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COMMUNICATIONS RECEIVER

The Model GPR-90 Receiver is a professional, general purpose communications receiver of the double conversion superheterodyne type covering the frequency range of .54 to 31 mcs. The receiver features low noise, excellent selectivity, a highly stable HFO and BFO, accuracy in calibration, the finest components, and is designed for ease of servicing. Also available: GPR-90R, 3/16" aluminum panel for rack mounting with dust covers, side plates, less cabinet.

New and novel features such as low noise grounded grid broad-banded ferramic input stage, low intermodulation, delayed AVC, audio selectivity and excellent audio response make this the finest receiver in its class.

FREQUENCY RANGE: .54 to 31 mcs in six bands. **TYPE OF RECEPTION:** AM, CW, MCW, FS and SSB. **TUNING SYSTEM:** Accurately calibrated main tuning dial plus full electrical bandspread. **SENSITIVITY:** Better than 1 microvolt for 10 db signal to noise ratio. **IMAGE RATIO:** Average 85 db. **CRYSTAL CALIBRATOR:** Provides 100 kcs markers through tuning range. **STABILITY:** Better than .002% first three bands and .003% remainder of range.

GPR-90

**OCDM APPROVED
ITEM T-16
BULLETIN 179**



**R-825/URR
(GPR-90R)**

GPR-90RX



**OCDM APPROVED
ITEM R-02/R-16
BULLETIN 205**

R-840/URR

COMMUNICATIONS RECEIVER

The Model GSB Single Sideband Adapter is a filter type slicer permitting accurate and simple tuning of Single Sideband, AM, CW and MCW signals. The unit incorporates features which will improve any receiving system. The filter provides additional selectivity and pass-band tuning. Additional AVC (FAST/SLOW) prevents powerful local stations from overloading the receiving system. The noise limiter reduces impulse peaks. Available as GSB-2 for Rack Mount.

Electrical bandspread eliminates the critical frequency adjustments characteristic of single sideband tuning. Upper and lower sidebands are selected by a flip of a switch:

FREQUENCY RANGE: 452 to 458 kcs. **RECEPTION:** AM, SSB (upper or lower), CW, and exalted carrier. **INPUT:** 0.1 to 10 volts. **OUTPUT:** One Watt into 6, 8, 16 or 600 ohms. **TUNING:** Bandspread control calibrated in cycles.

COMMUNICATIONS RECEIVER

The Model FFR is a highly versatile receiver, covering the frequency range 50 Kcs to 32 Mcs and is used for dependable, unattended continuous reception of AM, CW, MCW, FS and SSB signals. Provision is made for Crystal, Internal and External operation of the HFO and BFO. Rapid frequency change is made possible by means of accurately calibrated pretuned plug-in 'front ends'. Remote control and diversity features are incorporated as standard features. The Receiver is also available with squelch (CODAN), and for Beacon Monitoring purposes.

FREQUENCY RANGE: 50 to 400 kcs, 500 kcs, 2 to 32 mcs. **BAND CHANGE:** By means of pretuned, preheated, receiver front ends. **TYPE OF RECEPTION:** AM, CW, MCW, FS and SSB. **CONTROL:** Manual or remote. **FREQUENCY CONTROL:** Crystal or VFO. **SENSITIVITY:** Better than 1.0 microvolt for 10 db Signal to Noise Ratio. **OVERALL SELECTIVITY:** 2 to 32 mcs—Less than 5 kc at 6 db down. Variable Selectivity—50 kc - 400 kc. 5, 1.3, 0.5, 0.3 kc at 6 db down.

FFR

BULLETIN 200



**AN/FRR-49(V)
AN/FRR-502**

DUAL DIVERSITY RECEIVER

The Model DDR-3 Dual Diversity Receiver is an all-purpose receiving system, covering the frequency range of .54 to 31 mcs, for the reception of AM, FS, CW, MCW and SSB signals in diversity. The system incorporates the Model GPR-90 Receiver in conjunction with the VOX Variable Frequency Oscillator, a unique diversity combining unit and a visual tuning indicator.

FREQUENCY RANGE: .54 to 31 mcs. **RECEPTION:** AM, FS, CW, MCW and SSB. **FREQUENCY CONTROL:** Crystal or high stability VFO. **DIVERSITY COMBINING:** AM, CW and SSB—By means of Model DCU Combining Unit, FS—Audio type converter, Model CFA.

DDR-3

BULLETIN 190



RECEIVING MODE SELECTOR

The Model MSR-4 Receiving Mode Selector, provides Selectable Side Band reception of SSB or AM Signals, improved CW/MCW reception, exalted Carrier AM, simultaneous reception of AM and FS with one receiver, and band pass tuning. Two MSR's may be used with a single GPR-90 receiver to provide reception of two independent side bands. The MSR-4 may be used for local or remote operation.

INPUT FREQUENCY RANGE: 452-548KC in local osc position, any normal receiver IF frequency in crystal position by proper selection of crystal. **RECEPTION:** AM, SSB (upper or lower), CW and exalted carrier. **OUTPUT:** High Level, 2 watts, 600 ohms, 8 ohms; Low Level, 150 milliwatts, 600 ohms, 8 ohm speaker. **TUNING:** Calibrated Bandsread Control or crystal selection of USB or LSB.

