TMC BULLETIN NUMBER 4003B

Sideband Converters
TMC Model SBC-9
AN/URA-42( )

OCT 1967

- ISB Reception with Standard Receivers
- Economical Modernization
- Automatic Frequency Control for Pilot Carrier Reception
- Front Panel Selection IF Bandwidths

The SBC Series features new electronic circuits packaged on the building block principle for maximum flexibility: the Model SBC-9 consists of two major rack mounted units, the Model AFC-2A Automatic Frequency Control and the Model SBS-9 Sideband Selector. For four channel ISB reception, see OPTIONS/ACCESSORIES.

The Model AFC-2A features a unique dual loop electronic frequency control system. The first loop provides a fast response time for small frequency errors while the second loop corrects for larger errors. Both loops are coupled to an electronic memory circuit. This combination provides ease of tuning by means of a ±50 cps capture range and will remain synchronized over a drift range of ±750 cps while the memory circuit holds the wanted frequency during normal carrier fades or signal interruption.

The Model SBS-9, Sideband Selector, consists of four plug-in IF amplifier/sideband filter channels, each with its own AGC system. Two discrete detector audio amplifier channels are provided for independent sideband operation. Standard channels provided are 3.5 and 7.5 kc upper and lower sideband. Channels with bandwidth of 3 kc and 6 kc upper and lower sideband, and 1 kc, 6 kc and 15 kc symmetrical, are available on special order.

The Model SBC-9 is a modern replacement for the CV-157/URR.

TECHNICAL SPECIFICATIONS: MODEL SBC( )

TYPES OF DETECTION:	SSB, ISB, with full carrier or up to 30 db carrier suppression with AFC, or SSB, ISB, AM, CW, MCW with AFC disabled.
SIDEBAND SELECTION:	Upper sideband, lower sideband, or independent sideband by means of a front panel switch.
INPUT FREQUENCY:	455 kc (kHz) (others available on special order).
INPUT IMPEDANCE:	50 ohms nominal, also high impedance.
INPUT TUNING RANGE:	±3 kc (kHz) electrical bandspread tuning is provided.
INPUT VOLTAGE RANGE:	1. 50 ohms: 1 millivolt to 1 volt 2. Hi-Z: Up to 3 volts.
CARRIER REINSERTION:	1. Reconditioned carrier. 2. Local carrier or oven controlled crystal oscillator.
CARRIER SUPPRESSION:	Will operate with carrier suppression of 0 db to —30 db.
UNWANTED SIDEBAND REJECTION:	Undesired sidebands, removed more than 250 cps from the carrier, are rejected by a minimum of 60 db.
INBAND DISTORTION:	—40 db.
MONITORING:	A separate monitoring circuit is provided to permit headphone monitoring of either audio channel without disturbing the audio output circuits.
THRESHOLD:	A continuously adjustable threshold control is provided on the front panel of the AFC to reduce the system sensitivity when excess noise is encountered.
AUDIO OUTPUTS:	A. High Level. Two 0 to 1 watt balanced 600 ohm audio channels. B. Low Level. Two 0 to 1 milliwatt balanced 600 ohm audio channels.
AUDIO RESPONSE:	The amplitude response of the audio amplifier is ±1.5 db over the frequency range of 100 to 10,000 cps.
AUDIO DISTORTION:	40 db below 1 watt output.

METERING:

A. Independent VU indicators are provided to monitor each low level 600 ohm channel.
B. AFC drift indicator.
C. Carrier level indicator.

HUM OUTPUT: —50 db.

ENVIRONMENT: The Model SBC 9 is designed for continuous duty within a temperature range of 0 to 50 degrees C, and any value of humidity up to 90%.

ORIENTATION: Any

INPUT POWER: SBC-9: 115/230 volts AC, 50/60/400 cps, single phase, approx. 320 Watts.

INSTALLATION DATA: Size: SBC-9: 10½" h x 19" w x 17" d
AFC-2A: 3½" h x 19" w x 17" d
SBS-9: 7" h x 19" w x 17" d
Weight: (Approx.) 50 lbs.

