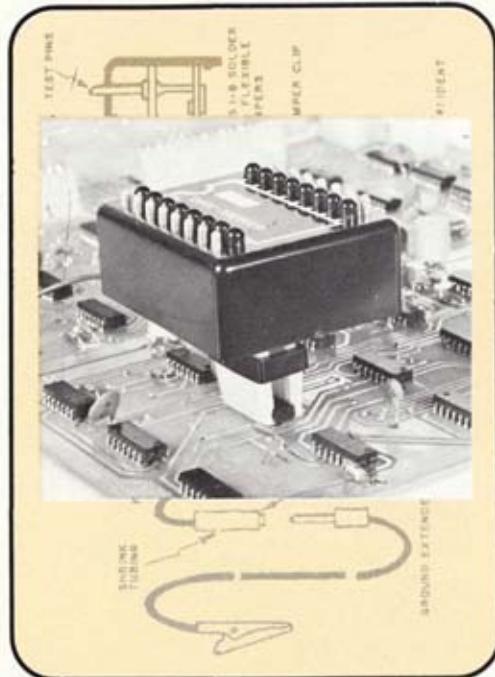
# DIGI-VIEWER II

## IN-CIRCUIT IC TESTER

## CHECKS STATIC AND DYNAMIC OPERATION

## COMPACT—CIRCUIT POWERED

## FAST LONG LIFE LED INDICATORS

In-circuit testing of digital IC's is now easier than ever with our new VU-II. This neat compact little instrument features LED indicators, automatic power connection, test points for each pin and a positive locking clip. No where else can you get a tester of this type with all of these features. The LED lamps show at a glance the logic state of each pin on the circuit being checked. The fast response of the LED indicator lamps makes it possible to also check high freqency dynamic response. The special locking type test clip insures safe—no slip—testing of the pack. Convenient test pins on the top of the case make simultaneous scope testing easy and safe.

#VU-II Kit—as illustrated . . . **$19.50 PPd in U.S.**

# PSYCHEDELIA III

## "CLASSICAL" FILTER SYSTEM

## 4 – 800 WATT CHANNELS

## WORKS WITH ANY SOUND SYSTEM

The best of its type. Psychedelia III is the only color organ available using a ramp triggering system. This unique system, pioneered by SwTPC, produces a light output that is closely proportional to the sound level in each channel. There are no circuits that produce a lag in light response, other than the lamps in the display itself. Lamp power is changed at a 60 per second rate.

The four channels are generated by op amp driving active filters. These filters have 12 dB per octave slopes to minimize crosstalk and bleed through from one channel to another. The input is transformer isolated and may be connected to any speaker terminals with safety. Due to the sensitivity of this circuit, only a fraction of a Watt is needed to drive the system and, as a result, the connection cannot possibly affect your sound system in any way.

Psychedelia III corrects automatically for variations in sound level. A compressor circuit with 40 dB range allows you to operate your system at any level from 5 Milliwatts to 50 Watts without readjusting the color organ controls. This completely eliminates the need to reset sensitivity every time you change the volume.

QXIII - Four Channel Kit . . . **$49.95 PPd in U.S.**

QXIII A - Assembled Kit. . . . **$84.50 PPd in U.S.**

### SPECIFICATIONS

| | |
|---|---|
| Dimensions (circuit board w/parts) | 8¼ x 5½ x 2½ |
| Input Impedance: Stereo | .100 Ohms |
| Monaural | 50 Ohms |
| Bands: Low | approximately 60 Hz - 240 Hz |
| Med. Low | 240 Hz - 960 Hz |
| Med. High | 960 Hz - 3840 Hz |
| High | 3840 Hz - 15,360 Hz |
| Power Handling Capability | .800 watts of 117 Volt lamps per channel |
| Circuitry Power Requirements | 117 Volts 100 Watts |
| Shipping Weight | 4 lbs |

Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas

# FUNCTION GENERATOR



SINEWAVE    TRIANGLEWAVE

SQUAREWAVE    POSITIVE    RAMP

**0.1 Hz to 0.1 MHz**

PULSE    POSITIVE
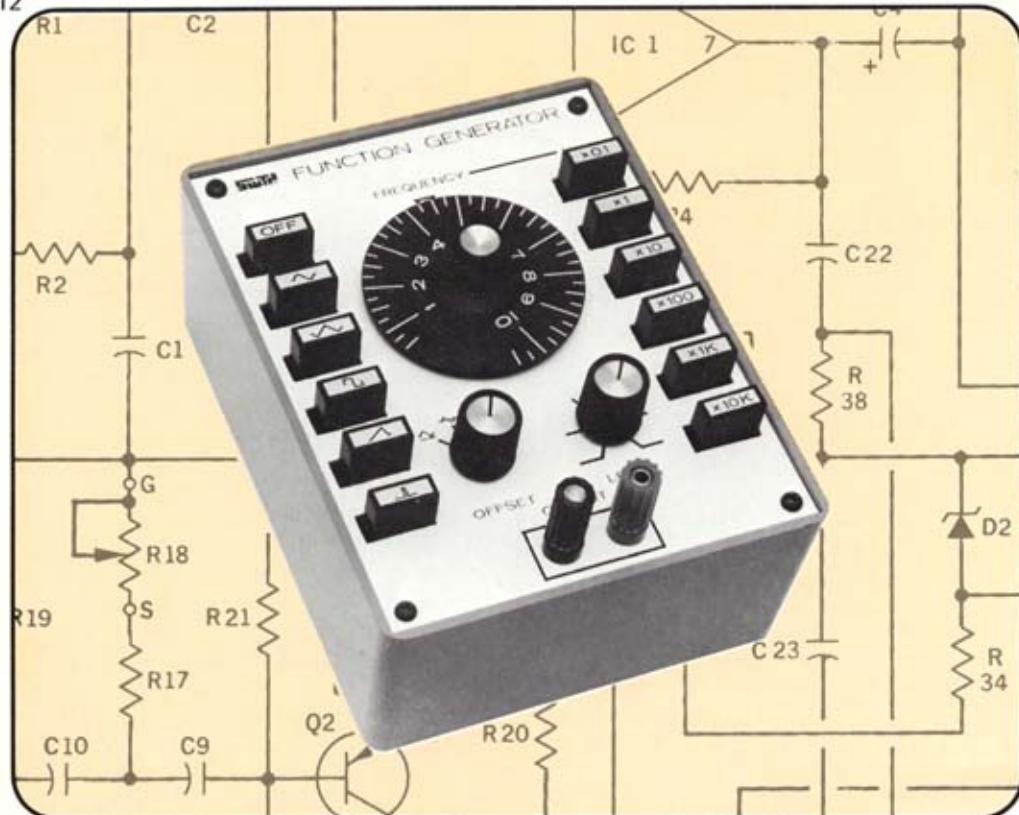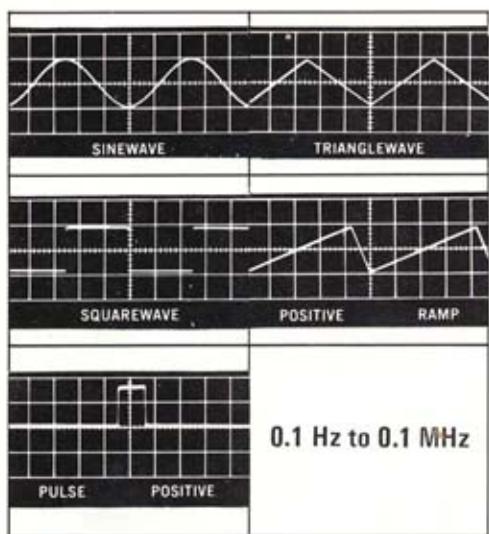
Now, thanks to IC technology, everyone can afford one of these versatile waveform generators. This is the ideal general purpose signal generator. Use it for checking audio equipment, digital circuits, sweep circuits, or anywhere you need a variety of waveforms.