The Model MSR-3 is similar to the MSR-4 but is for use with receivers having an intermediate frequency range of 197-203 kc when the MSR-3 oscillator is variable or normal crystal is used. Or, 200 kc to 1.5 mc when the MSR-3 oscillator is crystal controlled only. **INPUT FREQUENCY RANGE:** 197-203 kc, 200 kc-1.5 mc; **RECEPTION:** AM, SSB (upper or lower), CW and exalted carrier. **OUTPUT:** High—2 watts, 600 ohms, 8 ohms. Low—0 dbm, 600 ohms; 150 mw, 600 ohms, 8 ohms. **TUNING:** Calibrated bandsread control or crystal selection of USB or LSB.

MSR



**OCDM APPROVED
ITEM R-16-SSB
BULLETIN 196**

**CV 591A/URR
CV 657/URR**

SINGLE SIDEBAND ADAPTER

The Model GSB Single Sideband Adapter is a filter type slicer permitting accurate and simple tuning of Single Sideband, AM, CW and MCW signals. The unit incorporates features which will improve any receiving system. The filter provides additional selectivity and pass-band tuning. Additional AVC (FAST/SLOW) prevents powerful local stations from overloading the receiving system. The noise limiter reduces impulse peaks. Available as GSB-2 for Rack Mount.

Electrical bandsread eliminates the critical frequency adjustments characteristic of single sideband tuning. Upper and lower sidebands are selected by a flip of a switch:

FREQUENCY RANGE: 452 to 458 kcs. **RECEPTION:** AM, SSB (upper or lower), CW, and exalted carrier. **INPUT:** 0.1 to 10 volts. **OUTPUT:** One Watt into 6, 8, 16 or 600 ohms. **TUNING:** Bandsread control calibrated in cycles.

GSB



**OCDM APPROVED
ITEM R-16-SSB
BULLETIN 194**

REMOTE CONTROL SYSTEM

The Model RCR, Remote Control System is a Variable Frequency Control system arranged to provide control of HFO, BFO, BFO On/Off, RF Gain Remote/Local AVC and Audio Gain of up to five communication receivers from a remote site. This system may be operated over any radio or voice circuit providing a 300-3000 CPS channel. The system is frequency sensitive and therefore virtually unaffected by amplitude variations and noise interference.

The RCR system permits the placement of receivers in a favorable location with individual operator control located at a convenient operational site. As a result, users of this equipment have more than doubled the usable receiving range of existing location.

This system is used in conjunction with the TMC Model FFR Communication Receiver to provide:

1. Remote Controlled Air/Ground, Ship/Shore, CW, AM & SSB communications.
2. Remote Controlled point to point, CW, AM, SSB and FS operation.
3. Remote Controlled diversity operation.
4. Remote Controlled reception of facsimile and photo.

In addition to the above, the RCR system may be used to control any device requiring vernier and on/off control in a telemetering, automation, or guidance system.

RCR



BULLETIN 124C

**AN/FRA 19V
AN/FRA 501A**

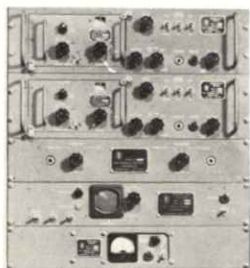
DIVERSITY RECEIVING PACKAGE

The Model DRP-1 Diversity Receiving Package combines the Model FFR (AN/FRR-49(V) Receiver, the Model CFA, FS Converter, and the Model PSP, Power Supply, into a compact, easy to operate system capable of receiving AM, FS, CW and MCW signals in diversity within the frequency range of 50 to 400 Kcs and 2 to 32 Mcs.

Either SPACE or FREQUENCY Diversity may be used. Pretuned, plug-in, receiver 'front ends' provide quick frequency change. The package may be remotely controlled by use of the Model RCR (AN/FRA-501) Remote Control System.

FREQUENCY RANGE: 50 to 400 Kcs and 2 to 32 Mcs. **RECEPTION:** AM, FS, CW and MCW. **FREQUENCY CONTROL:** Crystal, Internal or External VFO and BFO. **REMOTE CONTROL:** By means of Model RCR Remote Control System. **DIVERSITY COMBINING:** AM-MCW-CW—Common diode load, FS-CW—Audio type converter Model CFA. **OUTPUT:** Audio output 8 or 600 ohms, teletype-writer output DC into 2000 ohms.

DRP



BULLETIN 170

FREQUENCY SHIFT CONVERTER

The Model CFA Frequency Shift Converter is an audio type, dual channel converter for use with diversity or single receiver systems, used to convert the mark and space tones of a frequency shifted signal into DC pulses capable of operating a teletypewriter.

The CFA is a compact equipment incorporating visual monitoring, wide signal drift acceptance, mark hold and bias correction. The unit is available for optimized narrow shift applications.

INPUT LEVEL: Minus 30 to plus 30 dbm. **LIMITING:** 50 to 60 db per channel. **INPUT FREQUENCY DRIFT LIMITS:** Up to 1500 cycles. **KEYING SPEEDS:** Up to 600 wpm. **TUNING INDICATOR:** Two inch cathode ray tube. **OUTPUT CIRCUIT:** Neutral, either side grounded or floating.

