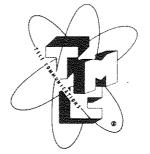
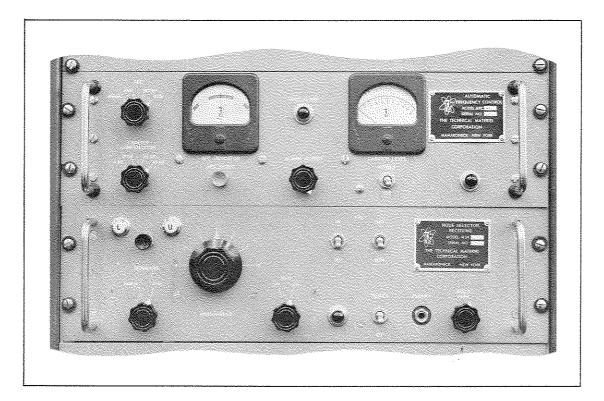
SALES SERVICE BULLETIN NUMBER 246 A



Automatic Frequency Control System

Model AFS-1



The TMC Model AFS-1 is a phase conscious automatic frequency control system which will compensate for transmitter and receiver drift. Error correction to better than \pm 1 cycle is provided. The system may be used with suppressed carrier sideband transmissions with up to 30 db carrier suppression. The AFS-1 was designed to allow the use of receivers such as the R-390/UR or the crystal controlled GPR-90RX (R-840/URR) on circuits where narrow band (85 cps) FSK voice frequency telegraph is being used.

The AFS-1 has a capture range of ± 10 cps and a hold-in range of ± 1000 cps. In order to fully utilize this hold-in range, an electronic "memory" circuit is incorporated. If, for example, a signal which has drifted near the limit of the hold-in range should momentarily fade, an ordinary AFC would return to a neutral position. When the signal returned it would be beyond the capture range, hence the AFC would not synchronize. The AFS-1 "memory" circuit delays the AFC from returning to a neutral position and effectively holds the correction for approximately 30 seconds.

The automatic gain control of the system may be derived from the suppressed carrier or the sideband. A front panel switch allows for several AGC time constants, FAST, MEDIUM and SLOW for various circuit conditions.

The Model AFS-1 is composed of two TMC equipments, the Model AFC-1, Automatic Frequency Control and the Model MSR-6, Receiving Mode Selector. Where necessary, this bulletin lists individual Technical Specifications for each unit.

TECHNICAL SPECIFICATIONS:

Types of Reception:

Selectable sideband with carrier suppression of 10,

20 or 30 db.

With AFC-1 disabled the following are available -

AM, SSB, CW, MCW.

Sideband Selection:

Upper or lower sideband by means of crystal or

calibrated bandspread oscillator, controlled by

AFC-1.

Input Frequency Range:

452 - 458 Kc.

Input Voltage Range:

0.1 to 10 volts RMS

Input Impedance:

240 K ohms.

Filter Characteristics:

3.2 Kc at 3 db points 5.2 Kc at 45 db points

AVC Speeds:

AFC-1 Fast, Medium, Slow

MSR-6 Fast, Slow

AFC Capture Range:

± 10 cycles

AFC Lock Range:

Will maintain synchronism for ± 1000 cps drift at

a maximum drift rate of 50 cps per second.

Audio Output:

High Level

2 watts

Low Level

0 dbm

150 mw

Output Impedances:

Loudspeaker 8 ohms

Line

600 ohms

Headset

High or Low

Metering:

AFC-1 Drift Indicator.

Carrier Level Indicator.

Upper/Lower Sideband MSR-6

Indicator.

MSR-6 Front Panel Controls:

Power ON/OFF

AUDIO GAIN control

Sideband UPPER/LOWER switch

MANUAL/XTAL switch BANDSPREAD control AVC ON/OFF switch BFO ON/OFF switch AVC FAST/SLOW switch

PHONES jack

Sideband Indicator Lighting

Power Indicator

AFC-1 Front Panel Controls:

Power ON/OFF

AFC RESET AGC SELECT

Fade ALARM ADJUST CARRIER COMPENSATOR Fade Alarm Indicator Power Indicator

MSR-6 Rear Panel Facilities:

IF Input jack Threshold controls AC Power Input Audio output terminals

AFC Terminal

HI/LO output level control 17 Kc carrier output jack 17 Kc reference input jack

AFC-1 Rear Panel Facilities:

Carrier input jack

17 Kc reference output jack AFC output terminal AGC output terminal Remote fade alarm output

AC power input

Power Requirements:

105/115/125/210/230 volts

50 - 60 cps Single Phase 110 watts

Size and Weight:

25 lbs. net AFC-1 MSR-6 25 lbs. net 50 lbs. net AFS-1

AFC-1 MSR-6

AFS-1

5-1/4" high x 19" wide x 11-1/4" deep. 5-1/4" high x 19" wide x 11-1/4" deep.

Gross shipping weight, case packed, 120 lbs. 24-1/2" x 19-1/2" x 23".

Mounting:

Standard 19" relay rack

MSR-6 Tube Complement:

Relay driver 12AU7 12AT7 Amplifier & Oscillator

12AU7 17 Kc Oscillator & Audio Amplifier

6**J**6 Reactance tube 6AG5 1st Oscillator 6BA6 IF Amplifier 6BE6 1st Mixer 6BE6 2nd Mixer

6AQ5 Audio Power Amplifier 5Y3 Power Rectifier

OA2 Voltage Regulator

AFC-1 Tube Complement:

6AU6 1st Carrier Amplifier 2nd Carrier Amplifier 6AU6

12AX7 Limiter

6U8 17 Kc Amplifier/Phase

detector amplifier 17 Kc xtal oscillator 12AX7 Carrier Rectifier 12AL5

Memory lock & fade alarm 12AU7 6AG5 Constant current pentode

6AB4 Memory follower

+150 v voltage regulator OA2 OA2 -150 v voltage regulator

Components & Construction:

All equipment manufactured in accordance with JAN/MIL Specifications wherever practicable.

THE TECHNICAL MATERIEL CORPORATION

700 FENIMORE ROAD

CABLE TEPEI MAMARONECK, N.Y.



MAMARONECK, NEW YORK

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