Construction is very simple due to extensive use of circuit boards. Only the offset, level and frequency controls are wired. Our kit features switch selection of waveform, frequency range and type of offset. Output amplitude is constant to less than ±1 dB on any range and with any waveform. Sine wave distortion is less than 1% from 20 to 20,000 cycles. Square wave and pulse rise times are less than 0.25 microseconds. Accuracy is 1% on the range calibrated and better than 5% on all other ranges.

The instrument is housed in an impact plastic case for maximum drop protection. Case size 5¼ x 6¾ x 2½. Power required 115 Volts AC.

#FG-2 Function Generator Kit
Shipping weight 3 lbs. . . . . . **$61.50 PPd in U.S.**
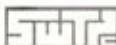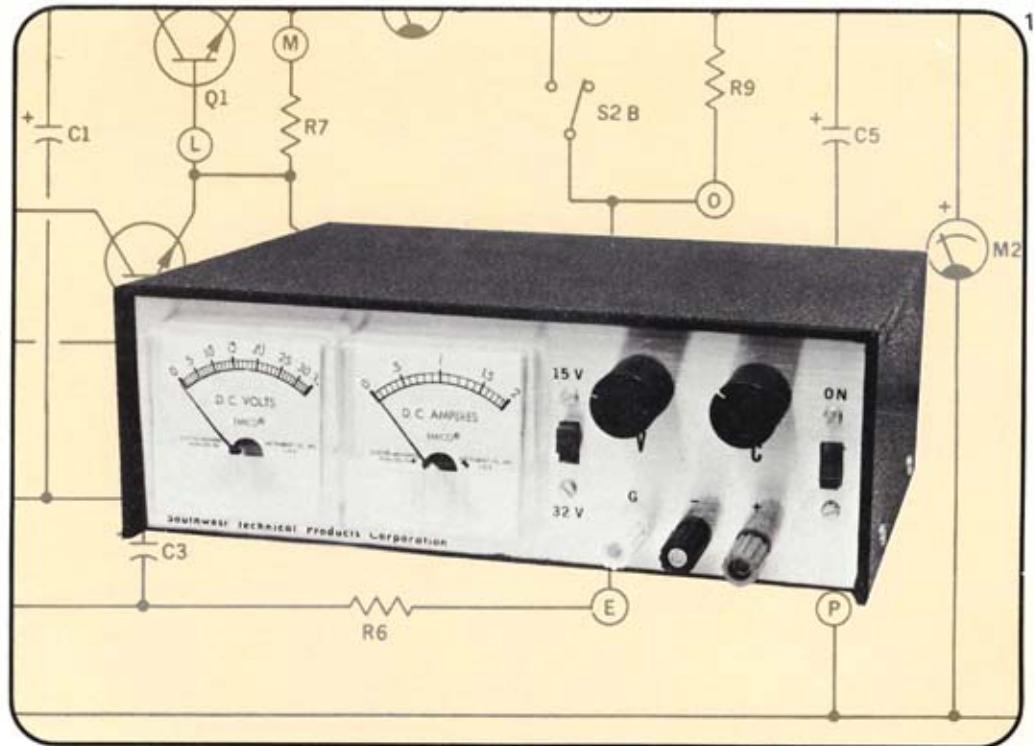
# SHORT PROOF POWER SUPPLIES

## SINGLE POLARITY
### 0 to +35 VOLTS DC 0-2 AMPS

High capacity 0-2 Amp Power supply for use where only a single polarity power supply is needed. May be used for either positive, or negative ground circuits. Voltage is adjustable from 0 to 15 and from 15 to 35 Volts. Current limiting is adjustable from 10 Ma. to 2.0 Amps.

Cabinet is all metal with vinyl covered top, and a brushed gold front panel.

#143 Power Supply Kit
Shipping weight 8 lbs. . . . . . $57.95 PPd in U.S.

### SPECIFICATIONS

Regulation. . . . . . . . . . . . .1% or 0.1 Volt for
. . . . . . . . . . . . . . . . . . 100% load change
Ripple . . . . . . . . . . 0.3% or 10 Mv. Maximum
Voltage Range. . . . . . 0-15 and 15-35 Volts DC
Input . . . . . . . . . . . . . . . 110 to 125 Volts AC

## DUAL POLARITY
### 0 TO ±20 VOLTS DC 0-1 AMP

The ideal power supply for operational amplifier circuits and any others requiring a split polarity power supply voltage. The voltage control changes both the positive and negative output voltage by equal amounts when adjusted. Current limiting range is 50 Ma. to 1.0 Amp.

Cabinet is same as single polarity type.

#243 Power Supply Kit
Shipping weight 8 lbs. . . . . . $57.95 PPd in U.S.

