# EXCITING NEW PRODUCT!

10 METER CONVERSION MICROCOMPUTER COMES TO HAM RADIO

Until recently, many CB to 10 meter conversions have been per-
formed using heterodyne crystal oscillator changes and simply
taking what frequencies that came without question. Now
however, a new development, the MICROMONITOR, has come avail-
able which is designed to remotely program the radio and
give frequency ranges that includes the entire 10 Meter band.
Step sizes of 5KHz are possible and are indicated in the built
in display.

The MICROMONITOR consists of two pieces. First is the computer
controlled hand held unit. Enclosed within the unit is a
microcomputer, a display and a keyboard. The user simply keys
in the frequency he desires to use and the computer does the
rest. First, the computer updates the display to the desired
frequency. It then calculates the command code that corresponds
to the desired frequency. Once the code is calculated, it
transmits the code command to the second part of the system.

The second unit is called the interface board. This piece is
designed to mount inside the radio. The board contains the
necessary interface logic that interprets the computer's
commands and translates those codes into the desired frequency.
This is accomplished by substituting the radio's own phase
locked loop synthesizer circuitry with a dedicated chip of
its own. The chips that normally come with the CB radios are
usually of limited range and therefore do not readily lend
themselves to 10 meter conversion techniques. The chip supplied
with the interface assembly can supply up to 1024 different
frequencies at 5KHz spacing. Given that the average CB radio
only requires up to 88 of these frequencies, it is frequently
possible to program a much higher division ratio, allowing
sufficiently higher output frequencies. Simple retuning of the
filter and VCO for operation in the ten meter spectrum of the
band completes the conversion.
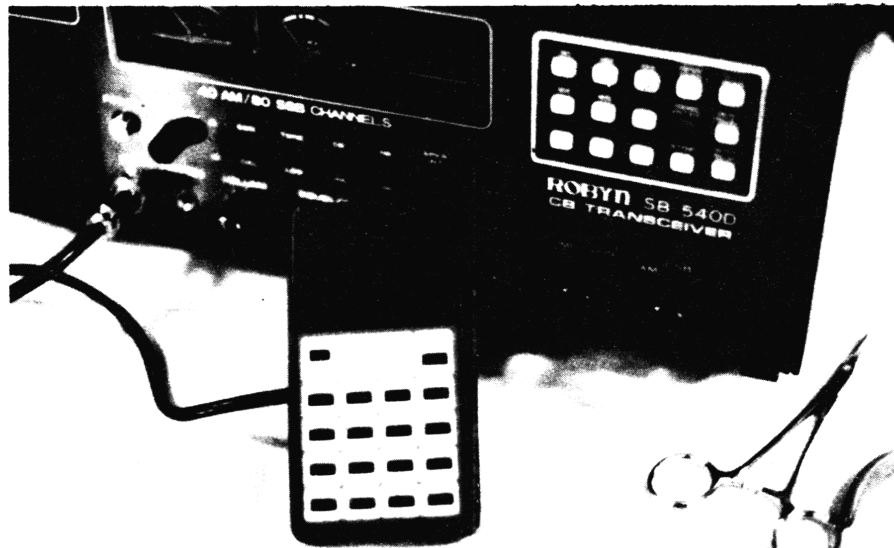
Once the system is installed, the user simply keys in the four least significant digits of the frequency desired and the combination of the computer and interface synthesizer do the rest. Programmed limits of operation are computer controlled and range between 28.0 and 29.7MHz. As long as the user keys in any number between these limits, that frequency is automatically commanded by the micromputer and synthesizer by the interface board. One limitation exists, however; on most converted CB radios, their initial design is for a total operational range of 440KHz. The 10 Meter modification calls for 1.7MHz total range which is about 4 times the original design range. As a result, the practical maximum frequency range is usually reduced. This phenomenon is entirely dependent upon the radio being converted and by the actual components within the radio. Techniques exist, however, to expand the range of the VCO.

The MICROMONITOR system uses much of the radio's circuitry to perform the synthesis. The systhesizer chip supplied includes the reference oscillator, programmable divider and phase comparator. Neither the filter nor the VCO is included. Instead, the filter and VCO provided with the radio are pressed into dual service, both stock and for use with the MICROMONITOR.

An interesting design feature includes the capability of conventional CB operation whenever the MICROMONITOR is turned off. In this case, electronic switching automatically restores the radio to stock configuration and normal CB operation is resumed. Keep in mind however, that once the unit has been retuned for 10 Meter operation, this last feature is not really practical. Should this be a desirable feature, then perhaps a mid-range tuning technique can be employed to allow limited operation on either hand.