CFA

BULLETIN 120



CV-763/URR

PSP

POWER SUPPLY

The Model PSP Power Supply, provides a source of DC current for use in communication circuits where DC battery power is required for keying relays, teleprinter or any other similar terminal equipment. The PSP has been designed to provide a steep wave front when keyed, to promote more positive action of relay or magnet operated equipment. The Power Supply is available as a single unit Model PSP-1 or as a double unit Model PSP-2.

BULLETIN 121

OUTPUT CURRENT: Direct Current, 5.0 ma to 75 ma, variable by means of a front panel control. **OUTPUT LOAD:** 75 ma maximum into 2000 ohms with lower values of current into higher impedances, available ungrounded or either side grounded. **METERING:** 0 to 100 ma output current meter.

PP-2232/U

FILTER PANEL

The SFP-2 Filter Panel is an audio type dual channel bandpass filter used on Frequency Shift receiving circuits to eliminate adjacent channel interference. The standard SFP-2 uses "Mark" 2975 cps and "Space" 2125 cps. Other frequencies are available on special order.

BULLETIN 168

SFP-2



PASSIVE VOLUME COMPRESSOR

The TMC Model PVC, Passive Volume Compressor, is a compact, versatile audio power limiting device which requires no power supply for operation. Installed between a receiver or other audio source and a speaker, headset, telephone line etc., it will hold its output level constant within 3 dbm for an input range of 2 to 70 volts (better than 30 db excursion).

BULLETIN 216

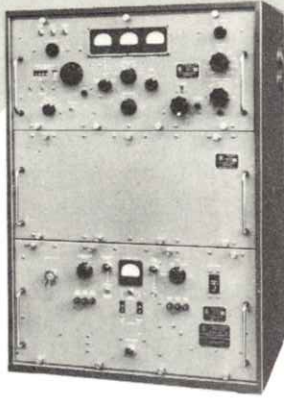
INPUT IMPEDANCE: 600 ohms balanced. **OUTPUT IMPEDANCE:** 600 ohms balanced. **OPERATING RANGE:** Input—minus 18 to plus 37 dbm; Output—minus 27 to plus 1.0 dbm. **KEYING SPEED:** Up to 1000 wpm or 800 bauds. **BANDWIDTH:** 20 to 5000 cps, essentially flat response. **DISTORTION:** Intermodulation—minus 43 db; 2nd Harmonic—negligible. **RISE AND DECAY TIME:** 75 microseconds. **ATTACK TIME:** 0.5 seconds max. to operating level after first syllable.

PVC

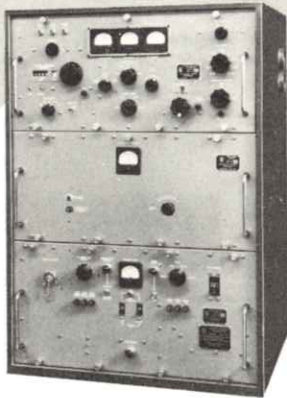


GENERAL PURPOSE TRANSMITTERS

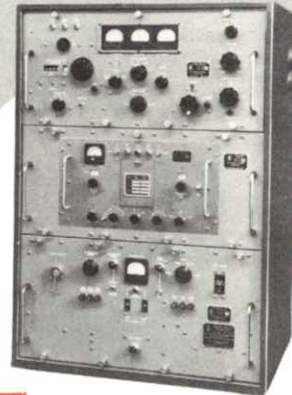
The Model GPT-750 has, during the past few years, become the "work-horse" of the communications field, thereby replacing such famous transmitters as the BC-610. Suggestions due to environmental testing have resulted in a completely ruggedized unit incorporating new features enhancing its mobile and shipboard applications. The Model GPT-750 transmitter provides 750 watts output single side-band and AM, 1000 watts CW and FS (all ratings CCS) over the continuous frequency range of 2 to 30 mc., bandswitched. Serviceability is one of the outstanding points of interest, and slide out drawers make for easy access to all components for adjustment or replacement. This feature permits economical combinations to suit a particular need. The various combinations and their types of emission are shown on this page. The flexible design of the final amplifier permits all modes of operation without modification.



GPT-750(A)



GPT-750(B)



GPT-750(C)



RTC

AN/URT-17

BULLETIN 134A

OPERATING MODES

- GPT-750(A)-2 CW
- GPT-750(B)-2 AM CW *MCW
- GPT-750(C)-2 CW FAX FS
- GPT-750(D)-2 AM CW *MCW ISB DSB SSB

* Using external source of keying tone such as supplied by the TMC Model RTC, Remote Control Amplifier.



GPT-750(D)



GPT-10K

AN/FRT-39

BULLETIN 207B

GENERAL PURPOSE HI-POWER TRANSMITTER

The TMC Model GPT-10K, Radio Transmitter, is a conservatively rated, general purpose unit capable of providing 10 kw PEP output throughout the range 4 to 28 megacycles. All power amplifier stages are linear and the final is a ceramic tube for increased efficiency and reliability. Containing all components within a single attractive enclosure, the GPT-10K includes all excitation equipment, V.F.O., spectrum analyzer, F.S. Exciter, an complete "on the air" testing circuitry.