### SPECIFICATIONS

Regulation. . . . . . . . . . . . ..05% or 0.1 Volt for
. . . . . . . . . . . . . . . . . 100% load change
Ripple . . . . . . . . . . . . .02% or 5 Mv. Maximum
Voltage Range. . . . . . . . . . .0 to ±20 Volts DC
Input . . . . . . . . . . . . . . . 110 to 125 Volts AC
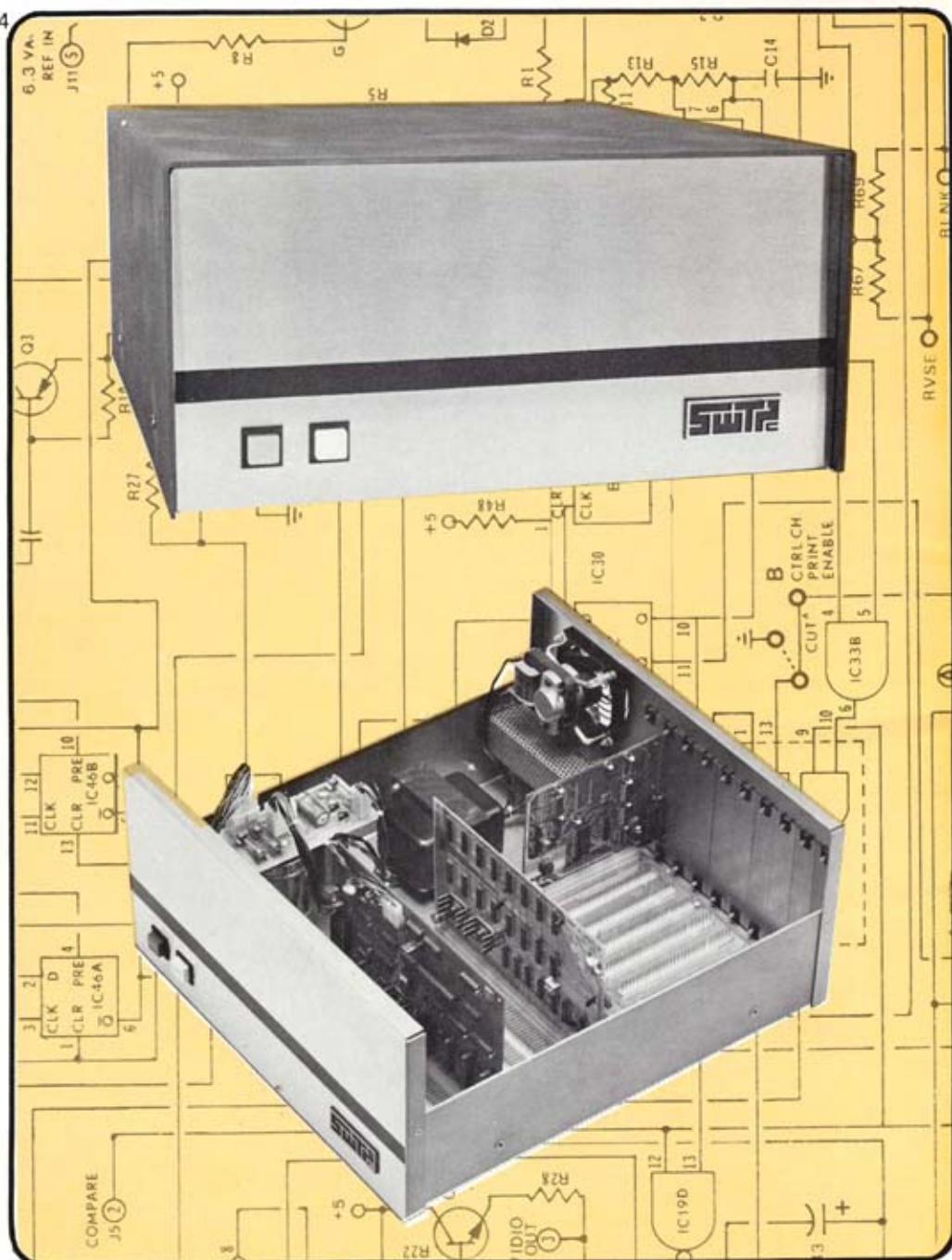
Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas

# 6809 COMPUTER SYSTEM

# 6809 COMPUTER SYSTEMS

Our systems are designed around the Motorola MC6809 microprocessor. This is the most powerful eight-bit microprocessor available today.

The MC6809 has more addressing modes than any other 8-bit processor. It has powerful 16-bit instructions and a highly efficient internal architecture with 16-bit data paths. It is easily the most powerful, most software efficient, and the fastest 8-bit general purpose microprocessor ever.

The greatest impact of the Motorola MC-6809 undoubtedly will be software related. Ten powerful addressing modes with 24 indexing submodes, 16-bit instructions and the consistent instruction set stimulate the use of modern programming techniques, such as structured programming, position independent code, re-entrancy, recursion and multi-tasking.

The MC6809 system is the only 8-bit processor designed for the efficent handling of high-level languages. Versatile addressing modes, an orthogonal instruction set and optimized data manipulation on stacks allows the efficient execution of block-structured high-level code such as generated by compilers like PASCAL.

Two sizes of central processors are available. The /09 which has a maximum random access memory (RAM) capacity of fifty-six thousand bytes (56K) and the S/09 which has a maximum RAM capacity of 768K. Either can have as many as sixteen input/output (I/O) devices such as printers, terminals, etc attached.

The /09 may be used with up to four terminals in educational installations or applications where a large amount of user memory is not required. In business applications this processor should be limited to single user installations.

The S/09 has a twenty-bit address bus and a memory management system. This allows it to directly address and access up to a million memory locations and to efficienly allocate this memory among the various users or taskes. Memory allocation is a dynamic system that can reallocate memory when it is no longer needed.

The S/09 with its ability to directly address up to a million memory locations is ideal for larger business systems, or for installations where both word and data processing are needed. This processor is normally supplied with 128K bytes of RAM memory, which can be expanded by plugging in additional array boards in 128K increments.

The number of terminals or other I/O devices that can be connected to the system will depend upon how intensively the terminals are being used. Six to eight will normally be reasonable and up to sixteen are possible in low data rate applications. The S/09 with a multi-tasking, multiuser operating system can simultaneously be used for data processing, word processing, environmental control and security applications. This main frame type capability makes it possible for only one computer to do all the processing jobs needed by a business.

| S/09 | 6809 Computer w/128K memory, shipping wt. 32 lbs.............$3,245.00 |
| S/00 | S/09 w/o Processor or Memory Card, shipping wt. 35 lbs............$ 490.00 |
| /09 | 6809 Computer w/56K memory, shipping wt. 32 lbs..............$1,595.00 |
| 69/A | 6809 Computer w/ 8K memory, shipping wt. 31 lbs...............$ 595.00 |
| 69/K | 6809 Computer Kit w/8K memory, shipping wt. 37 lbs............$ 495.00 |

**Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas**

# CT-82 TERMINAL SYSTEM

Until recently all terminal functions were designed with hardware logic. A relatively simple terminal with limited functions could easily require as many as sixty or more integrated circuits. More sophisticated terminals with a moderate amount of intelligence could easily have over a hundred IC's. All this has now changed. With the introduction of MOS video controller circuits it has become possible to design a terminal using a controller and a microprocessor that will perform almost any imaginable function with software. The CT-82 has one hundred twenty-eight separate functions—all of which are software driven. It contains fewer parts than most "dumb" terminals.

The normal screen format is 16 or 20 lines (selectable) with 80 characters per line. This is an upper-lower case display with a 7 x 12 dot matrix. The high resolution characters are displayed on a Motorola Data Products M-2000 series monitor with a green P-31 phosphor. This monitor has a 12 MHz video bandwidth and dynamic focus circuits to insure a crisp well focused display over the entire face of the tube. A highly effective contrast enhancing, antiglare screen in front of the tube reduces problems with room light reflections without any defocusing or fuzzing of the display.

A limited resolution graphics character set is provided with a resolution of 184 x 66 pixels. The upper case portion of this graphic character set provides a 92 column x 22 line format. In this mode the lines may be moved together to give a solid figure or line. Direct cursor addressing combined with the plotting capability makes it possible to indicate the end points of a line and then to automatically draw a line between them.

