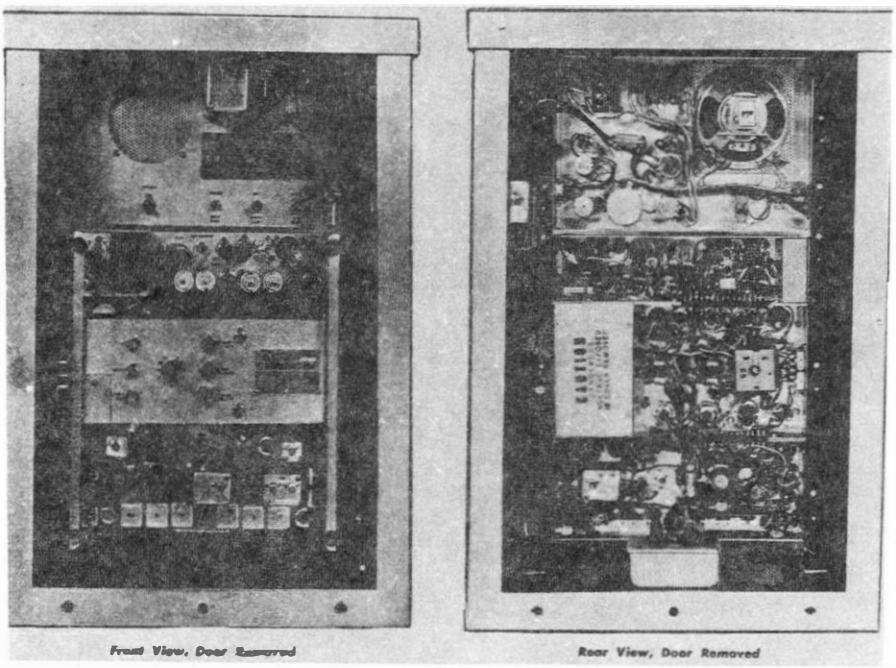
5 May 1966 RADIO SET AN/FRC-52B

Cog Service: USN FSN: Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Communication Co., Inc., (13848).



RADIO SET AN/FRC-52B

FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-52B is a fixed frequency single or dual channel, crystal controlled, dual conversion super-heterodyne type, designed for FM communication in the 25 to 54 mc/s band, for use in mobile or fixed station equipment. Each frequency conversion is crystal controlled using a separate crystal. The receiver is designed for either wide band or narrow band channel operation and can be easily changed from one to the other.

No field changes in effect at time of preparation (1 December 1965).

RELATION TO OTHER EQUIPMENT:

AN/FRC-52B is one way interchangeable with AN/FRC-52, and AN/FRC-52A. The AN/FRC-52B incorporates temperature controlled crystals mounted in ovens.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 25 to 54 mc/s.

SELECTIVITY	BANDWIDTH	
	WIDEBAND	NARROWBAND
2 x down (− 6 db)	30 kc/s	12 kc/s
100,000 x down (− 100 db)	52 kc/s	28 kc/s
85 db down by EIA Method	80 db down by EIA Method	