SHIPPING WEIGHT AND CUBE (Approx.): 85 lbs. 6.3 cu. ft.

COMPONENTS AND CONSTRUCTION: All equipment manufactured in accordance with JAN/MIL specifications wherever practicable.

AGC SYSTEM: The Model SBC-9 has provision to control the receiver gain from an AGC voltage derived from the upper sideband, lower sideband or the carrier, independently selectable by front panel switch. The AGC system has a fast attack time and an adjustable release time.

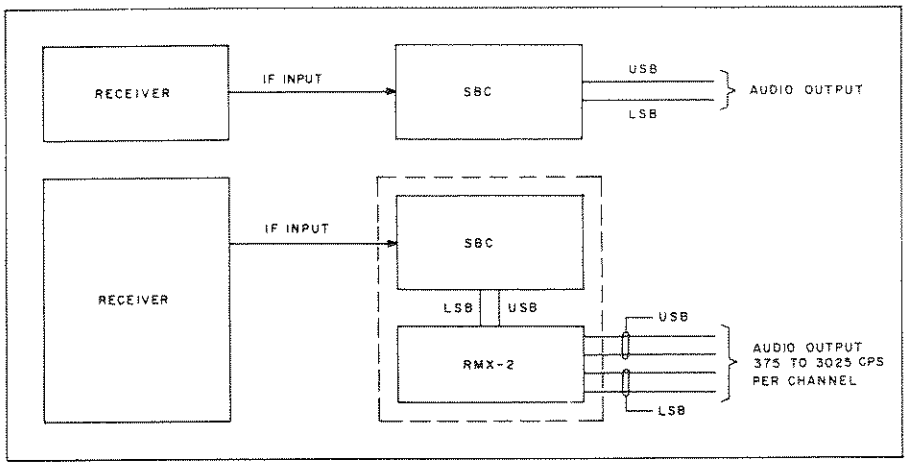
AGC CONTROLS:
Channel A plus B
Channel A only
Channel B only
Carrier only
Manual

IF BANDWIDTHS:

A. Normally supplied
1. ±1.5 db 250 to 7500 cps, USB
2. ±1.5 db 250 to 7500 cps, LSB
3. ±1.5 db 250 to 3500 cps, USB
4. ±1.5 db 250 to 3500 cps, LSB

B. Available on special order
1. ±1.5 db 250 to 6000 cps, USB
2. ±1.5 db 250 to 6000 cps, LSB
3. ±1.5 db 1 kc symmetrical
4. ±1.5 db to 6 kc symmetrical
5. ±1.5 db 15 kc symmetrical
6. ±1.5 db 250 to 3000 cps, USB
7. ±1.5 db 250 to 3000 cps, LSB

AFC ACCURACY:	Less than 1 cycle error over the entire AFC control range.
AFC CHARACTERISTICS:	The AFC system will synchronize with an IF signal ±50 cps and suppressed 25 db at 1 millivolt and 30 db at 5 millivolts, and will remain synchronized for ±750 cps of drift at a maximum drift rate of 10 cps per second. Memory circuits will maintain tuning position during signal fades or momentary outages.
AFC CORRECTION:	The AFC circuit will maintain the frequency of the audio output within a residual error of less than 1 cycle of the transmitted intelligence.
DRIFT ALARM:	A drift alarm light indicates when the carrier error is greater than ±500 cps.
FADE ALARM:	A fade alarm circuit is incorporated which provides a visual indication when the carrier is interrupted or fades below a predetermined level. Connections for a remote fade alarm indicator are available on rear apron.
OPTIONS/ACCESSORIES:	The model SBC-10 adds an additional unit, the RMX-2 Demultiplexer which will provide 4 3kc (kHz) demultiplexed channels. See TB 5002 for RMX-2 specifications. (Note: RMX-2 consists of two RMX-1's).
INSTALLATION DATA:	Size: SBC-10 15¾" h x 19" w x 17" d. Weight: Approximatey 72 lbs. Input Power: 115/230v AC, 50/60/400 cps, single phase, approx. 328 watts.



SIMPLIFIED BLOCK DIAGRAM

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