The character generator used in the CT-82 is a standard Motorola "65" series part. Others in this series may be substituted for foreign languages, or special symbols that may be desired instead of the standard upper-lower case English set supplied. Both the control ROM and the character generator have sockets provided for alternate material in the form of an EPROM. This makes it possible to have special terminal functions or character sets that can be switched in under computer control.

The CT-82 has its own internal editing function. This allows inserting and deleting lines and characters, erasing quadrants or lines; doing rolls, scrolls, slides and other similar functions. The CT-82 can block transmit completed material to the computer or output material to its own remote printer through the built-in parallel printer I/O port. The terminal can be programmed to operate at any system baud rate that is normally used from 50 to 38,400. The baud rate may be changed at any time within this range with a software command.

The cursor position, type of cursor, cursor ON—OFF and blinking are all provided. A command is provided to print control characters and also turn on and off a tape punch or tape reader. Protected fields, shift inversion, dual intensity and many other miscellaneous features make the CT-82 one of the most flexible terminals available.

A fifty-six key alphanumeric keyboard plus a twelve key cursor pad is standard. A numeric pad may be substituted for the cursor pad (optional). Connection to the terminal is through a standard DB-25 connector and RS-232 signal levels. The CT-82 operates from 100, 115, 220, or 240 VAC at 50 to 60 Hz. It weighs 20 lbs. and is a compact 18 wide, 10 high and 18 inches deep.

CT-82 Intelligent Terminal, assembled and tested . . . . $895.00  F.O.B. San Antonio
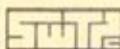
## CONFIGURE CURSOR
display cursor
suppress cursor display
set blinking cursor
set block cursor
set non-blinking cursor
set underline cursor

## CURSOR CONTROL
bump cursor down
bump cursor left
bump cursor right
bump cursor up
cursor off
cursor on
home down
home down to right
home up
home up to right
move cursor down
move cursor left
move cursor right
move cursor up
set cursor position (Y,X)
set cursor position (X,Y)
set horizontal cursor position
set vertical cursor position

## ERASES
backspace
cancel
erase field
erase north east quadrant
erase north west quadrant
erase south east quadrant
erase south west quadrant
erase to beginning of frame
erase to end of frame
erase to beginning of line
erase to end of line

## ROLLS AND SLIDES
roll down north east quadrant
roll down north west quadrant
roll down south east quadrant
roll down south west quadrant
roll up north east quadrant
roll up north west quadrant
roll up south east quadrant
roll up south west quadrant
scroll down
scroll up
slide screen left
slide screen right

## INSERTS AND DELETES
delete character, left
delete character, right
insert character, left
insert character, right
insert line, down
insert line, up
delete line, down
delete line, up

## CONFIGURE SCREEN
set CRT display format I
set CRT display format II
set CRT display format III
set CRT display format IV
set graphics CRT format

## GRAPHICS
clear graphics dot
invert graphics dot
set graphics dot
clear graphics line
invert graphics line
set graphics line
pitch down graphics screen
pitch up graphics screen
yaw left graphics screen
yaw right graphics screen

## TELETYPEWRITER FUNCTIONS
bell
carriage return
form feed
line feed
line unfeed

## CONFIGURE CR/LF
disable automatic line feed
enable automatic line feed
disable automatic new line
enable automatic new line
disable scroll on line feed
enable scroll on line feed

## MISCELLANEOUS
display byte in hex
display number in decimal
read cursor position
read light pen position
transmit (screen read)

## CHARACTER CONTROL
change control character
display control character
null
clear character protect bit
set character protect bit
set background mode
set foreground mode
disable rubout as data
enable rubout as data
disable escape character
enable escape character
honor character protection
ignore character protection
write protected characters
write unprotected characters

## DEVICE CONTROL
enable terminal printer passthru
disable terminal printer passthru
punch off
reader off
reader on

## CONFIGURE INTERFACES
enable upper and lower case
set upper case only
set conversational mode
set paged edit mode
set full duplex
set half duplex
set baud rate
enable shift inversion
disable shift inversion

## CONFIGURE MODES
clear escape data mode
set escape data mode
clear graphics cursor mode
set graphics cursor mode

## LEADIN CHARACTERS
data link escape
escape
Group B control sequence
Group C control sequence
option bit control
optional ROM control sequence
set leadin character
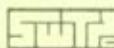
# 6809 SOFTWARE

**Optimizing Assembler**—The SWTPC 6809 resident assembler is a very powerful disk assembler designed to provide a versatile programming tool. It has many special features added to support structured programming techniques and enhance code modularity and readability. In addition, the assembler provides a multi-pass optimizer that attempts to reduce the size and execution time of assembled object code. Two options are provided to selectively disable certain types of optimization in order to reduce the time required for an assembly. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$ 99.00**

**Text Processing Editor**—The SWTPC Word Processing Editor makes it simple to create all kinds of written work: anything from a short letter to a massive legal document can be done faster, easier, better with the Editor's help. It's capabilities include: automatic carrier return, global search and replace, verification, search, display text on the screen, copy or move text, delete, insert, automatic margin adjust and repeat.. . . . . . . **$ 99.50**

**Text Processing Editor and Text Processor**—This package includes the Editor described above as well as powerful text formatter. Print format is controlled by two-letter mnemonic comands which are typed in as a part of the text. Because the individual commands are quite extensive and can be combined to do complex jobs, it is possible to achieve almost any print format, including precise control of footnotes, headers and trailers of any size, titles, multiple spacing, indentations, etc. The Formatter's capabilities include: left, right and even justification, automatic pagination, page and paragraph numbering, centering, underscoring and conditional commands .. . . . . . . . . . . . . . . . . . . . **$149.50**

**Inventory**—Our inventory program may be used in almost any type inventory application. It is extremely flexible since the number of fields, the field size and names assigned to the fields are determined by the user. The program includes an edit function that allows you to change data for any item. Inventory also includes a "search" feature that allows you to match on any one field, or a combination of fields. Inventory is written in TSC Extended BASIC and is compatible with all FLEX utilities, such as Sort-Merge. . . **$ 99.50**

**Mail List**—The Mail List program like the inventory program described above may be used in most mail list applications. It offers the same flexibility in the number of fields, field size and field names. Edit and search functions are, of course, included. Mail list is written in TSC Extended Basic and is compatible with all FLEX utilities, such as Sort-Merge.. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$ 99.50**

## TSC SOFTWARE FOR 6809 SYSTEMS

Southwest Technical Products stocks the following TSC software for 6809 systems running FLEX-09. All programs are available on either 5-inch or 8-inch disks at the price shown, please specify.

