

Collins

# Amateur Products



**Collins KWM-380 transceiver**

# The Complete One Unit Station

The Collins name stands for quality in communications and has traditionally been associated with the major advancements in high frequency communications. Since 1933, when Admiral Byrd relied on Collins HF equipment to provide voice communications from the South Pole to the United States, the company has been a leader in new technological advancements.

Now, Rockwell's experience and up-to-the minute technology have produced a new amateur station—

completely self-contained in one unit. The Collins KWM-380, a professional quality system for the serious ham. You don't need a cluttered station with separate units. The fully synthesized KWM-380, with microprocessor controlled tuning, gives frequency stability and accuracy in four tuning rates, even down to 10 Hz. The KWM-380 has everything you need to set up a complete, professional operating station including an internal split frequency VFO function, a built-in AC/DC power supply and speaker.

Fully protected all-solid-state 100 watt true output power amplifier. (approximately 200 watts input)

Microprocessor frequency control for synthesized 10 Hz-step resolution, memory capability, frequency display and band selection.

Synthesizer locked to single internal crystal standard.

Vox operation—with separate delay controls for SSB and CW.

Built-in metering: forward and reflected power, automatic level control.

Adequate service loop, no circuit board extenders required, for ease of servicing.

Built-in power supply.

LED frequency display.

Manual selection of MOX, VOX, Noise blanker (optional), speech processor (optional), automatic gain control fast or slow.

Selectable four-rate tuning, 1 MHz, 1 kHz, 100 Hz, 10 Hz steps.

Transmit drive level control.

Mode selection CW, LSB, USB, and AM receive.

Volume control for voice and CW.

Built-in VFO with two memory registers.

Independent filter selection, two standard (8 kHz and 2.2 kHz) and any of four optional bandwidths.

Passband tuning control.

CW spot.

Antenna Input/output

Optional control interface

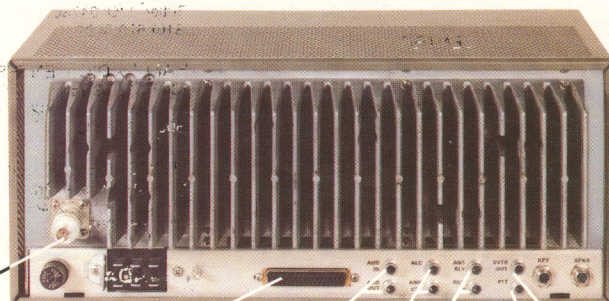
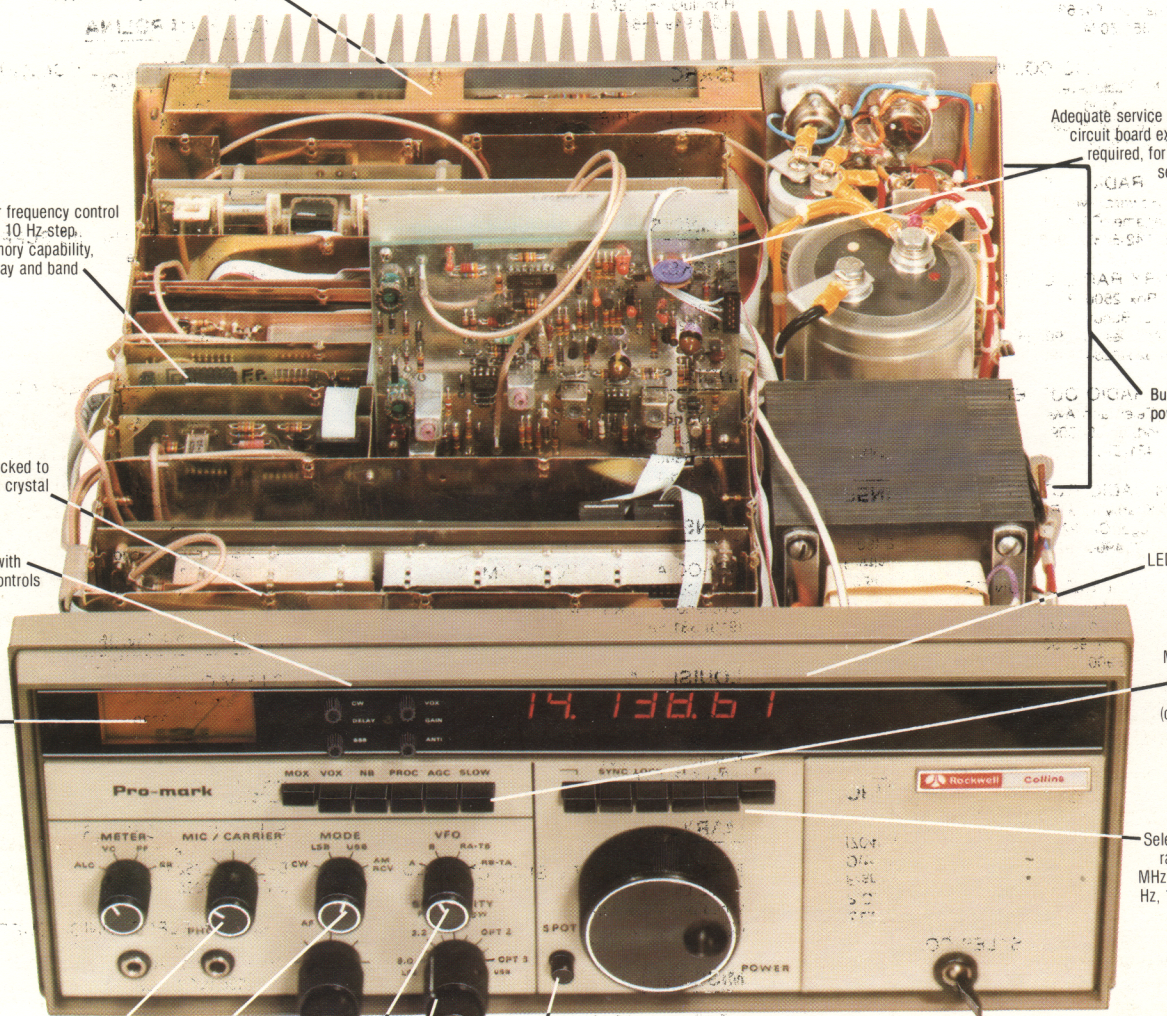
600 ohm line audio