With the MICROMONITOR installed, many additional user features are now possible. The system allows for automatic frequency scanning. And, when used in conjunction with the radio's squelch circuitry, automatically stops any scan function when the squelch circuit is activated; making it very easy to scan the band in search of active frequencies. Momentarily activating the push-to-talk switch will stop the scan. Alternatively, provision is also provided to allow the unit to scan for unused frequencies, again determined by the squelch circuit.

The computer has provisions for up to five separate memories for use in storing any commonly used user frequencies subject to instant recall by the user. All he must do is depress the appropriate memory key and the frequency stored in memory is instantly recalled for immediate use.

The MICROMONITOR has built in provision for splitting the transmit
and receive frequencies. In this case, the user can independently
program both transmit and receive frequencies. Whenever the
user transmits, the computer automatically retrieves the desired
transmit frequency. When receive mode is returned, the computer
exchanges the transmit code with the receive frequency code and
the receiver now operates on the desired receive frequency. This
feature allows for operation frequently used by DX stations
which listen on one frequency and transmit on another.

Installation is a snap. The interface board is simply wired in
place using the supplied instructions. Only one resistor is
necessary to be removed. Once the radio has been interfaced, the
user plugs in the MICROMONITOR, keys in the frequency he chooses
and viola! He is on the air.

Summarizing, it is now possible to bring computer control to
your own radio. In the process, user features only found on the
big rigs (and some that are not) are now available at your finger-
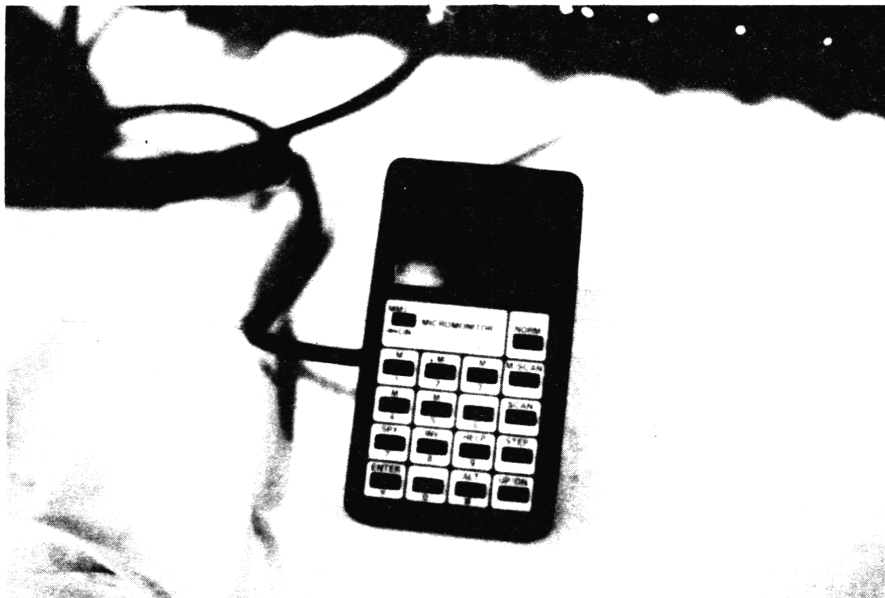tips. Simple readjustment of the rig completes the process.
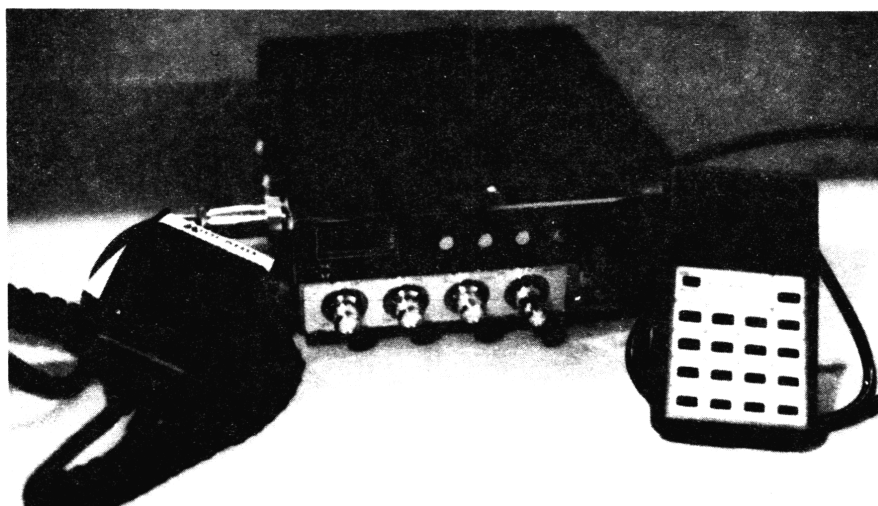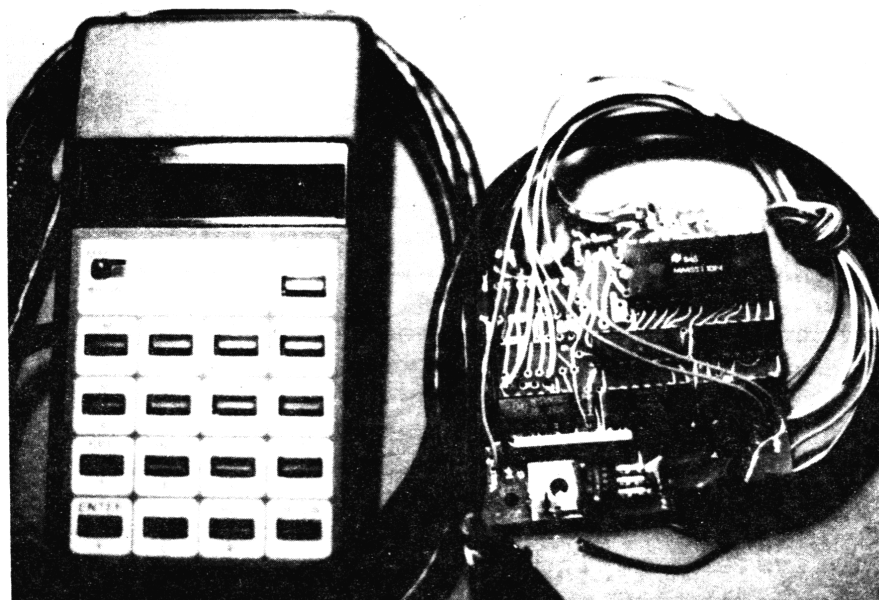
	MM1	UP-800	RM-2	RM-76	Yaesu
Step Size	5KHz	5KHz	.1, 1, 15KHz	5KHz	5KHz
Memory Channels	5	4	4	6	4
Band Scan	up/down	up/down	up/down	up/only	up/down
Memory Scan	yes	yes	no	yes	?
Open or Busy Scan	yes	yes	no	yes	?
Tone Pad Option	yes 16 buttons	no	yes	no	yes
Programmable Splits	yes	yes	yes	yes*	yes
Upper & Lower Scan Limits Adjustable	no	no	no	yes	no
Single Step Scan up/down	yes	yes	yes	yes	yes
Scan Stop	PTT/fcn	Hold/PTT	PTT/Hold	HOLD	HOLD
Reverse Pair	yes	no	no	no	no
Automatic Duplexing Direction/Amount	yes	no	no	no	no
HELP Frequency Recall	yes	no	no	no	no
# Channels	1024	800	800	800	800
MARS & CAP Use	yes	Radio Dependent	no	SPX only	no
Memories Retained When off	no	yes	no	no	no
Display Type	LED	LED*	Flourescent	LED	LED
Keyboard Entry	yes	no	yes	yes	yes
Installation	Removable	Permanent	Removable	Removable	Permanent
Separate Regulated Voltage Power Supply	yes	no	no	no	no
Size	small	Medium	Medium-Large	Medium-Large	small
Price	190	100	220	179	190