**TSC TEXT EDITING SYSTEM**—One of the most complete line editors available. It is an efficient fast content oriented type editor with all of the standard text editing commands, including COPY, MOVE, CHANGE, DELETE, INSERT, OVERLAY and APPEND. Another set of commands allows for easy positioning of the line pointer.**$ 35.00**

**TSC MNEMONIC ASSEMBLER**—One of the most versatile assemblers available. It is many times faster than many other resident assemblers due to an extremely efficient label handler. All standard assembler language mnemonics are supported. Labels may be any length with six characters significant. ............................**$ 40.00**

**TSC BASIC**—Chances are there will NEVER be a faster BASIC interpreter for the 6809. TSC BASIC takes full advantage of all the advanced features of the 6809 to put all other BASIC's to shame. It includes a full command set, floating point math, scientific functions, etc., plus sequential, random and record files. This BASIC will make it obvious just how inferior the 8080, Z80 and 6502 really are. ..................**$ 65.00**

**TSC DEBUG PACKAGE**—The TSC Debug Package is an extremely powerful and complete assembler language program debugging tool which is capable of simulating all functions of the 6809 microprocessor including interrupts and I/O operations. It is ideal as a substitute for hardware logic analyzers or CPU emulators at only a fraction of the cost.......................................**$ 75.00**

**TSC EXTENDED BASIC**—All the features of regular BASIC—and more. Floating point calculations are carried out to an internal accuracy of 17 digits. Most math functions are accurate to 16 digits, with a minimum accuracy of 13.5 digits. It has PRINT-USING capabilities which include dollar and asterisk fill, trailing minus sign, and imbedded commas. This is the most complete BASIC ever offered to micro users, but with no sacrifice in speed. You will not believe how fast a 14 digit BASIC can be......**$100.00**

**TSC BASIC PRECOMPILER**—This program allows the creation of BASIC programs without the use of line numbers or restrictive two-character variable names. Alphanumeric line and subroutine labels may be used, as well as variable names of any length. Comment lines are marked with non-alphanumerics for easy readability. The output of the pre-compiler is in the standard BASIC compiled form. This allows application programs to be written, precompiled, and then distributed in a non-source form. .........**$50.00**

**TSC MULTI-USER BASIC**—Extended BASIC with provision for multi-terminal operation. Only additional serial interfaces are needed to create a multi-user system. One of the best features of the 6809 is that multiuser systems are possible without the additional expensive multiplex circuits or the slow speed of software multiplex systems...**$150.00**

**TSC SORT-MERGE**—This program allows any size and type of file to be sorted. It is written in assembly language and is extremely fast. Sort parameters may be supplied as part of the command line thru use of a parameter editor, or thru an existing parameter file. The program is a full-disk sort/merge. Files too large to fit into RAM memory are broken into temporary work files which are individually sorted and then merged into one. It accepts fixed, or variable length records and up to 20 ascending or descending keys, non-ASCII sequences and more.....................................**$ 75.00**

**TSC FLEX-09 UTILITIES**—Complete set of additional DOS utilities ranging from memory dump to disk diagnostics. Includes manuals and source listings. ...........**$ 60.00**

**TSC 6809 DIAGNOSTICS**—Included in the memory diagnostics are zeroes and ones test, random pattern test, walking bit tests, dynamic RAM dropout test, and a convergence test. The disk repair portion package contains utilities which operate on a FLEX-formatted diskette. Included are utilities which report structural inconsistencies among the files, utilities for recovering data from diskettes with unreadable directories, a program to retrieve deleted files, a single-sector read/write/modify routine, and a copy utility which ignores CRC errors. The manual includes descriptions of the diagnostics, some background information of types of errors, and troubleshooting guides..........**$ 75.00**

# MEMORY EXPANSION BOARDS

All expansion memory cards have full buffering on all data, address and control lines for reliable, noise immune operation. Expansions are standard SS-50 bus compatible.

## 6800, /09, 69A, 69K Memory Expansion—

| | | |
|---|---|---|
| MP-8M | Memory expansion kit 8K, shipping weight 1 lb. | $ 200.00 |
| MP-8A | Memory expansion assembled 8K, shipping weight 1 lb. | $ 235.00 |
| MP-16 | Memory expansion assembled 16K, shipping weight 2 lb. | $ 400.00 |
| MP-32 | Memory expansion assembled 32K, shipping weight 2 lb. | $ 650.00 |

## S/09 Memory Expansion—

The S/09 memory consists of a controller card and array cards. The controller can service up to three array cards.

| | | |
|---|---|---|
| 3809 | Memory expansion, 128K array card, shipping weight 3 lbs. | $2,095.00 |

# INTERFACE EXPANSIONS

Dual interface cards for our 6809 computer systems. The mainframe must have the RESET button on the left side of the chassis. Assembled and tested supplied with hardware needed to mount in chassis.

| | | |
|---|---|---|
| MP-S2 | Dual Serial Interface, shipping weight 1 lb. | $ 99.50 |
| MP-L2 | Dual Parallel Interface, shipping weight 1 lb. | $ 99.50 |

# ACCESSORY BOARDS

## Interrupt Timer Interface—

The MP-T programmable interrupt timer provides software selectable interrupts of 1 usec, 10 usec, 100usec, 1 msec, 10 msec, 20 msec, 100 msec, 1 sec, 100 sec, 1 min, 10 min or 1 hour. This provides a highly flexible clock system for a variety of computer applications. The MP-T can be used to set sampling rates, to provide interrupts for special applications, or simply to keep the computer updated in real time. The interface is completely software programmable by the user with interrupt control as well as polarity control of the input port handshake lines. Power is provided by the I/O connector on the computer.

| | | |
|---|---|---|
| MP-T | Interrupt Timer option (kit), shipping weight 1 lb. | $ 47.50 |

## MP-N Calculator Interface—

The MP-N is a calculator interface board for the computer system. This board makes it easy to do arithmetic functions within machine language programs while simultaneously conserving program memory. All necessary interface subroutine listings are supplied with the kit for maximum simplicity and ease of use. The interface uses the National Semiconductor MM-57109 Number Oriented Processor and features Reverse Polish Notation, floating point or scientific operation, up to an eight digit mantissa and two digits exponent, four register stack, memory register, trig functions, base ten and natural logarithms and overflow indicator. The board plugs onto one of the seven interface card positions and is powered by the computer system's power supply.

| | | |
|---|---|---|
| MP-N | Calculator Interface option (kit), shipping weight 1 lb. | $ 54.95 |
| MP-NA | Calculator Interface option assembled, shipping weight 1 lb. | $ 80.00 |

## MP-R 2716 EPROM Programmer—

The MP-R EPROM Programmer programs and verifies ultraviolet light erasable 5-volt 2716 EPOM's. The EPROM to be programmed is plugged into a socket near the top edge of the board. All software necessary to operate the board is supplied with the kit and includes providisons for testing, verifying, and copying 2716 EPROM's. The high voltage supply necessary in the programming process is supplied by an on-board DC to DC inverter so that no external AC supplies are required. Power consumption for the board is approximately 0.4 A during programming and 0.15 A while idle.