External P.A. control

Separate RX antenna

Transverter

PTT



# The Collins KWM-380

With the Collins KWM-380, you get a truly professional and complete amateur station in one attractive unit — a separate VFO, power supply and speaker aren't required and it's all-solid-state. The KWM-380 provides full frequency coverage in receive between the frequencies of 1.8 to 30 MHz. Transmit power is 100 watts in upper sideband (USB), lower sideband (LSB), and continuous wave (CW) modes within the 160 to 10-meter amateur bands.

All solid-state with high resolution synthesizer, the KWM-380 provides computer controlled 4-speed tuning down to 10 Hz. The microprocessor also controls the LED frequency display, band selection and 2 register memory for split-frequency operation without the need for an external VFO unit or separate receiver. The frequency display always shows the exact carrier frequency.

And the KWM-380 has superior strong signal handling performance. The  $\frac{1}{2}$  microvolt sensitivity coupled with a very high third order intercept yields a high dynamic range. This insures that weak signals won't be masked by strong off-frequency signals.

In CW mode the receiver gain is increased to lower the AGC threshold and maintain a constant audio output level. Optional 8 pole filters and careful attention to signal leakage around these filters provide excellent selectivity and adjacent signal rejection.

There are no bandswitch or tuning controls, so an operator can transmit immediately upon dialing in a frequency. Even the transmit low pass filters are selected by relays. This feature allows split frequency operation (half-duplex) on *any* 2 frequencies within the amateur bands.

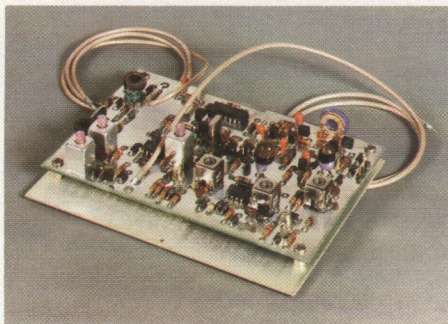
After you have finished operating on split frequencies, push the sync button

on the front panel and both channels are immediately tuned to the displayed frequency. Pushing the lock button prevents further frequency changes.

The meter in the KWM-380 measures signal strength in receive. In transmit, it measures automatic level control (ALC), supply voltage (VC), forward power (PF) and reflected power (PR).

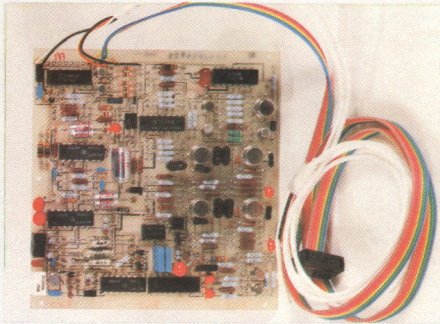
The KWM-380 is easily maintainable, with card cage construction interconnected with ribbon cables to allow the cards to be removed for servicing while the radio is still operational. No extender cards are needed.

## OPTIONS



### Noise Blanker

The noise blanker option is designed for use in transceivers located in high impulse RF noise environments.



### Speech Processor

The speech processor is a new circuit (patent applied for) that increases the effective "talk power" in SSB transmissions without using limiting or clipping.



### IF filters

A choice of IF filters are available including: a 360 Hz CW filter, a 140 Hz CW filter, a 1.7 kHz RTTY/SSB filter, and a 6.0 kHz AM filter.