FREQUENCY RANGE: 4 to 28 mc continuous. **OUTPUT POWER:** 10 kw, 2 tone PEP, 35db 3rd order product suppression, 5 kw, 40 db. **OPERATING MODES:** CW, MCW, SSB, ISB, DSB, FS. **FREQUENCY CONTROL:** High stability VFO, 10 oven controlled crystals, three oven controlled crystals in FSK, provision for frequency synthesizer.

OUTPUT IMPEDANCE: 70 ohms unbalanced, 600 ohms balanced. **AUDIO BANDWIDTH:** 3 kc or 7.5 kc. either sideband. **POWER REQUIREMENTS:** 208/230 volts, 50/60 cps, 3 phase, approx. 13 kw.

LINEAR POWER AMPLIFIER

The TMC Model PAL 350 is a conservatively rated general purpose amplifier providing 300 watts PEP output over the frequency range 2 to 32 mcs. The PAL-350 occupies 14" of rack space or may be mounted in a cabinet for table top use. The Amplifier is provided with a Pi Output network, interlocks, overload and fuse protection, forced filtered blower system and a very effective ALDC system.

FREQUENCY RANGE: 2 to 32 mcs. **POWER OUTPUT:** 300 watts 2 tone PEP, 400 watts key down CW or FS. **TUNING:** Front panel bandswitched. **INPUT REQUIREMENTS:** 100 milliwatts to full output. **3rd ORDER DISTORTION:** 40 db down at PEP.

PAL-350

BULLETIN 215



TRANSMITTING MODE SELECTOR

SBE

The TMC Model SBE, Transmitting Mode Selector, is a universal exciter permitting the transmission of any intelligence on Single or Double Sideband, with or without carrier. The exciter may be used for simultaneous or independent transmission of intelligence on either upper or lower sideband. For example: a voice channel can be transmitted on the upper sideband while tone multiplex is being transmitted on the lower sideband.

**OCDM APPROVED
ITEM T-32
BULLETIN 195C**

FREQUENCY RANGE: 2 to 32 megacycles continuous, bandswitched. **OPERATING MODES:** Single sideband*, double sideband*, independent sideband*, amplitude modulation, CW or MCW. (* may be used with any degree of carrier insertion.) **FREQUENCY CONTROL:** Temperature controlled crystals or external VFO or synthesizer. **STABILITY:** 1 PPM for a 24 hour period. **OUTPUT POWER:** Continuously adjustable from zero to a maximum of 2.5 to 3 watts PEP. **NOTE:** SBE is available with either 3 kc or 7.5 kc filters.



AN/URA-23A

PORTABLE MASTER OSCILLATOR

The Model PMO Portable Master Oscillator and Heterodyne Frequency Meter is a highly stable, precision, direct reading device used as a transmitter exciter, frequency meter or receiver calibrator. It provides output over the range 2 to 8 mcs and is directly calibrated by means of a counter-dial system over the range of 2 to 4 mcs. An oven controlled 100 kc oscillator provides visual calibration of the unit.

FREQUENCY RANGE: 2 to 8 mcs. **OUTPUT:** 3 Watts adjustable into 70 ohms. **STABILITY:** Better than 20 parts per million for a 30 degree C change in ambient. **CALIBRATION:** Direct reading in cycles 2-4 mcs. **READABILITY, RESETABILITY:** 30 parts per million to a previously calibrated frequency. **CALIBRATION:** Against a calibrator controlled 100 kc crystal oscillator with visual indication.

PMO

BULLETIN 193A



O-459/URT

VARIABLE FREQUENCY OSCILLATOR

The Model VOX Variable Frequency Oscillator is a direct reading, precision variable frequency device designed to replace the crystal oscillator of a diversity receiver or of a transmitter. This oscillator is also used as a secondary standard.

The VOX provides a continuously variable output over the range 2 to 64 mcs, with direct reading calibration over the basic oscillator range with better than .002% long term stability. Frequency calibration is provided by means of an oven controlled 100 kc crystal oscillator with visual Zero Beat indication.

FREQUENCY RANGE: 2 to 64 mcs. **OUTPUT:** 3 - 75 ohm coaxial outputs. **STABILITY:** Better than 20 parts per million for Zero to 50 degrees C change in ambient. **RESETABILITY:** Better than 20 parts per million to a calibrated frequency. **ADDITIONAL FEATURES:** 1. Crystal BFO for receiver control provided. 2. Crystal IFO for receiver control provided. 3. Three HFO crystal positions provided.

VOX

BULLETIN 134A



O-330/FR

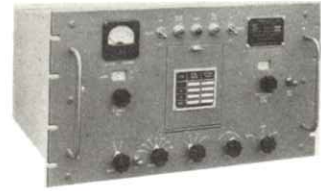
FREQUENCY SHIFT EXCITER

The Model XFK Frequency Shift Exciter is a high stability radio frequency oscillator which replaces the crystal oscillator in the transmitter and provides the mark and space pulses necessary for the transmission of teleprinter, telegraph, narrow band FM telephone, facsimile or telephoto intelligence. The XFK features two precision temperature controlled ovens providing the high stability required for unattended operation.

