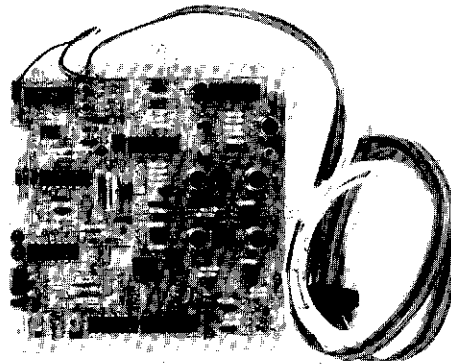




Rockwell
International

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.

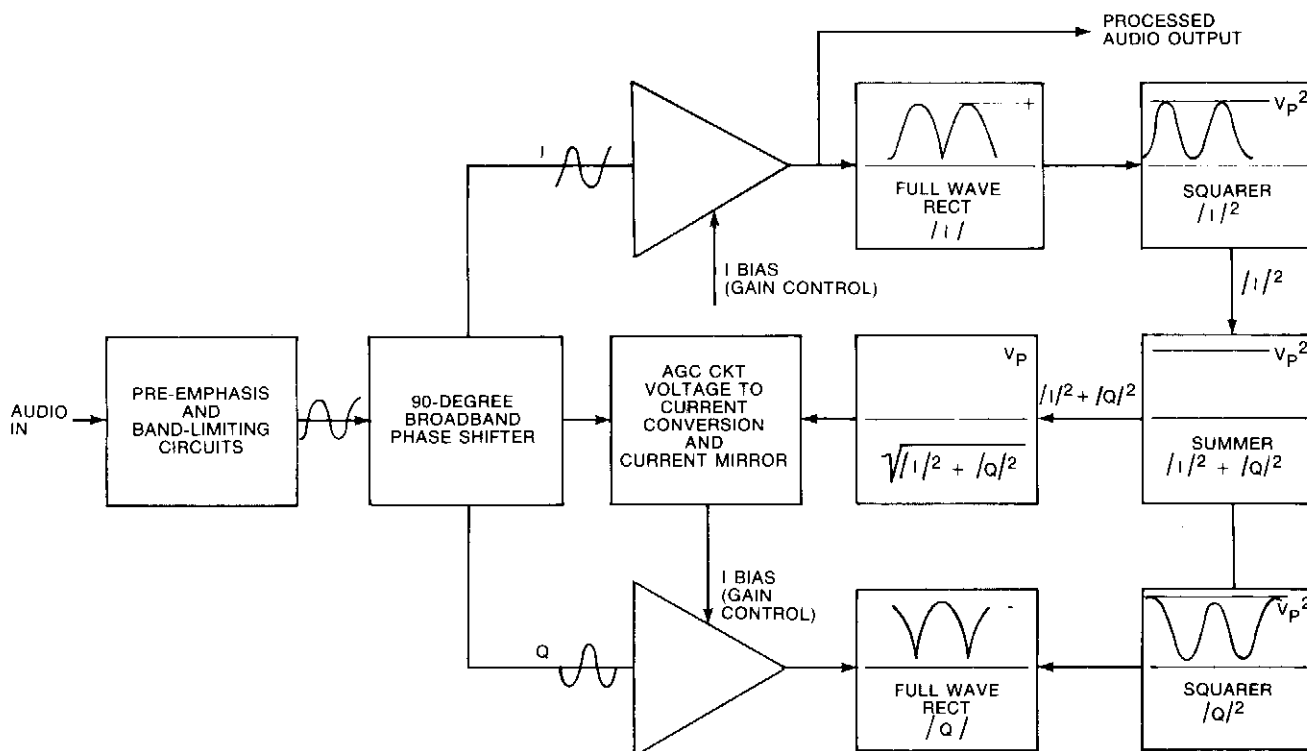
The new dc level is compared to the preset compression threshold level producing an AGC voltage that regulates the gain of the phase amplifiers. The result is an audio voltage with peaks that are maintained at the preset threshold.

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 AMATEUR EQUIPMENT LIST

<u>TYPE</u>	<u>DESCRIPTION</u>	<u>COLLINS 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 PART NUMBER</u>	<u>SUGGESTED 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

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