FREQUENCY STABILITY: ± 0.0005% temperature controlled, ± 0.002% non-temperature controlled. Optional at decreased price.
AMBIENT TEMPERATURE RANGE: − 30 deg C to + 60 deg C (exterior of case).
SENSITIVITY: 0.4 uv or less for 20 db noise quieting or EIA method of measurement.
SQUELCH SENSITIVITY: 0.2 uv or less.
SPURIOUS RESPONSES: − 100 db or better.
AUDIO OUTPUT: 1.5 watts with less than 10% distortion.
AUDIO FREQUENCY RESPONSE: Within + 1 db to − 3 db of a 6 db per octave slope over the range of 300 to 3000 cycles (1000 cps reference).
ANTENNA INPUT IMPEDANCE: 52 ohms.
AUDIO OUTPUT IMPEDANCE: 4 and 500 ohms.
RECEIVER CRYSTALS
CHANNEL DETERMINING CRYSTAL: 3rd mode type 75 deg C temperature controlled type, COMCO part no. 209-6RA, B or C. (May be furnished without temperature control on special order at decreased price, COMCO part no. 201-4RA, B or C).
OSCILLATOR RADIATION: Oscillator Radiation of the channel determining crystal and/or 2nd Conversion Crystal does not exceed FCC requirements part 15, Sub-part C.
POWER REQUIREMENTS: 117 v ac, 50 to 60 cycles single ph.
EMISSION: Type F3.
FREQUENCY CONTROL: Crystal.
POWER OUTPUT: 60 watt max.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Set AN/FRC-52B includes:		10-1/2 x 18-3/4 x 25-1/2	75
1	Receiver-Transmitter, Radio RT-407B/FRC-52			
1	Antenna, AT-739/U			
1	Local Control Panel			
1	Microphone			
1	Cabinet, Electrical Equipment			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92921(B): Technical Manual for Radio Set AN/FRC-52, 52A, 52B.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 5763 (1) 6146 (2) 6AL5 (1) 6AQ5 (12) 6BH6 (2) 12AT7 (1) 12AU7 (2) 12AX7

CRYSTALS: (2) 30 to 42 mc (1) 3450 kc (1) CR-18A/U

SEMI-CONDUCTORS: (17) 1N540

SHIPPING DATA

PKGS VOLUME (CU FT) WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: SHIPS-B-4405

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Communication Company, Inc.	Coral Gables, Florida	NObsr 89532	

19 July 1967 RADIO SET AN/FRC-83

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: General Electric Co. (08771)

RADIO SET AN/FRC-83

FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-83 operates as a fixed base station for use with mobile Radio Sets in the 132 to 152 mc range. Receives signals from mobile radio sets and relays, the signal to a remote control unit at some distance away. It is designed to be mounted on the cross-arm of a telephone pole.

No field changes in effect at time of preparation (30 November 1965).

RELATION TO OTHER EQUIPMENT: None

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None

TECHNICAL CHARACTERISTICS:

TRANSMITTER DATA

FREQUENCY RANGE: 132 to 152 mc, 1 band, 1 channel.
EMISSION: type F3.
POWER OUTPUT: 80 w maximum.

RADIO SET AN/FRC-83

RECEIVER DATA

FREQUENCY RANGE: 132 to 152 mc, 1 band, 1 channel,
EMISSION: type F3,

POWER REQUIREMENT: 117 v ac, 60 cyc, single ph.

TEMPERATURE RANGE: 30deg C to 60deg C(-22F to 140degF).

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Set AN/FRC-83 includes;		
1	Receiver-Transmitter, Radio	12-1/4 x 27 x 42	
1	RT-699/FRC-83,		
1	Antenna AS-1438/FRC		

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94704: Instruction Book for Radio Set AN/FRC-83.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: SHIPS-R-4099

DESIGN COG: USN, BuShips

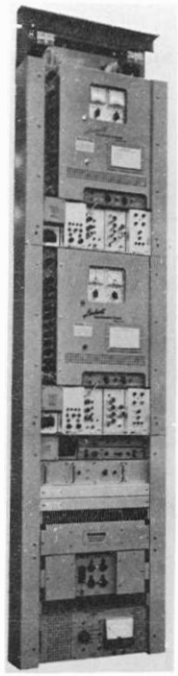
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
General Electric Co.	Lynchourg, VA.	NObsr-87643	

Cog Service: USN **FSN:** **Functional Class:**

USA **USN** **USAF**

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Lenkurt Electric Co., Inc.,(83744).



RADIO SET AN/FRC-84

FUNCTIONAL DESCRIPTION:

Radio Set AN/FRC-84 is a frequency modulated transmitting and Receiving equipment used in point-to-point shore-based, radio-relay link systems. It is a microwave system consisting of one bay of units, and associated power supplies.