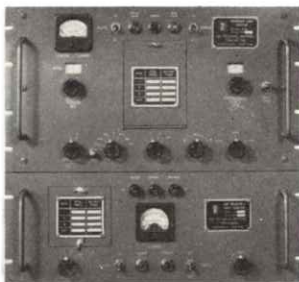
FREQUENCY RANGE: 1 to 6.9 mcs. **FREQUENCY SHIFT:** Linear to 1000 cycles. **OUTPUT:** 3 Watts adjustable into 70 ohms. **CONTROLS:** Directly calibrated in frequency. **FREQUENCY CONTROL:** 3 crystal positions and one external oscillator position. **KEYING SPEED:** 1000 wpm. **STABILITY:** 10 cycles for an ambient change of 50 degrees C. **TRANSMITTER MULTIPLICATION:** Automatic by means of a unique patching system.

XFK

BULLETIN 118



C-2749/URT



XFL-2

BULLETIN 154

FREQUENCY SHIFT EXCITER SYSTEM

The XFL-2 Frequency Shift Exciter System uses the LFA Adapter and the XFK Frequency Shift Exciter to provide frequency shift operation over the range 50 - 500 kc and 1 - 6.9 mc. The LFA Low Frequency Shift Adapter may be used with existing keyers to provide LF operation and may be obtained separately.

ANTENNA TUNING UNIT

The Model TAC Antenna Tuning Unit matches the 70 ohm unbalanced output of a radio transmitter to balanced or unbalanced loads ranging from 50 to 1200 ohms over the frequency spectrum 2 to 30 Mc.

The Tuning Unit incorporates a unique, continuously variable, contact type inductance with switched taps to control the loading of the transmitter over the frequency range. Capacitor spacing and teflon insulation prevents flash-over.

FREQUENCY RANGE: 2 to 30 Mcs. **INPUT IMPEDANCE:** Nominal 75 ohms unbalanced. **OUTPUT IMPEDANCE:** 50 to 1200 balanced or unbalanced. **RF POWER RATING:** 1000 watts input.

TAC

BULLETIN 163



CU-658/U

RTC



BULLETIN 183

REMOTE CONTROL AMPLIFIER

The Model RTC Remote Control Amplifier is a multi-purpose unit providing amplification for a low level microphone, selectable peak clipping and variable tone output for MCW. The unit also makes possible remote keying, break-in and other semi-remote transmitter control functions.

The peak clipping feature may be switched into operation by means of a front panel switch. The clipping characteristic is continuously adjustable 0 to 20 db, and high and low pass filters are provided.

INPUT LEVEL: Minus 50 db for full output. **OUTPUT LEVEL:** 0 volts to plus 6 dbm, continuously variable. **FREQUENCY RESPONSE:** Plus/Minus 2 db from 100 to 7500 cps. **DISTORTION:** Less than 2% total harmonic. **CLIPPING:** 0 to 20 db continuously adjustable.

ANTENNA TUNING SYSTEM

The TMC Model ATS, Antenna Tuning System, is a new and unique remotely controlled antenna coupler designed to couple the output of a 1 kw transmitter with 50 or 70 ohm unbalanced output to a 35 foot whip antenna, over the frequency range 2 to 30 megacycles. The system consists of an RF Tuner, remotely controlled; a Control Monitor, with SWR Indicator; and a Coupling Unit. The RF Tuner is contained in a fiberglass reinforced plastic case with removable cover. The case is designed for outside installation at the base of the antenna. The Control Monitor is case mounted or will require 8 3/4 inches of space in a standard 19" relay rack.

FREQUENCY RANGE: 2 to 30 mcs. **POWER RATING:** 1 KW input continuous at 100% modulation. **INPUT IMPEDANCE:** 50 ohms (ATS-50), 70 ohms (ATS-70), unbalanced. **OUTPUT IMPEDANCE:** 70 ohm system, will match a 35 foot whip antenna with a resistance of 2 to 650 ohms and a reactance of plus J750 to minus J850, to obtain a VSWR of less than 2.5 : 50 ohm system, will match a 35 foot whip antenna with a resistance of 2 to 500 ohms and a reactance of plus J750 to minus J850, to obtain a VSWR of less than 2.5. **STANDING WAVE RATIO:** Better than 2.5 to 1. **DIRECTIVITY OF STANDING WAVE COUPLER:** Better than 20 db. **EFFICIENCY:** Better than 80% over the 2 to 30 mc range.

ATS

BULLETIN 209



AN/URA 24
AN/URA 25

AMC/LMC

ANTENNA MULTICOUPLER

The TMC series of Antenna Multicouplers are broadbanded electronic coupling devices designed to couple a number of receivers to a single receiving antenna. They cover the frequency range 15 kc to 30 mc and provide an effective match with a minimum of interaction between receivers, and a minimum of intermodulation and cross modulation.

Multicoupler operational requirements are divided into two major categories, the first requiring maximum sensitivity and low system noise; the second calling for maximum overload and intermodulation characteristics in the face of high intensity RF signals. The TMC Models AMC-6-2 and AMC-6-3 are designed to satisfy the first requirement, and the Model AMC-6-5 satisfies the second.

All Multicouplers in the series feature the use of specially designed wideband transformers, uniform gain, lowest noise figures, and high attenuation of spurious signals. Cascade operation is a must and any TMC Multicoupler may be used in cascade to provide up to 36 outputs from a single antenna without degradation. A switchable broadcast filter is standard in all units with the exception of the LMC.