| | | |
|---|---|---|
| MP-R | EPROM Programmer option (kit), shipping weight 1 lb. | $ 49.95 |
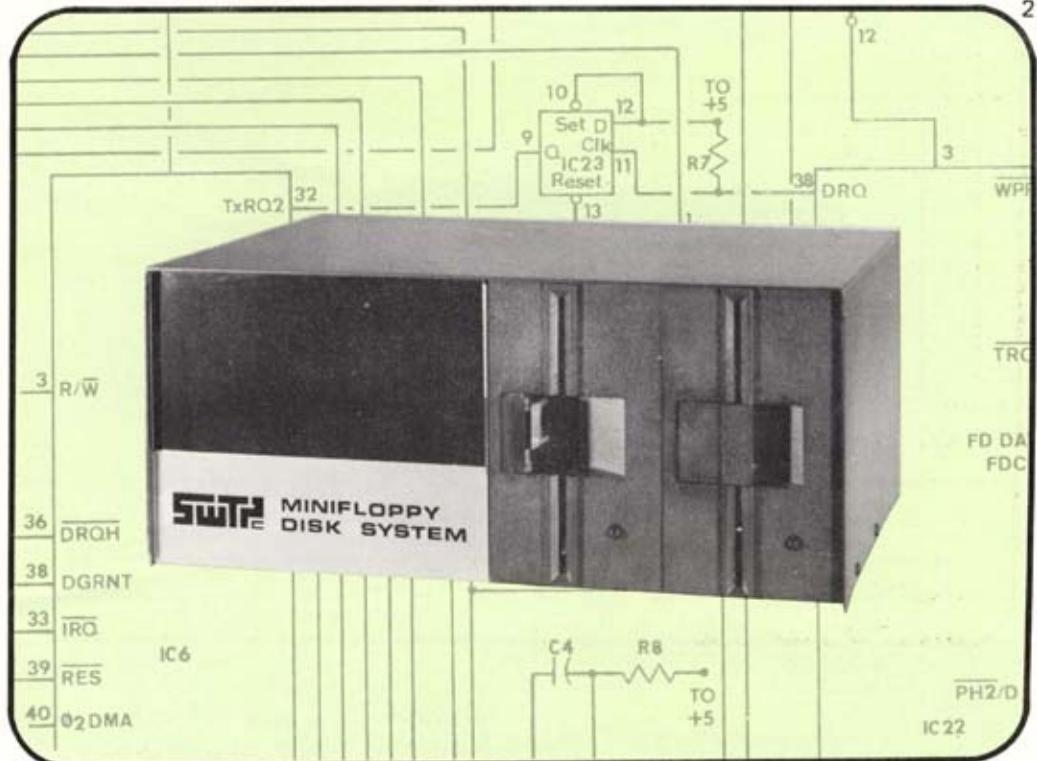
# MF-69
# FLOPPY DISK

The MF-69 is a dual drive 5¼ inch floppy disk unit. The drives are double headed and each diskette can store 195,000 bytes of data, giving a total on line storage capacity of 390,000 bytes.

The disk controller plugs into the I/O (30-pin) bus of the 6809 computer system and connects to the MF-69 with a 34 conductor ribbon cable. The disk unit requires a minimum RAM memory in the computer of 32K bytes. The DOS requires 8K of RAM beginning at hex C000.

The unit is supplied with FLEX 9 as the operating system. This DOS is very powerful and yet easy to learn and comfortable to use. Some of its features are dynamic filespace allocation, random and sequential file accessing, batch job type program entry, user startup facility, automatic drive searching, file dating, space compression, complete user environment control, English error messages, and over 40 utilities. A users manual for FLEX 9 and its utilities, plus an advanced programmers guide are included with the unit.

The unit includes the cabinet, power supply, controller, two double headed drives, connecting cables, diskette with DOS and DOS manual. The cabinet is 14 inches wide, 6 inches high and 10 inches deep. The unit can be expanded to four drives with the addition of two more drives with power supply.

MF69A Floppy Disk Unit
    assembled and tested. . . . . . . . .$1,195.00
MF69X Drive Expansion
    assembled and tested. . . . . . . . .$  995.00
**Shippling Weight 20 lbs. either unit.**
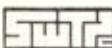
Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas
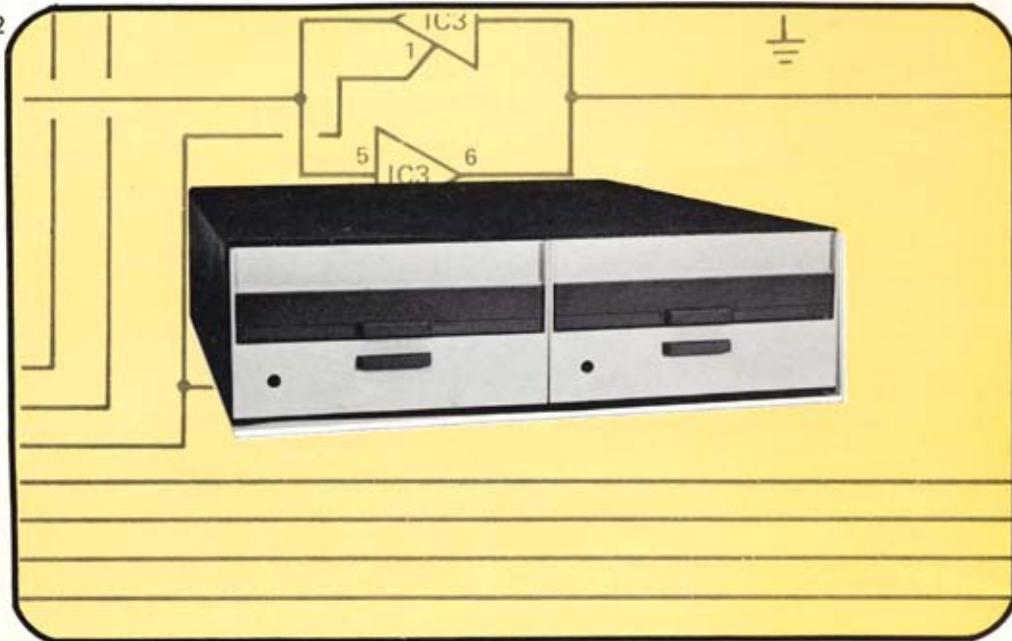
# DMF2

The most reliable, cost effective disk unit ever designed for the SS-50 bus is now available. The Southwest Technical Products Corp. DMF-2 disk unit provides 2.5 M/bytes of usable, formatted on-line storage. It offers the lowest cost per byte available on floppy disks at this time.

The DMF-2 features Qume DATATRAK 8 double headed eight-inch drives. We consider these to be the best drives we have ever tested. The 17½" W x 5" H x 21½" D cabinet is made from 1/8 inch thick aluminum and finished with a super tough textured epoxy. The power supply has 115/230 volt capability and will operate from either 50 or 60 Hz. mains.