A basic transmitter-receiver assemoly accepts 300 voice channels single sideband suppressed carrier. Provisions have been made for the simultaneous operation of up to four transmitters and receivers over a single antenna to meet high-traffic density demands (600 voice channels frequency diversity or 1200 voice channel non-diversity, hot-standby operations). This set may be utilized in several modes of operations, such as frequency diversity, space diversity, and hot-standoy. The radio link is usually made up of a number of stations located at intervals of 20 to 40 miles. This equipment is designed to accommodate a frequency division multiplex such as the AN/FCC-17.

No field changes in effect at time of preparation (31 August 1967).

RELATION TO OTHER EQUIPMENT: None

EQUIPMENT REQUIRED BUT NOT SUPPLIED: Not available

TECHNICAL CHARACTERISTICS:

TRANSMITTER
- TYPE EMISSION: F9.
- MAX POWER OUTPUT: 1.5w.
- FREQUENCY RANGE IN MC: 5925 to 6425.
  6575 to 6875.
  7125 to 7750.
  7750 to 8400.
- FREQUENCY STABILITY: ±0.02%.
- VIDEO INPUT IMPEDANCE: 75 ohms unbalanced.
- OUTPUT IMPEDANCE: 50 ohms nom.
- VIDEO INPUT LEVEL: -9 to -40 dbm.

RECEIVER
- TYPE EMISSION RECEIVED: F9.
- FREQUENCY RANGE IN MC: 5925 to 6425.
  6575 to 6875.
  7125 to 7750.
  7750 to 8400.
- VIDEO OUTPUT IMPEDANCE: 75 ohms unbalanced.
- NOISE FIGURE: 14 db.
- VIDEO OUTPUT LEVEL: -15 dbm.

POWER REQUIREMENTS: 115v ±10%, 47 to 100 cyc, 1 ph ac; 24v, +4 -2v dc; 48v, +8 -5v dc.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Set AN/FRC-84 includes:		
1	Radio Set U.S.N. CNO Lenkurt Electric Co. Inc. Type 74B-32001.		
1	Microwave Relay Set Lenkurt Electric Co. Inc. Type 74B-32001.		

REFERENCE DATA AND LITERATURE:

Nomenclature Request.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BUSHIP
SPEC &/OR DWG:

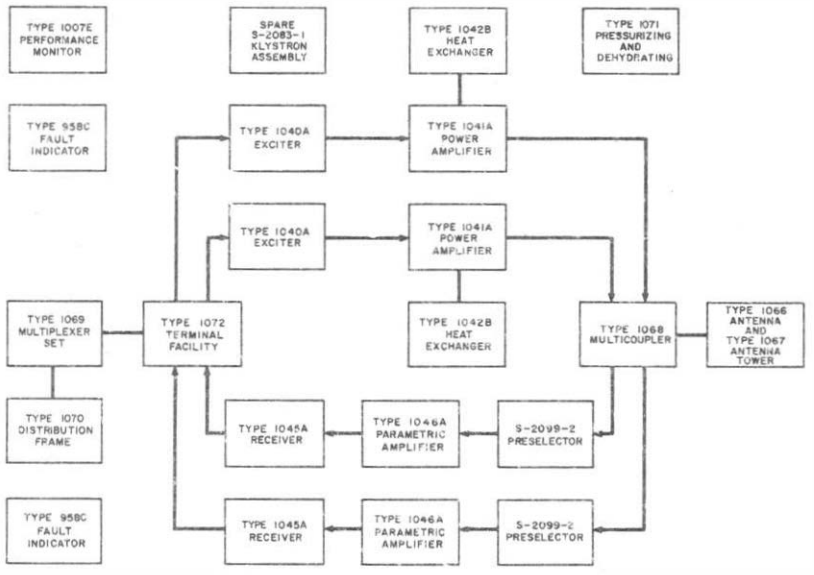
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Lenkurt Electric Co. Inc.	San Carlos, Calif.	N600(11)59326	

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Radio Engineering Laboratories, (77633).