The series 5 features a new dynamic test circuit which provides a front panel meter check of the input amplifier and each output circuit.

BULLETIN 155C

CU-5013/SRR

STANDING WAVE RATIO INDICATOR

The TMC Model SWR-3000, Standing Wave Ratio Indicating System, is designed to provide accurate, direct reading VSWR, forward and reflected power measurements of 50 or 70 ohm transmission lines with very little insertion loss. Any high frequency transmitter producing up to 3000 watts when operating into a transmission line with a VSWR of better than 5 to 1 over the frequency range of 2 to 32 megacycles can be accommodated. If a VSWR of 5 to 1 or better cannot be obtained, a suitable reduction in transmitter power must be made. The system is composed of several units as described below.

SWR-3000 RM . . . contains the VSWR meter, a ten position switch for selection of the line to be measured. This unit can be case or rack mounted.

SWR-3000 PM . . . contains only the VSWR meter and is contained in a light portable plastic case.

SWR-3000 CU . . . This is the coupling unit, essentially a balanced RF bridge network, and should be mounted within ten feet of the antenna.

SWR-3000 JB1 . . . is a junction box to accomplish the connection between the Coupling Unit and either or both of the meter units.

FREQUENCY RANGE: 2 to 32 megacycles. **POWER CAPACITY:** 3000 watts maximum with a VSWR not greater than 5 to 1. **METER ACCURACY:** within 10%. **TRANSMISSION LINES:** 70 or 50 ohm. **INSERTION LOSS:** negligible. **DIAL CALIBRATION:** Analog isolines directly indicate VSWR. Power indication on linear scales.

SWR-3000

BULLETIN 198A



TRC

SERIES TRC

The TRC Series are transmitting type broadbanded antenna couplers for transferring RF Power from unbalanced inputs to balanced outputs over the frequency range 2 to 30 Mcs. These are passive transformer devices requiring no tubes, power supplies or tuning adjustments.

TRC 100	100 watts
TRC 500	500 watts
TRC 3500	3500 watts

BULLETIN 218

CU-729/URT

RHOMBIC ANTENNA COUPLERS

The RAC Series covers broadband transformers designed to couple a coaxial transmission line to a receiving rhombic antenna. The units match a balanced input to an unbalanced line in many varying combinations to suit field requirements. Frequency response is flat within 3 db from 2 to 60 mcs. Protection for static charges and DC checking of continuity of the antenna and transmission line are provided.

FREQUENCY RANGE: 2 to 60 megacycles. **INPUT AND OUTPUT IMPEDANCES:** Variable according to unit selected. **FREQUENCY RESPONSE:** Flat within 3 db over the frequency range.

RAC



BULLETIN 112C

RHOMBIC TERMINAL UNITS

The Models RTB Rhombic Terminal Units were designed to complement the Models RAC Rhombic Antenna Couplers, and provide rugged and proper connections for the antenna.

The series has recently been redesigned to provide additional resistance coverage and center taps on all units.

The Model RTB consists of 2 or 4 resistors as required, to provide terminations of 280, 600 or 700 ohms, plus a spare resistor mounted within the case. The resistors are plug-in, ferrule type for ease of maintenance and replacement.

A built-in lightning arrestor prevents the build up of static charges which might damage associated equipment.

TERMINATION RESISTANCE: RTB-3: 280 ohms, RTB-4: 700 ohms, RTB-5: 600 ohms
EQUIPMENT CASE: Weather resistant, cast of aluminum alloy.

RTB



BULLETIN 156B

VERTICAL RECEIVING ANTENNA

The VRA Series of Vertical Receiving Antennas are convenient broadbanded devices used for local receiver monitoring purposes. Each unit is provided complete with an 18 foot vertical whip antenna, a cast aluminum weatherproof case containing a matching transformer, a universal mounting kit and hardware.

FREQUENCY RANGE: VRA-1: 200 to 800 kcs. VRA-2: 2 to 30 mcs.

VRA



BULLETIN 169

DIPOLE ANTENNA COUPLERS

The TMC Dipole Antenna Couplers, Models DAC are impedance matching devices, each providing a balanced connection for the center of a receiving dipole to an unbalanced connection for the coaxial transmission line.

Bronze connector rings are provided for the antenna connector and for messenger tie points. The entire unit is contained within a sealed fiberglass reinforced plastic case, and additional strength and weather resistance is provided by "potting" the transformer and connectors in a plastic compound. A built-in lightning arrestor prevents the accumulation of static charges which otherwise might injure associated equipment.

FREQUENCY RESPONSE: Flat within 3 db throughout the frequency range.

EQUIPMENT CASE: Reinforced fiberglass plastic.

INPUT TERMINALS: Standard ring type.

IMPEDANCE: Standard 72 ohms bal. to 72 ohms unbal., others available upon request.

DAC



BULLETIN 158A

RF PATCH PANELS

The TMC Series QDP RF Patch Panel Assemblies were designed to utilize the new Quick-Disconnect Series of coaxial connectors for use in transmitting and receiving patching schemes. The QDL connectors are for operation with 10,000 volt peak power cables, such as RG-17, 18, 34, 35 and 164/U. The QDS connectors are for use with the smaller 4,000 volt cables such as RG-8, 10, 11 and 12/U. These QDP assemblies permit station designs incorporating efficiency and versatility never before possible.