## ACCESSORIES

AC-2808 Blower Kit



SM-281 and SM-280 desk-top microphones



AC-2828 Microphone Foot Switch

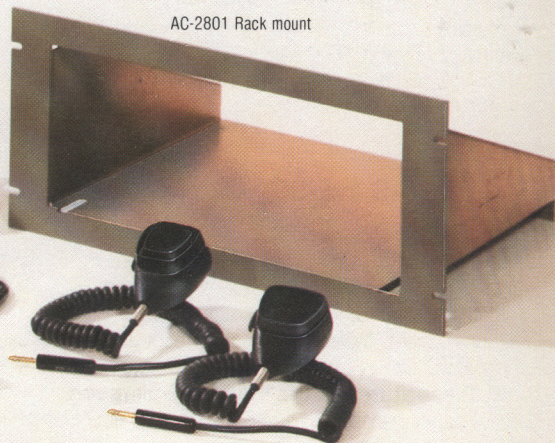


AC-2821 Power cord.

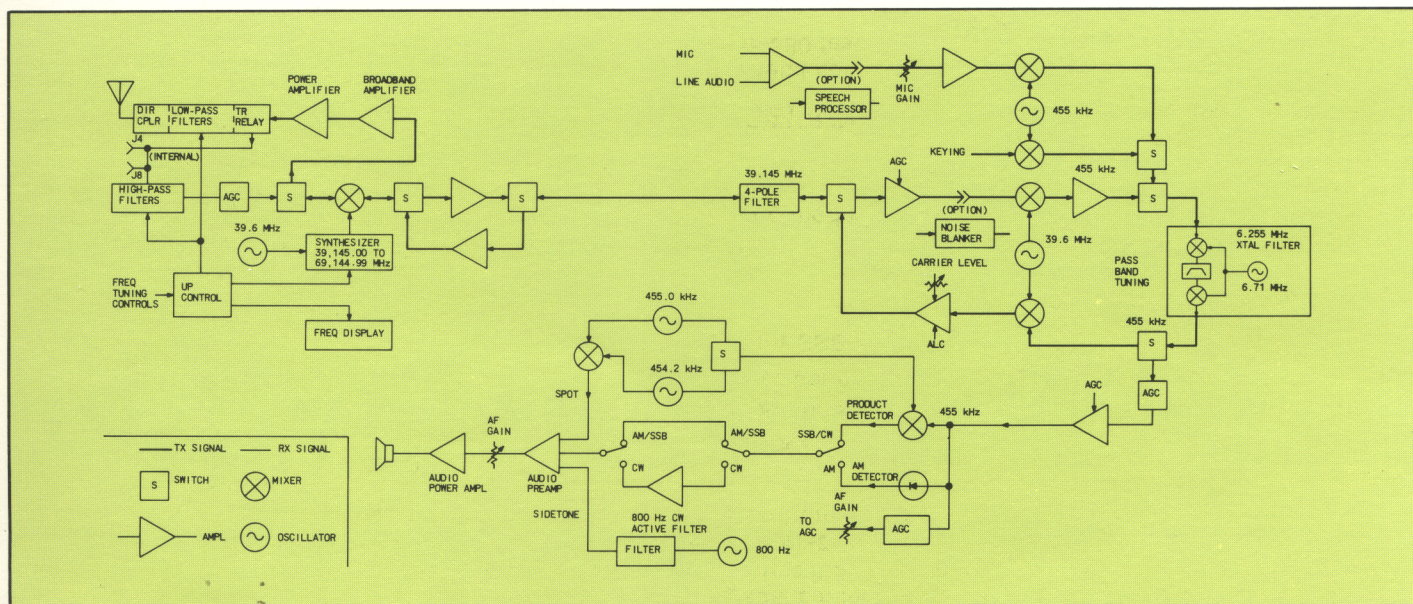
AC-2827 CW Key

AC-2829 and AC-2830 Headphones

AC-2801 Rack mount



MM-281 and MM-280 hand held microphones



## SPECIFICATIONS

**FREQUENCY RANGE:** Tunable in 10 Hz steps.

**RECEIVE MODE:** 1.8-30.0 MHz.

**TRANSMIT MODE:** SSB or CW 160-thru 10 meter amateur bands.

\*HF-380 1.6 to 30 MHz.

**MODE:** SSB(voice and RTTY, either sideband selectable), CW, or AM (receive only).

**POWER REQUIREMENTS:** 105, 115, 125, 210, 220, 230, 240, 250,  $\pm 5\%$  V ac (Internal strapping option) 50-60 Hz 12 V to 15 V dc (Connector strapping). 120 W input in receive max; 600 W input in transmit max.

**FREQUENCY ACCURACY:** Accurate to within  $\pm 5$  Hz when the 39.6 MHz oscillator and the 455.0 kHz oscillator are set within  $\pm 3$  Hz. Warm-up time is 10 min.