RADIO-TERMINAL SET AN/FRC-92(V)

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FUNCTIONAL DESCRIPTION:

The Radio Terminal Set AN/FRC-92(V) is a shore facility used to provide one terminal in a multi-channel system, over a tropospheric scatter communications link. It is operated as a dual diversity system to increase the quality and reliability of reception.

No field changes in effect at time of preparation (10 February 1966).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

OPERATING FREQUENCY RANGE: 345 mc to 400 mc.
TRANSMITTER OUTPUT POWER: 20 kw (two 10 kw outputs diplexed).
TRANSMITTER OUTPUT IMPEDANCE: 50 ohms, nominal.

RECEIVER INPUT IMPEDANCE: 50 ohms.
MULTIPLEX CHANNEL CAPACITY: 24 voice channels.
MULTIPLEX DROP INPUT INPUT AND OUTPUT IMPEDANCE: 600 ohms.
MULTIPLEX HF LINE INPUT AND OUTPUT IMPEDANCE: 75 ohms.
ORDER WIRE CAPACITY: 3 voice channels.
ORDER WIRE LINE INPUT AND OUTPUT IMPEDANCE: 600 ohms.
ORDER WIRE CHANNEL INPUT AND OUTPUT IMPEDANCE: 600 ohms.
PRIMARY POWER REQUIREMENTS: 208 v ac, 47 to 63 cps, three ph 4-wire; 208 v ac, 47 to 63 cps, single ph 4 wire, one wire grounded; 120 v ac, 47 to 63 cps, single ph, 2 wire.
AMBIENT TEMPERATURE RANGE
OPERATING: Minus 29 deg C to Plus 52 deg C.
STORAGE: Minus 65 deg C to plus 71 deg C.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Terminal Set AN/FRC-92(V)			
	includes:			
2-4	Amplifier-Power Supply Group AN/URA-48			
1-2	Antenna AS-1608/FRC-92(V)			
1-2	Dummy Load Calorimeter DA-354/URC			
2-4	Electron Tube Liquid Cooler HD-645/URC			
1-2	Electric Dessicant Dehumidifier HD-663/FRC-92(V)			
2-4	Alarm Monitor BZ-91/URC			
1-2	Multiplexer Set AN/UCC-2(V)			
1-2	Antenna Duplexer-Multiplexer CU-1299/URC			
1-2	Tower AB-841/FRC-92(V)			
2-4	Receiver Group AN/URA-49			
1-2	Terminal Box J-2228/URC			
1-2	Radio Test Set AN/RRM-9			
2-4	Transmitter Group AN/URA-51			
1-2	Monitor Group AN/URA-50			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94728: Instruction Manual for Radio Terminal Set AN/FRC-92(V).

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

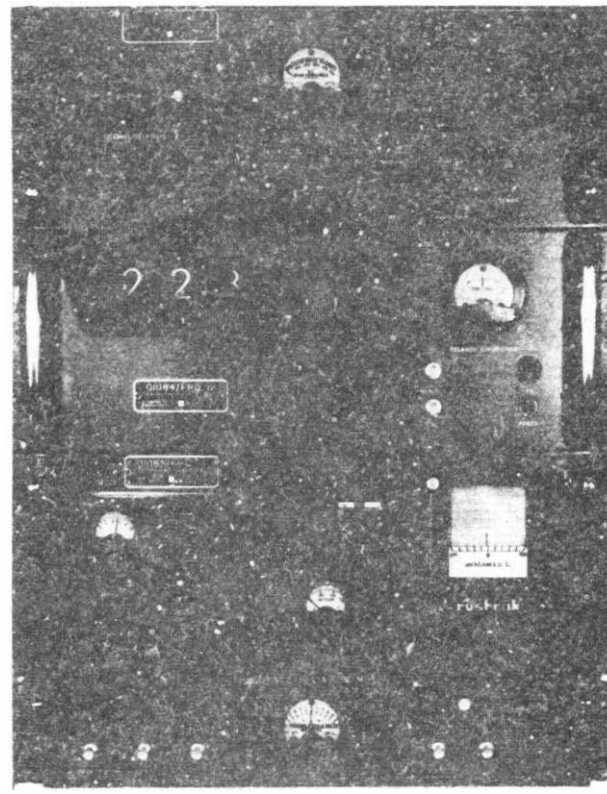
PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Radio Engineering Laboratories	Long Island City, New York	NObsr-87659	

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Montronics Inc., (19429).