The controller card is a direct memory access type circuit, using the 6844 DMA controller and a 1791 double density disk controller. This type circuit has a much higher data transfer rate than simple sector buffer type circuits and it also imposes far less overhead on the processor. The critical phase lock and data separator circuits use 1% components and time proven circuits to insure long term reliability. We find no statistical difference in the error rate of this controller and our single density controller.

The DMF-2 is supplied with the FLEX -09 operating system. You can format and record in either single or double density. FLEX is the world standard disk operating system for the MC6809 and is available for almost all 6809 family hardware, whatever the source.

The DMF-2 system includes the cabinet, power supply, controller, connecting cable, diskette with FLEX -09, two drives and instruction manual. Shipping weight is 53 pounds.

DMF-2 Dual Double Density Disk Unit
assembled and tested. . . . . . . . . .$2,495.00

DMF-2 Controller board retrofit for converting DMF-1 single density systems
assembled and tested. . . . . . . . . .$ 395.00
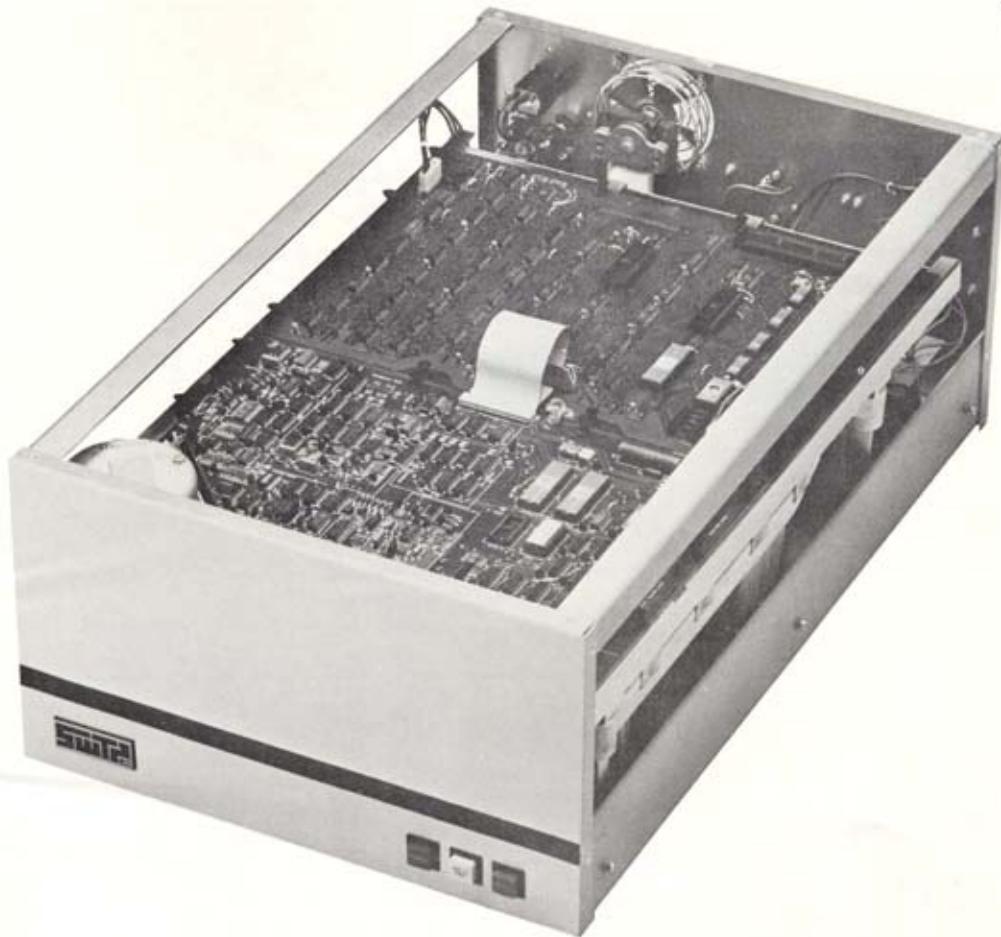
# CDS-1

State of the art "Winchester" type hard disk with a data storage capacity of nearly 16 Megabytes, makes the SWTPC 6809 system the most flexible as well as the most powerful eight-bit microcomputer system in the world. The intelligent controller, using DMA data transfer, makes maximum use of the "Winchester" capability. It is completely compatible with the FLEX9 operating system used on the SWTPC 6809 floppy disk system.

**CDS-1** "Winchester" disk drive with controller
Shipping weight 115 lbs.. . . . . . . . . . . . . . . . .$4,395.00

**Cabinet**—matching our 6809 computer desk
Shipping weight 70 lbs.. . . . . . . . . . . . . . . . .$  150.00



Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas
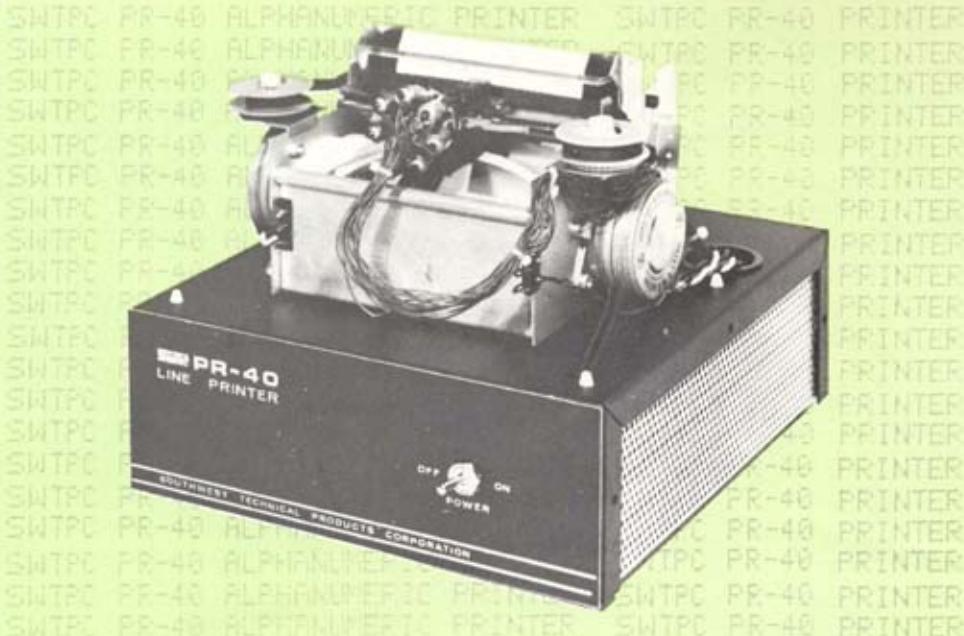
# PR-40 ALPHANUMERIC PRINTER

Been looking for a reasonably priced printer? The SwTPC PR-40 may be just what you have been wanting. It is a 5 x 7 dot matrix impact printer similar in operation to the well known Centronics printers. It prints the 64 character upper case ASCII set with 40 characters/line at a rate of 75 lines/minute on standard 3 7/8" wide rolls of adding machine paper. One complete line is printed at a time from an internal forty character line buffer memory. Printing takes place either on receipt of a carriage return or automatically whenever the line buffer memory is filled.