* Uses Radio Functions

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MEMORY, SCAN, DUPLEX, SELECT HELP
IT DOES IT ALL
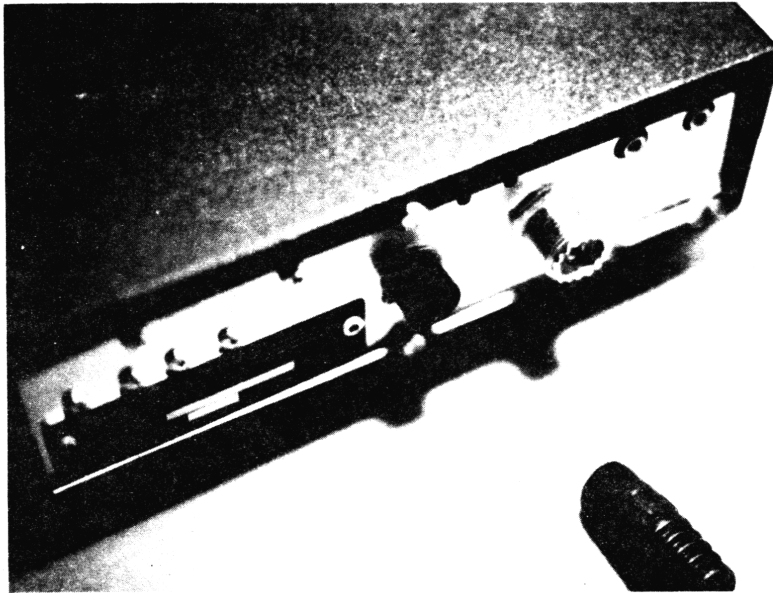
UNPLUG MICROMONITOR AND RADIO
GOES BACK TO STOCK CONDITION

SMALL AS A CALCULATOR