VERY LOW FREQUENCY RECEIVER COMPARATOR AN/FRQ-12

FUNCTIONAL DESCRIPTION:

Very Low Frequency Receiver Comparator AN/FRQ-12 consists of a versatile 10 channel VLF superhetrodyne receiver, a frequency synthesizer, a high resolution frequency deviation meter, and a precision frequency standard.

The system provides reception of CW, FSK, AM, SSB and phase modulation in 10 to 30 kc range and also serves as an automatically or manually disciplined VLF frequency standard facility. This feature allows the frequency deviation meter to rapidly measure the absolute accuracy of any external 1 mc or 100 kc signal to a few parts in 10^{10}. The receiver features adjustable noise silencers in each of the ten RF modules as well as adjustable IF bandwidth. The Synthesizer frequency is selected by three decade knobs and displayed on illuminated numerical indicators. The frequency deviation meter multiplies the deviation between the frequency standard and an external standard by as much as 10,000 times thus increasing the resolution and reducing the time required to determine the difference between two standards.

No field changes in effect at time of preparation (30 August 1965).

VERY LOW FREQUENCY RECEIVER COMPARATOR AN/FRQ-12

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: Not available.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 120/208 v ± 10%, 50 to 400 cps.
SELF CONTAINED POWER: Supplied in all units except the frequency deviation meter.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Very Low Frequency Receiver Comparator AN/FRQ-12 includes:	18 x 19 x 24-1/2	
1	Radio Receiver R-1174/FRQ-12		
1	Electrical Signal Synthesizer C-1084/FRQ-12		
1	Frequency Standard O-1085/FRQ-12		
1	Frequency Deviation Meter FR-158/FRQ-12		
1	Antenna AS-1387/FRQ-12		

REFERENCE DATA AND LITERATURE:

Nomenclature Request.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COC: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Montronics Inc.	Bozeman, Montana	N600(11)58655	

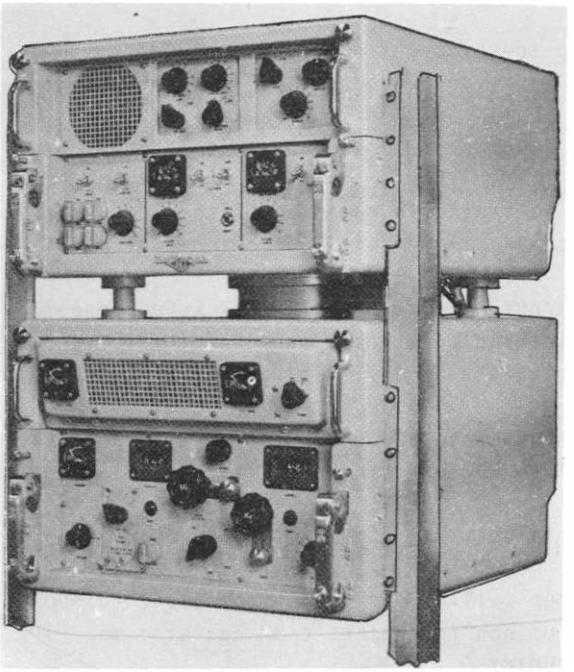
18 September 1967 RECEIVING SET, RADIO AN/FRR-59A

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: National Co., (42498).



RECEIVING SET, RADIO AN/FRR-59A

FUNCTIONAL DESCRIPTION:

Receiving Set, Radio AN/FRR-59A is a triple-conversion superheterodyne receiver designed to operate in the frequency range of 2 mc to 32 mc. It is intended for use in shore installations, and is designed for mounting in a MIL-STD-189 Relay Rack. The receiver is intended primarily for the reception of single-sideband transmissions with full carrier suppression. It will also receive conventional AM signals of various types including CW, MCW, voice, facsimile, and frequency-shift-teletype. In order to meet present strict frequency tolerances, special features of the receiver provide extremely accurate tuning and a very high degree of stability over long periods of operation. Simultaneous use of both upper and lower sideband channels for receiving two different types of intelligence is possible, but not with single-sideband on AM signals.