**FREQUENCY STABILITY:** Stability is within  $\pm 150$  Hz over the temperature range of 0-50°C.

\*HF-380 is within  $\pm 20$  Hz over the temperature range.

### TRANSMIT PERFORMANCE:

**OUTPUT IMPEDANCE:** 50 ohms nominal.

**POWER OUTPUT:** 100 W PEP nominal from 160 thru 10 meters. In RTTY, there is automatic turndown to 50 W after 30 seconds with continuous key

down; 50% duty cycle, key down 15 minutes max.

With the optional blower kit, power is 100 W average, 50% duty cycle, key down 1 hour max at 25°C, 1/2 hour max. at 50°C for all modes.

### UNWANTED SIGNAL SUPPRESSION:

(minimum values below PEP output)

Carrier suppression 50 dB  
Undesired sideband, 1 kHz ref 55 dB  
Harmonics (all) 40 dB  
Mixer products 50 dB

**THIRD ORDER DISTORTION:** 25 dB below each tone of a two tone test.

**AUDIO INPUTS:** Microphone — low or high impedance type. Line — 600 ohm input unbalanced impedance; level of 40 mV sufficient to produce full output.

**AUDIO FREQUENCY RESPONSE:** Not more than 5 dB variation from 300 to 2400 Hz.

### RECEIVER PERFORMANCE:

**ANTENNA IMPEDANCE:** 50 ohms.

**SENSITIVITY:** For 10 dB or better  $\frac{S+N}{N}$  at antenna input for SSB and CW:  
0.5  $\mu$ V, 2.0 to 30 MHz  
1.0  $\mu$ V, 1.8 to 2.0 MHz

**SELECTIVITY:** In operating modes of USB, LSB, CW, and AM.

| Filter          | BW        |            |
|-----------------|-----------|------------|
|                 | -3 dB min | -60 dB max |
| Standard SSB    | 2.1 kHz   | 4.4 kHz    |
| Standard AM     | 8.0 kHz   | 70 kHz     |
| <b>Optional</b> |           |            |
| AC 3810         | 360 Hz    | 1250 Hz    |
| AC 3811         | 140 Hz    | 600 Hz     |
| AC 3812         | 1.7 kHz   | 3.4 kHz    |
| *AC 3813        | 6.0 kHz   | 25 kHz     |

\*optional for 8 kHz position.

**IF AND IMAGE REJECTION:** Greater than 60 dB.

**AUDIO OUTPUT:** Not less than 3 W into 4 ohm load at 1 kHz, at not more than 10% total harmonic distortion. Line audio output, -10 dBm nominal into 600 ohms.

**AUDIO FREQUENCY RESPONSE:** Not more than 5 dB variation from 300 to 2400 Hz.

**AGC:** Audio output variance not more than 8 dB as the RF input varies from 4.0  $\mu$ V to 200 mV open circuit.

**INTERMODULATION DISTORTION:** Two signals spaced 20 kHz at a level of -10 dBm each will produce IMD down 50 dB min. (+15 dBm 3rd Order Intercept).

**SIZE:** 15.50 (39.4 cm) W, 6.5 (16.5 cm) H (w/o feet), 7.5" (19.1 cm) H (w/feet), 18.00" (45.7 cm) D.

**WEIGHT:** 50 lbs (22.7 kg).  
Specifications subject to change without notice.

## COLLINS HF-380 GENERAL COVERAGE TRANSCEIVER

For U.S. government and international users authorized to operate between the HF frequencies of 1.6 to 30 MHz, Rockwell offers the new Collins HF-380 transceiver. The HF-380 is a complete general coverage transceiver including all the features of the KWM-380 plus the added capability needed to meet the demands of specialized users.

In addition to the general coverage transmit feature, the HF-380 features a high stability oscillator.

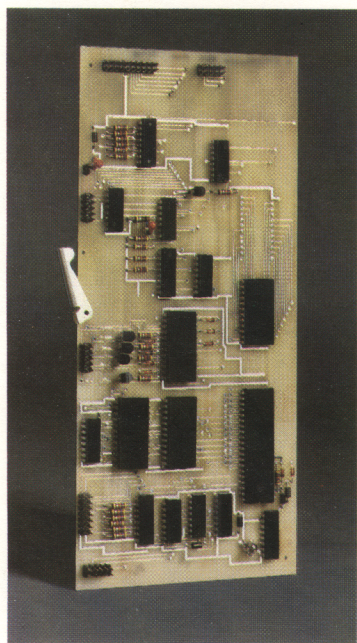
The HF-380 is available for authorized users through the Collins DOD/International sales organization.



## FEATURES

### MICROPROCESSOR CONTROL SYSTEM

- simplifies frequency selection with 4-speed tuning.
- provides dual VFO operation.
- with an optional control interface kit and a customer supplied external 16 button keypad, the microprocessor control system enables:
  - the keyboard to be used to enter any frequency.
  - capability to store and recall up to 10 frequencies.