The printer can accept character data as fast as one character per micro-second or as slow as you wish to send it. The printer's seven parallel data lines are TTL compatible and may be enabled by a single "data ready" control line or by separate "data ready" and "data accepted" handshake control lines. This universal approach makes the printer compatible with all computer and terminal systems having an eight bit parallel interface; including of course the SWTPC 6800 computer and most "8080" based designs.

The printer mechanism is mounted on a black anodized aluminum chassis which houses the electronic circuits and the 115/230 Volt AC 50-60 Hz power supply for the unit. This makes the printer's overall dimentions 9 5/8" wide x 10½" deep x 8¾.. high.

Each unit is shipped with one ribbon and one roll of paper. Extra ribbons are available from us while the standard adding machine paper may be purchased in office supply stores.

#PR-40 Alphanumeric
Printer Kit . . . . . . . . . . . . .$250.00 PPd in U.S.
Shipping Weight. . . . . . . . . . . . . . . .15 lbs.

swtpc PR-40
LINE PRINTER

OFF · ON
POWER

SOUTHWEST TECHNICAL PRODUCTS CORPORATION



MANUAL · AUTO
MOTOR · CONTROL
A · B
MIC
FAR
RECORD
A · SELECT · B
READ · READ
RECORD
READY
OFF · ON
STATUS
DATA
OFF · ON
PWR
REM · LOC
swtpc AC-30 CASSETTE INTERFACE

**SWTPL**
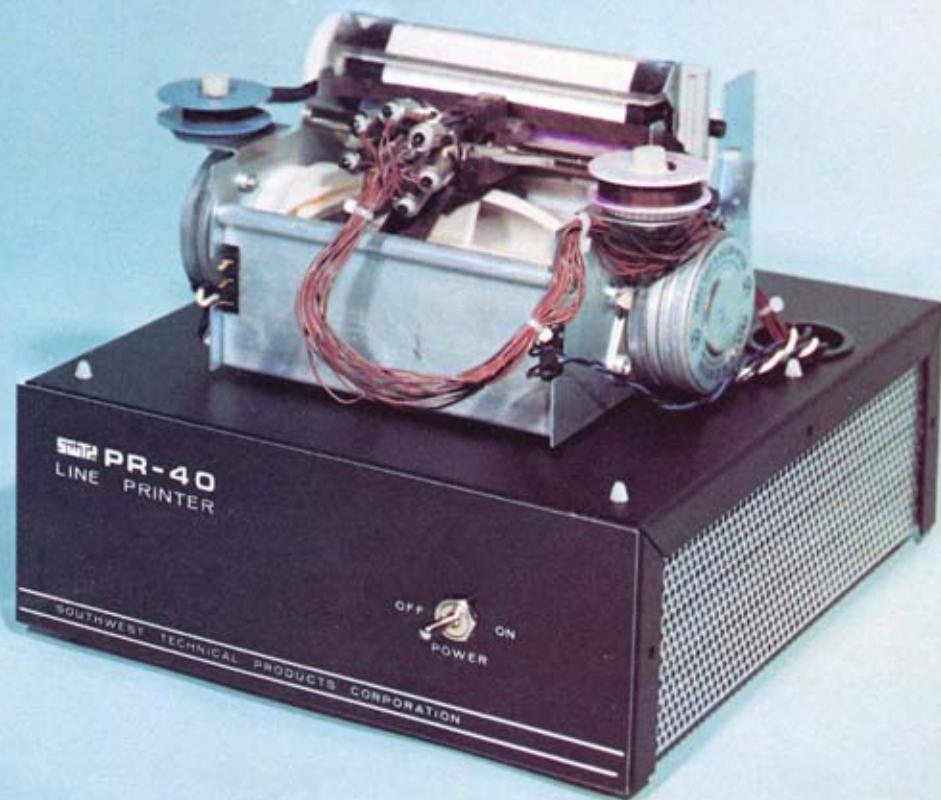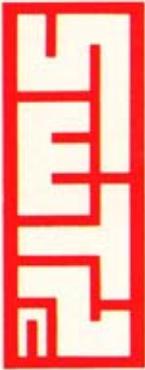
Southwest Technical Products Corporation 219 W. Rhapsody    San Antonio, Texas 78216

Price 25¢

Deliver to Addressee or Occupant
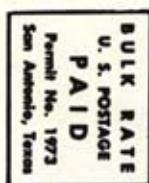
## Southwest Technical Products Corporation, 219 W. Rhapsody, San Antonio, Texas 78216

NAME _____
          (FIRST NAME)  (MIDDLE INITIAL)  (LAST NAME)

Rural Route_____Rural Box No._____P.O.Box No._____

Street Address_____

City_____ State _____

Date_____           ZIP_____

DO NOT WRITE IN THIS SPACE

| P | | | D | UPS | BUS | AIR | SPD | PAL | MFT | MO | CCK | MC | CHK | COL | SPL | |
|---|---|---|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| C | | | F | PP | REA | SPH | CM | SAM | SPL | CSH | CHX | BAC | TOD | PO | | |

| HOW MANY | CATALOG NUMBER | NAME OF ITEM | PRICE | TOTAL PRICE Dollars  Cents | |
|----------|----------------|-------------|-------|---------|---|
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## SEND MONEY ORDER OR CASHIERS CHECK ALL OTHER CHECKS WILL CLEAR BEFORE SHIPMENT

| | | |
|---|---|---|
| **TOTAL FOR GOODS** | | |
| **TAX (See Note Below)** | | |
| See other side for shipping information. | | |
| **TOTAL CASH PRICE** | | |
| **AMOUNT ENCLOSED** | | |

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Tax Note: If you live in Texas, add 5 cents for every dollar's worth of goods you order.

Southwest Technical Products Corporation reserves the right to make changes in materials, specifications, accessories, delivery time or prices without notice.

C.O.D. ORDERS must be accompanied by 20% Deposit. Delivering carrier will require cash or certified check in payment of C.O.D. amount. No C.O.D. for FPO, APO or countries outside USA.

*Your* **BankAMERICARD** *welcome here*

ALSO CANADA
CHARGE X

WE HONOR **master charge** THE INTERBANK CARD

If you wish to order and charge to your Bank-Americard or Master Charge just fill in below:

Sign Your Name _____    Amt. of Order _____

Print Name Exactly As It Is On Your Card _____

Good thru_____ Inter Bank #_____
          Enter Date Above

Enter Above the Exact Number On Your Card _____

Your Billing Address _____

City _____ State _____ Zip _____

## C.O.D. ORDERS

## ARE PLUS SHIPPING COSTS

SEE OTHER SIDE FOR
DETAILED SHIPPING INFORMATION

We can ship via Air Parcel Post, Parcel Post Special Handling or Special Delivery, Air Express, Bus or Air Freight, if you so request. Contact your local office for rates and delivery information.