No field changes in effect at time of preparation (10 April 1967).

RELATION TO OTHER EQUIPMENT:

AN/FRR-59A is similar to but not interchangeable with AN/WRR-2A.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Headset, NT49985A or equal; (1) Antenna; (As reqd) Cable, Coaxial, RG10A/U; (As reqd) Cable, Power, THFA or equal; (As reqd) Cable, Power, type DHFA or equal.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v, 50-60 cps, 1 ph, 2.17 amp, 250 W.
FREQUENCY RANGE: 2 mc to 32 mc inclusive nominal; overlap, minimum-1.9 mc to 32.1 mc inclusive.
TUNING BANDS: 4.
BAND RANGES: 2 to 4 mc; 4 to 8 mc; 8 to 16 mc; 16 to 32 mc.
TYPE OF FREQUENCY CONTROL
  INCREMENTAL TUNING: 0.5 kc tuning increments controlled by a crystal std.
  CONTINUOUS TUNING: 330 100-kc increments controlled by crystal std; lesser increments oscillator-controlled.
TYPES OF RECEPTION: A1 (on/off keyed cw); A2 (on/off keyed tone-modulated CW); A3 (voice-modulated CW); A9 (single sideband); F1 (frequency-shift teletype, high-speed data transmission, and four-channel multiplex); F4 (facsimile).
MAX RECEIVER OUTPUT:
  AF LINE TERMINALS: Min 60 mw into 600 ohm non-inductive resistive load.
  PHONE JACKS: 15 mw max into 600 ohm non-inductive resistive load.
FREQUENCY-CONTROL CRYSTAL
  TYPE: CR-36/U in HC-6/U holder.
  OSCILLATION FREQUENCY: 1 mc.
  TEMP COEFFICIENT: 1 pt per million per deg C from +80°C to +90°C.
  FREQ ACCURACY: ±0.0005% of non freq at 85°C ±5 cps at 1 mc.
FREQUENCY STABILITY AND ACCURACY
  INCREMENTAL TUNING: 1 part in 10^7 per day.
  CONTINUOUS TUNING: 1 part in 10^7 ±150 cyc per day.
ANTENNA IMPEDANCE: 50 ohms.
HETERODYNE FREQ RANGE
  HIGH FREQ OSCILLATOR: 3.725 mc to 33.725 mc.
  INTERPOLATION OSCILLATOR: 680 kc to 580 kc.
IF FREQUENCIES
  FIRST CONVERSION: 1625 kc to 1725 mc.
  SECOND CONVERSION: 220 kc.
  THIRD CONVERSION: 80 kc.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Receiving Set, Radio, AN/FRR-59A includes:	19 x 22.56 x 24.47	250

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Converter, Frequency, Electronic CV-920A/URR		
1	Amplifier, IF-AF-AM-2477A/URR		
5	Cable		
1 set	Miscellaneous Cable Connectors		
1 set	Rack Mount Hardware		
1	Panel Filler		
2	Technical Manuals NAVSHIPS 94715		
1	Maintenance Standards Book NAVSHIPS 94715.42		
1	Operating Instructions Chart NAVSHIPS 94715.21		

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94715: Technical Manual for Radio Receiving Sets AN/WRR-2A and AN/FRR-59A.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	16	340

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, NavShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
National Co.	Melrose, Mass.	NObsr-91085	

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ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION: AN/FRR-63

CLASSIFICATION of Equip.	ITEM NAME	DATE of Request
UNCLASSIFIED	Panoramic Data Receiving Set	20 August 1962
SPECIFICATION: -	CONTRACT NUMBER AND DATE: N600(11)58460	QUANTITY ON ORDER: -