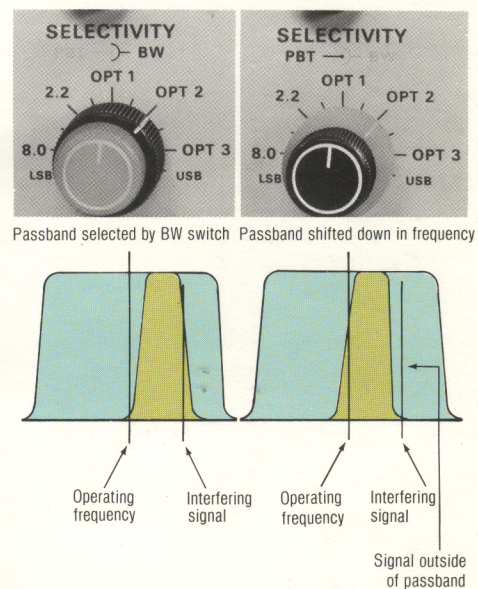
### BUILT-IN-SPLIT VFO MEMORY CAPABILITY

- The KWM-380 provides two frequency registers.
- You can transceive on one frequency on the A register and on *any* other frequency on the B register.
- or you can split frequency with receive on one frequency on A and transmit on *any* other frequency on B or reverse with receive on B and transmit on A.



### PASSBAND TUNING AND IF SELECTIVITY

- IF selectivity to eliminate undesired signal interference.
- Passband tuning can move continuously from LSB to USB.
- Optional IF filters can be selected independent of operating mode.



# A tradition of excellence

Collins products have been established leaders in high frequency (HF) communications since the early 30's. Admiral Byrd first used Collins HF equipment during his Antarctic Expedition in 1933. A tradition for state-of-the-art equipment with outstanding quality and dependability was established by the Company through its many innovations in communications.

During World War II, Collins developed the Autotone® ART-13 transmitters, which offered fast tuning of radio equipment for the first time. In the late 1940's, the pi-coupler was developed by Collins to simplify antenna matching. Collins also manufactured the first linear permeability tuned oscillator (PTO) with unheard-of frequency stability and accuracy.

The Collins KW-1, developed in the early 50's, was the first self-contained transmitter for the amateur user. In 1954, the KWS-1 was the first Collins single side band transmitter, giving it four times the talk power in less than half the physical size and weight of the

earlier KW-1.

The Collins developed mechanical filter improved carrier and opposite side band suppression for cleaner single side band operation. In 1956, Collins introduced the first amateur band transceiver, the KWM-1. The next step was in 1959, when the Collins KWM-2 was introduced with five amateur bands instead of three.

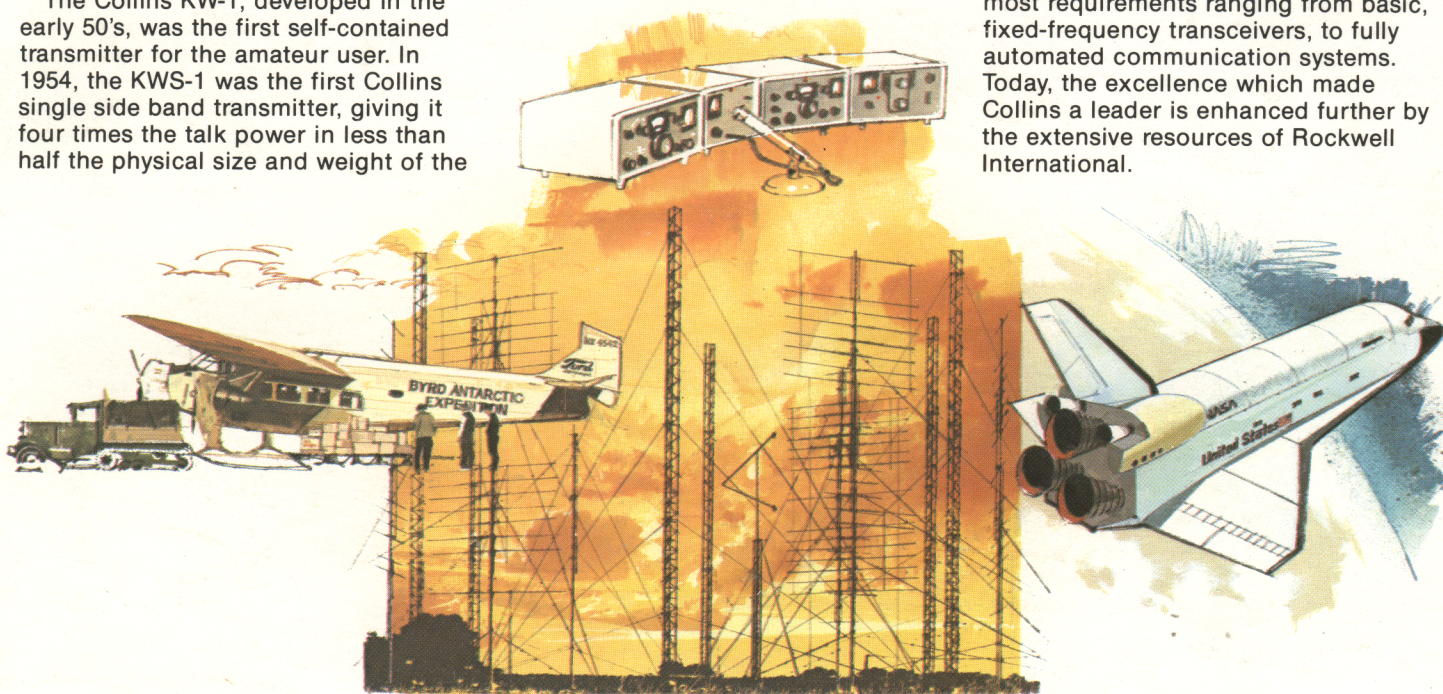
The Collins S/Line and KWM-2A were introduced in the 1960's and have set standards of performance for many years. The reliability of these product lines is well proven by thousands of hams. The U.S. Government has used Collins amateur equipment under rugged field conditions for over two decades.