QDP

QDP-411A



BULLETIN 197



SB-931/U

SPP



BULLETIN 210

SB-932/U

SWITCHING PATCH PANELS

The TMC series Models SPP, Switching Patch Panels, are improved switching panels for use in RF Signal Distribution systems where a "normalizing" patching scheme is indicated. These panels replace various AN type jack panels and their associated rear jumper connections. The switch mechanism in these devices is a new coaxial design providing a positive action locking arrangement for the mating plugs. The panels are standard 19" rack mount and vary in height from 1 3/4 to 3 1/2 inches.

VSWR: The VSWR taken from QDS through to UHF, or UHF through to UHF, is never greater than 1.02/1 over the frequency range of 2 to 32 megacycles. In fact, over the larger portion of the frequency range it is considerably less.
ISOLATION: With connections to one QDS plug and with both UHF jacks terminated in 70 ohms, the isolation from UHF to UHF is 55 db at 8 megacycles and 42 db at 30 megacycles. With connections to both QDS plugs and with both UHF jacks terminated in 70 ohms, the isolation from UHF to UHF is 64 db at 8 megacycles and 50 db at 30 megacycles.

RF SWITCHING JACK

The TMC SW-195, RF Switching Jack is a newly designed component using the new, Quick Disconnect Series of coaxial cable connectors. The assembly includes a novel switch action which is positive, clean, and provides a minimum standing wave ratio. The SW-195 directly replaces RF Jack Switch Type CIA-491388, used with the J-239/G Jack Panel, providing an electrical configuration as follows:

Part SW-195, uses UHF female receptacles Navy type 49191 on the antenna side, and for those installations using the miniature cables such as RG-58 and 59/U, Part SW-196 is available. This unit is exactly the same construction but uses BNC receptacles on the antenna side.

SW 195

BULLETIN 223



SA 598/U

COAXIAL CABLE ASSEMBLIES

TMC manufactures a series of "length to order" cable assemblies for those requiring coaxial RF patch cables with QDS (Quick disconnect, small) or QDL (Quick disconnect, large) connectors. They are recommended for use with the TMC Models, SPP, QDP and BJP patch panels, and all other equipments requiring the use of similar cable types. Angle connectors are available to relieve sharp cable bends and to allow neater installations where practicable.

BULLETIN 222

CA-3235-() * Cable assembly QDS

CA-323L-() * Cable assembly QDL

CA-3435-() * Cable assembly QDS with flange

CA-3665-() * Cable assembly QDS angle with flange

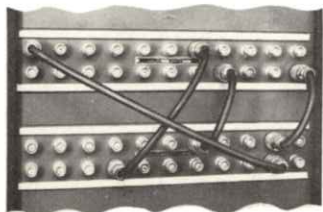
CA-3685-() * Cable assembly QDS angle

CA-373L-() * Cable assembly QDL angle

CA-3745-() * Cable assembly QDS, RG-59/U

CA-3825-() * Cable assembly QDS, RG-8/U

* Indicate length of cable in feet.



QDL, QDS SERIES CONNECTORS

The entry of TMC into the "systems" field has necessitated the development and manufacture, by us, of the many bits and pieces (cable assemblies, harnesses, patching panels etc.) which are the veins and arteries of any communication system. This is where QDL and QDS come in.

QDL and QDS are military assigned terms to designate the "Quick Disconnect, Large" and "Quick Disconnect, Small" series of coaxial connectors. The connectors are of a snap on type and provide positive locking when in place. Electrical contact is by means of standard pin and socket. The connectors in both the QDL and QDS series include plugs for use with all types of standard RG cables, and the standard arrangement of jacks for bulkhead mounting, feed thru, cable end, etc. See page 10 for panel applications.

FOR RG-85/U

ES 85/U	UG-1170/U	Terminates RG-85/U cable
TCA 85/12	RW491567	Terminates RG-85/U and reduces to RG-12/U
TCA 85/35QDL	UG-1165/U	Quick Disconnect adapter, RG-85 to 35/U
TCA 85/QDS	UG-1210/U	Quick Disconnect adapter, RG-85 to 12/U

**BULLETINS 162, 164,
191, 199**

END SEALS, PLUGS AND ADAPTERS

JJ-138	UG-934/U	QDL to QDL Female
JJ-156	UG-1073A/U	QDL End Seal for RG-77, 18, 35, 164/U
PL-136	UG-1020/U	QDL Plug
PL-141		QDL Plug, right angle to cable
PL-142	UG-1061A/U	QDL Adapter, right angle to jack
PL-143		QDL Plug
PL-146	UG-1020/U Mod.	QDL Plug for RG-34/U
PL-149		QDS Universal Plug, RG-8, 10, 11, 12/U
PL-156		QDS Plug, RG-58/U
PL-157		QDS Plug, RG-59/U
PL-159		QDS, right angle plug with flange
PL-161		QDS, right angle plug RG-8, 10, 11, 12/U
PL-162		QDS to UHF



TRANSMITTING ANTENNA DISSIPATORS TERMINATING RESISTORS AND DUMMY LOADS

The TMC TER series consists of specially designed non-inductive resistance elements packaged for indoor operation as dummy loads or outdoor operation as transmitting resistors. The resistors are of a new design providing a minimum of reactance. The case is reinforced fiberglass equipped with mounting devices, insulator bowls and 70 or 50 ohm connector, (unbalanced).