CONTRACTOR'S NAME AND ADDRESS
Trak Electronics
59 Danbury Road
W ilton, Connecticut

SERVICE APPROVAL LETTER - SERIAL AND DATE: -

ELECTRICAL CHARACTERISTICS

POWER INPUT										
115 V	60 CYCLE	PHASE	AMPS -	WATTS	- V	CYCLE -	PHASE	AMPS -	WATTS	

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	-

OPERATING FREQ. AND FREQ. RANGE	EMISSION OR RECEPTION (TYPE)	FREQ. CONTROL (TYPE)	NO. OF CHANNELS
100 to 150 mc Single band	(see reverse)	-	-

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	(see reverse)	-	- °HORIZ. - °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	-
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	~~VC of G~~ H.D. (UNITS) (feet)	WEIGHT (LBS)
	Panoramic Data Receiving Set AN/FRR-63 (Mfr's Model Pan-1-F) consists of:					
1	Panoramic Receiver	7-5/8	10-1/8	15	0.2	28
1	Control Panel	4-7/8	8	14	0.1	11½
1	Indicator	8	7-3/8	18½	0.2	13½
6	Cables					
1	Power Supply					
					1.4 AN/FRR-63: 1	
	CHANGE 74 - 681B1(OP94-G43)				UNCLASSIFIED	

IF ADDITIONAL EQUIPMENTS OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

217419

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DESIGNATION	ITEM NAME
AN/FRR-63	Panoramic Data Receiving Set

FUNCTIONAL DESCRIPTION: SKETCH. MFG. DIMENSIONS. ETC.

The AN/FRR-63 is a general purpose panoramic receiver which presents a simultaneous display of all signals in the 100 to 150 mc frequency range. It operates as a single band equipment. Reception includes all types of emission listed in Reference Group 5. The receiver contains the RF and IF circuits and the power supply. The RF section of the receiver is automatically swept-tuned by controllable inductors. The sweep logic and marker circuits are housed in the control panel. The front panel of this unit mounts all receiver controls except the display adjustment.

The indicator contains the CRT for display, the horizontal and vertical deflection amplifiers, and the CRT high-voltage power supply. The indicator has a blue surface and is five inches in diameter. The viewing area is five inches square. Maximum sweep frequency is 22 cps.

Frequency resolution is 50 mc sweep 175 kc, 10 mc sweep 55 kc, 5 mc sweep 25 kc, and 1 mc sweep 25 kc, with a sensitivity of 50 mc sweep 0.5u volts, 10 mc sweep 0.3u volts, 5 mc sweep 0.25u volts, and a visual sensitivity for S/N 2:1.

N

The external marker is 100 kc when used in connection with a "Listen" receiver. The visual resolution is 50 mc sweep 175 kc, 10 mc sweep 55 kc, 5 mc sweep 25 kc, and 1 mc sweep 25 kc. The extended mode is 10 mc ±1.5 mc with an accuracy of 5 mc ±1.0 mc and 1 mc ±300 kc. The display is CRT type 5BTP7. The operating temperature is 0 degree F to 130 degree F. Equipment warm-up time is 10 minutes.

The input impedance is 50 ohms with a maximum VSWR of 2.7:1. Dynamic range is 70 db with reference to minimum sensitivity. Image rejection is 85 db. Intermodulation distortion is -50 db. Oscillator re-radiation is 34 volts maximum across 50 ohms.

No unit cost available.

Source of information: Request for Nomenclature.

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION	
AN/FRT-15D	

CLASSIFICATION of Equip.	ITEM NAME	DATE of Request
UNCLASSIFIED	Radio Transmitting Set	19 September 1961
SPECIFICATION	CONTRACT NUMBER AND DATE	QUANTITY ON ORDER
-	P.O. 0205	-

CONTRACTOR'S NAME AND ADDRESS
Mfr. of Field Change
U. S. Naval Weapons Plant
Washington 25, D. C.