Today, with the new Collins KWM-380, Rockwell is carrying on the tradition

with a new state-of-the-art transceiver. The same quality, service and performance of the earlier amateur products were combined with the experience that has given Rockwell the most complete HF product line in the world, including military, government and commercial users. Thousands of Collins HF systems are used in fixed stations, ocean vessels, vehicles, and aircraft all over the globe.

Rockwell's proven communications capabilities extend to most parts of the radio frequency spectrum and extra-terrestrial applications. Every American voice from space has come over Collins equipment.

Rockwell has the capability to configure, install and support HF communications equipment and systems anywhere in the world. A full range of products is available to satisfy most requirements ranging from basic, fixed-frequency transceivers, to fully automated communication systems. Today, the excellence which made Collins a leader is enhanced further by the extensive resources of Rockwell International.



For more details and information,  
see your dealer or contact  
Collins Telecommunications Products Division,  
Rockwell International,  
Cedar Rapids, Iowa 52406.



**Rockwell  
International**

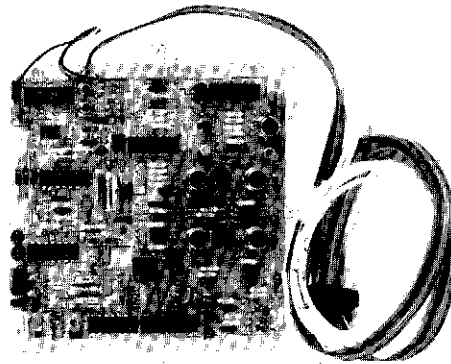
...where science gets down to business



Rockwell  
International

# AC-3802

Speech Processor  
Q Power



Over the years there have been many approaches used to increase the effective "talk-power" of HF-SSB transmissions. Each approach has distinct advantages and disadvantages. From a performance viewpoint there has been a general consensus that rf speech processing provides the best results. However, with rf speech processing there is concern relative to harmonic distortion and rfi generation.

Now, Collins Amateur Products has developed a method which has all the advantages of rf speech processing without the disadvantages of undesirable harmonic distortion and rfi generation. The AC-3802 Speech Processor has been developed as a "plug-in" option for the KWM-380 and HF-380 series transceivers.

The AC-3802 employs a unique two-channel (in-phase and quadrature-phase) design which eliminates the usual problems encountered with rf interferences. Mixing oscillators and rf filters are not required. Harmonic distortion is typically 1-1/2% since no clipping is used. The processing function is smooth and continuous across the 300-3000 Hz speech range.

The AC-3802 processor technology focuses on an envelope detector which follows the instantaneous speech modulation envelope to produce an output which is an exact reproduction of the speech envelope.

The modulation envelope is derived from the voice signal by dividing the signal into two channels, an in-phase channel and a quadrature-phase channel. Because of the phase shifting results obtained from this technique, we refer to this circuit as an **Q power** speech processor.

Patent applied for.

The processor is essentially a preemphasis circuit followed by a variable gain stage. The speech modulation envelope is compared with a preset level threshold. Whenever the speech modulation envelope peaks exceed the threshold, the gain of the variable stage is reduced.

Speech peaks are maintained at the preset threshold and since only the modulation envelope level is controlled, no clipping occurs. As a result, voice peaks are compressed and the average peak-to-signal level is increased. The envelope detector requires no filtering; therefore, there is no processing delay and peak compression is instantaneous.