FREQUENCY RANGE: DC to 30 megacycles. POWER RATINGS: 500, 1750, 5000 watts. IMPEDANCES: 70 or 600 ohms balanced or unbalanced. COOLING: Natural air cooling. OPERATING TEMPERATURE: Minus 40 to plus 100 degrees F.

TER-500(600)	DA-199/U
TER-3500(600)	DA-200/U
TER-5000(600)	DA-201/U
TER-5000(50)	DA-209/U
TER-5000(70)	DA-210/U

TER

BULLETIN 188A

DA---/U



TR-107

DISTRIBUTION TRANSFORMER

The TR-107 is a broadband transformer covering the frequency range 2 to 30 mc and provides two 70 ohm outputs from a single 70 ohm input. These units may be cascaded.

BULLETIN 186



ANTENNA DISTRIBUTION UNITS

The Models HFD and LFD are passive antenna distribution units consisting of a specially designed broadband transformer with a single input and four outputs. These units allow four receivers to operate from a single antenna with minimum interaction and insertion loss.

HFD-1 and LFD-1 have rear panel connections.

HFD-2 and LFD-2 have front panel connections.

FREQUENCY RANGE: HFD 2 to 30 mc. LFD 15 kc to 2 mc. FREQUENCY RESPONSE: HFD flat within 1 db. LFD flat within 3.5 db. INPUT IMPEDANCE: 70 ohms unbalanced. OUTPUT IMPEDANCE: HFD 70 ohms unbalanced. LFD 50 ohms unbalanced. Balanced input and output are available on request.

HFD/LFD

BULLETIN 187

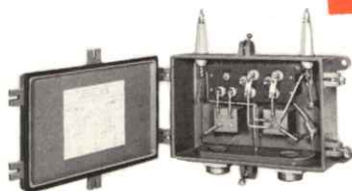


BAC • HLC

BEVERAGE WAVE ANTENNA COUPLERS

The BAC Series of Beverage Wave Antenna Couplers properly terminates each end of a Beverage long wire antenna and make it possible to reverse the direction of the antenna at the receiving end.

BULLETIN 142A - 177



HF/LF ANTENNA COUPLERS

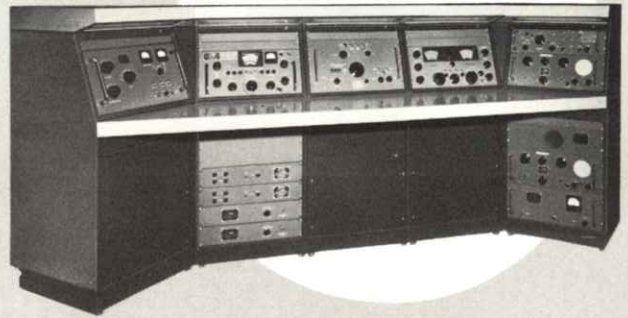
The Model HLC provides simultaneous HF and LF reception from a single antenna.

OPERATING CONSOLE

The Model CON Operating Console is an unusual "add a unit" type enclosure used in Point to Point, Air-Ground, Airport Control Tower, Mobile and Ship-board installations where maximum operator efficiency and equipment flexibility is required. The units are made up of standard 19" assemblies which can be used to form straight line, "L", "U" and many other arrangements. The cabinets are steel, finished in blue wrinkle enamel. Tops and desks are finished in grey formica. Mounting is standard 19" relay rack spacing. 12 1/4 inches of space above the desk and 21 1/4 inches below.

BULLETIN 211

CON



STONE INTELLIGENCE SYSTEM

TIS



BULLETIN 167

The Model TIS Stone Intelligence System is a multi-channel voice telegraph system for use on wire lines, radio or microwave links. The system is designed on a building block of four complete stone channels. Four such blocks can be combined to provide 16 discreet channels. Design features such as master power supplies, common stone transmitter chassis with plug-in frequency determining elements, common stone receiver chassis, master filter panels from which filters can be easily removed and changed, provide easy maintenance and a simplified logistics program. The system may be used with any type of terminal equipment which provides intelligence in an on/off form. This on/off keyed information is converted into tones and combined into a single composite for transmission. At the receiving end of the system the composite tones are restored to their original form, and the on/off intelligence is made available for use with the proper terminal equipment.

TRANSIT/OPERATING CASE

The TMC Model TOC, Transit/Operating Case, is a sturdy fiberglass reinforced carrying case designed for field or base station use. The units are stackable and will accept standard rack and panel units of any panel height up to 14 inches and with an 18 inch maximum depth.

MATERIAL: Reinforced fiberglass, cadmium plated steel edging. **SIZE:** 20 x 22 x 24 inches o/a.

TOC



BULLETIN 217

THE TECHNICAL MATERIEL CORPORATION

MAIN OFFICE AND PLANT

700 FENIMORE ROAD

MAMARONECK, NEW YORK

AND ITS SUBSIDIARIES . . .

TMC (Canada) Ltd.

TMC Industrial Corp.

Technical Materiel Development (Canada) Ltd.