Audio from the microphone is amplified and then divided into two signals which are phase shifted 90 degrees (in-phase and quadrature-phase). These signals are each detected and then recombined to produce a dc signal which is proportional to the peak voltage squared from the rectifiers. The square root of this level produces a dc level that is equivalent to the peak signal at the detectors.

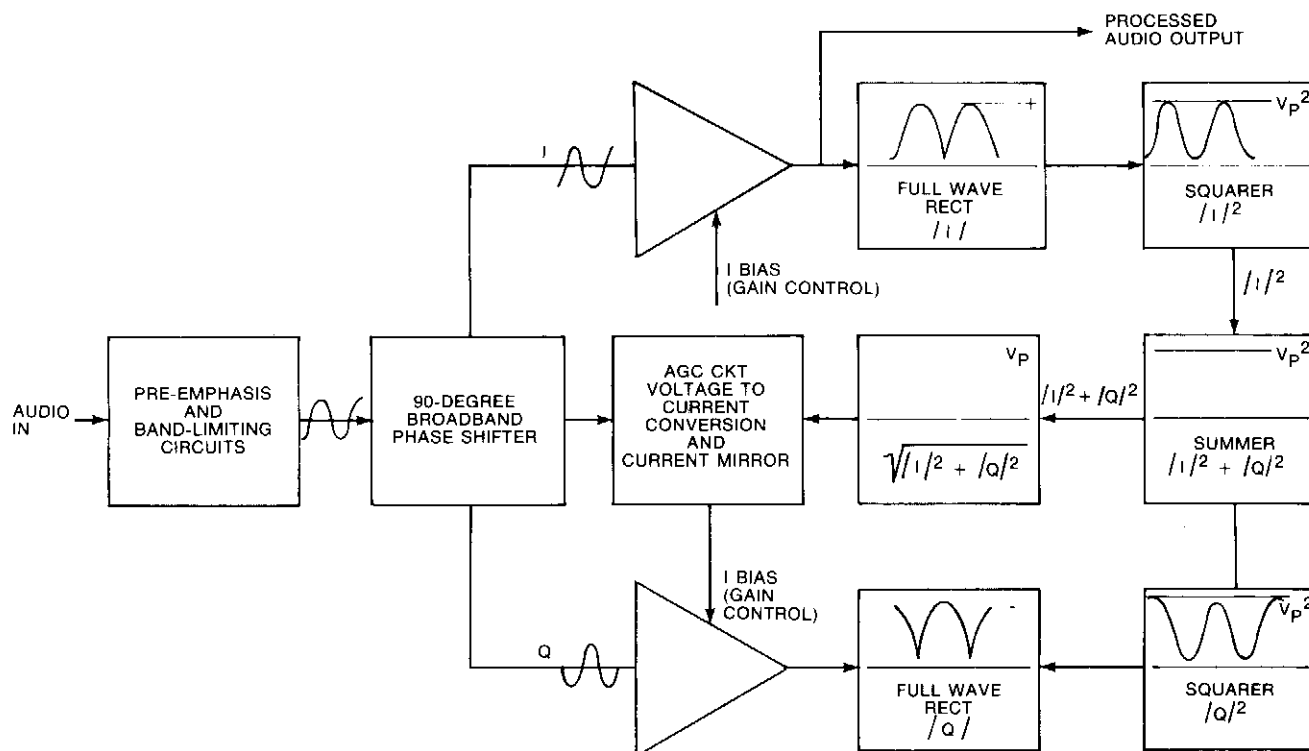
The new dc level is compared to the preset compression threshold level producing an AGC voltage that regulates the gain of the phase amplifiers. The result is an audio voltage with peaks that are maintained at the preset threshold.

The processed audio is taken from the output of the in-phase amplifier. When processing in either the KWM-380 or the HF-380 is not required, a control signal to the processor via the front panel switch causes the audio from the amplifier to bypass the processing circuitry.

The AC-3802 is constructed on a single circuit card which plugs into the KWM-380 or HF-380 transceivers. All operating voltages and control is provided by the transceiver. Station clutter including external cabling is eliminated and the station integrity of the transceivers is maintained.

The AC-3802 Speech Processor is the intelligent approach to increased "talk-power." Another advancement from the professionals at Collins Amateur Products — Rockwell International.

Specifications subject to change without notice.



**AC-3802 Speech Processor**

Collins Telecommunications Products Division  
 Defense Electronics Operations/Rockwell International  
 Cedar Rapids, Iowa 52498

# COLLINS TELECOMMUNICATIONS PRODUCTS DIVISION AMATEUR EQUIPMENT LIST

| <u>TYPE</u>         | <u>DESCRIPTION</u>                   | <u>COLLINS<br/>PART NUMBER</u> |
|---------------------|--------------------------------------|--------------------------------|
| KWM-380             | Amateur HF Transceiver               | 622-5093-001                   |
| KWM-380 OPTIONS     |                                      |                                |
| AC-3801             | Noise Blanker                        | 641-7105-001                   |
| AC-3802             | Speech Processor                     | 642-2438-001                   |
| AC-3803             | Control Interface                    | 641-7150-001                   |
| AC-3804             | WARC Frequency Kit                   | 642-2435-001                   |
| AC-3810             | CW Filter, 360 Hz                    | 642-2439-001                   |
| AC-3811             | CW Filter, 140 Hz                    | 642-2440-001                   |
| AC-3812             | RTTY Filter, 1.7 kHz                 | 642-2441-001                   |
| AC-3813             | AM Filter, 6.0 kHz                   | 642-2442-001                   |
| KWM-380 ACCESSORIES |                                      |                                |
| AC-2801             | Rack Mount                           | 622-3537-001                   |
| AC-2808             | Blower Kit                           | 622-3547-001                   |
| AC-2821             | DC Standby Power Cable               | 622-3564-001                   |
| MM-280              | Handheld Microphone                  | 020-0260-010                   |
| MM-281              | Handheld Noise-Cancelling Microphone | 020-0260-020                   |
| SM-280              | Desktop Microphone                   | 020-0261-010                   |
| AC-2827             | CW Key                               | 634-8545-001                   |
| AC-2828             | Microphone Foot Switch               | 634-8546-001                   |
| AC-2829             | Headphones                           | 622-3571-001                   |
| AC-2830             | Lightweight Headphones               | 622-3572-001                   |
| KWM-380 BOOKS       |                                      |                                |
| NTN                 | Owner's Manual                       | 523-0769-877                   |
| NTN                 | Instruction Book                     | 523-0771-731                   |

*Contact your authorized Collins Distributor  
for current prices.*



## Rockwell International

Defense Electronics Operations/Rockwell International  
Collins Telecommunications Products Division  
Cedar Rapids, Iowa 52498

# COLLINS TELECOMMUNICATIONS PRODUCTS DIVISION AMATEUR EQUIPMENT PRICE LIST

Prices Effective: May 1, 1982

| <u>TYPE</u>         | <u>DESCRIPTION</u>                   | <u>COLLINS<br/>PART NUMBER</u> | <u>SUGGESTED<br/>AMATEUR PRICE</u> |
|---------------------|--------------------------------------|--------------------------------|------------------------------------|
| KWM-380             | Amateur HF Transceiver               | 622-5093-001                   | \$ 4496.00                         |
| KWM-380 OPTIONS     |                                      |                                |                                    |
| AC-3801             | Noise Blanker                        | 641-7105-001                   | 240.00                             |
| AC-3802             | Speech Processor                     | 642-2438-001                   | 324.00                             |
| AC-3803             | Control Interface                    | 641-7150-001                   | 140.00                             |
| AC-3804             | WARC Frequency Kit                   | 642-2435-001                   | 80.00                              |
| AC-3810             | CW Filter, 360 Hz                    | 642-2439-001                   | 120.00                             |
| AC-3811             | CW Filter, 140 Hz                    | 642-2440-001                   | 120.00                             |
| AC-3812             | RTTY Filter, 1.7 kHz                 | 642-2441-001                   | 120.00                             |
| AC-3813             | AM Filter, 6.0 kHz                   | 642-2442-001                   | 112.00                             |
| KWM-380 ACCESSORIES |                                      |                                |                                    |
| AC-2801             | Rack Mount                           | 622-3537-001                   | 180.00                             |
| AC-2808             | Blower Kit                           | 622-3547-001                   | 264.00                             |
| AC-2821             | DC Standby Power Cable               | 622-3564-001                   | 72.00                              |
| MM-280              | Handheld Microphone                  | 020-0260-010                   | 48.00                              |
| MM-281              | Handheld Noise-Cancelling Microphone | 020-0260-020                   | 60.00                              |
| SM-280              | Desktop Microphone                   | 020-0261-010                   | 96.00                              |
| AC-2827             | CW Key                               | 634-8545-001                   | 36.00                              |
| AC-2828             | Microphone Foot Switch               | 634-8546-001                   | 48.00                              |
| AC-2829             | Headphones                           | 622-3571-001                   | 92.00                              |
| AC-2830             | Lightweight Headphones               | 622-3572-001                   | 48.00                              |
| KWM-380 BOOKS       |                                      |                                |                                    |
| NTN                 | Owner's Manual                       | 523-0769-877                   | 8.00                               |
| NTN                 | Service Manual                       | 523-0769-878                   | 40.00                              |

Prices subject to change without notice or obligation.

Defense Electronics Operations/Rockwell International  
Collins Telecommunications Products Division  
Cedar Rapids, Iowa 52498



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7.085

**COLLINS AMATEUR PRODUCTS  
DISTRIBUTOR/SERVICE AGENCIES**

Effective October 1, 1981

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Rock Hill, SC 29730  
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