SERVICE APPROVAL LETTER - SERIAL AND DATE
-

ELECTRICAL CHARACTERISTICS

POWER INPUT
220 V, 50-60 CYCLE, 3 PHASE, 120 AMPS, kva WATTS | V CYCLE PHASE AMPS WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	3000 watts
OPERATING FREQ. AND FREQ. RANGE	**EMISSION OR RECEPTIO (TYPE)**	**FREQ. CONTROL (TYPE)**	**NO. OF CHANNELS**
2 to 30 mc	A1,A2,A3,F1, & F4	crystal or master oscilloscope	10(preset)

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	°HORIZ. - °VERT. -

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	-
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-15D consists of:					
*1	Radio Modulator Group OA-204/FRT-15					
*1	Power Supply Group OA-206/FRT-15					
*1	Transmitter Group OA-3632A/FRT-15C					
2	Transmitter Control C-745/FRT-15					
*	The three groups are enclosed in three metal cabinets, bolted together with over-all dimensions: 83-13/16 inch deep, 33-3/4 inch wide, 86-15/16 inch high, floor mounted.					

1.6 AN/FRT-15D: 1

CHANGE 74 - 692D

UNCLASSIFIED

IF ADDITIONAL EQUIPMENTS OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

217419

DESIGNATION	ITEM NAME
AN/FRT-15D	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH. MFG. DIMENSIONS. ETC.

This is an AN/FRT-15A modified by a field change so that the RF power amplifier and the output coupling networks of the transmitter group provide a nominal power output of 3000 watts in the frequency range of 2 to 30 mc to a 50 to 70 ohm unbalanced load. It is one-way interchangeable with the AN/FRT-15A.

No unit cost available.

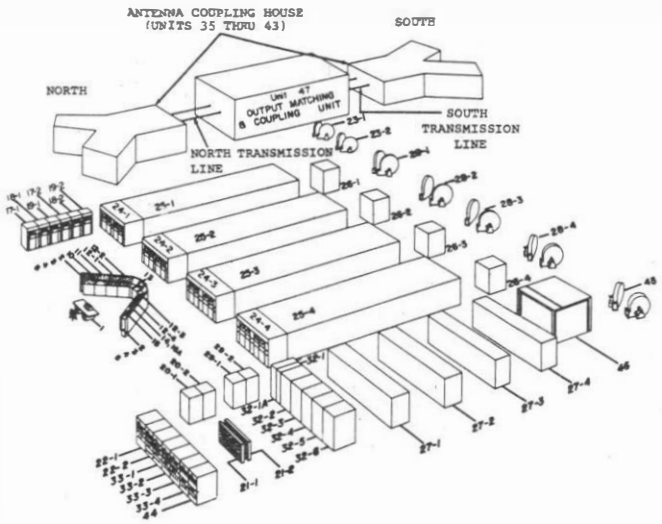
Source of information: Request for Nomenclature.

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Continental Electronics Mfg.Co., (08440).



TRANSMITTING SET, RADIO AN/FRT-31

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-31 is designed as a complete shore transmitter for radio-telegraph and radio-teletype communications in the very low frequency range. It is an all-purpose communication system capable of transmitting to surface crafts and submerged submarines in all parts of the North Atlantic and Mediterranean areas.

No field changes in effect at time of preparation (15 May 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed shore.
TYPES OF EMISSION: A1, F1.
FREQUENCY CONTROL: Crystal and Master Oscillator.
NUMBER OF BANDS: 1 Band.
NUMBER OF CHANNELS: 1 channel.
FREQUENCY RANGE: 14 to 30 kc.
POWER OUTPUT: 2000 kw.
POWER REQUIREMENTS: 4160 v, 60 cps, 3 ph.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-31 includes:			
1	Operators Control Desk Unit No. 1		29 x 30 x 60	350
2	Frequency Generator and Keyer Unit No. 2		29 x 30 x 60	775
2	Frequency Generator and Automatic Frequency Control Unit No. 3		30 x 38-1/2 x 60	825
2	Power Supply (for Unit 2 and 3) Unit No. 4		20 x 20 x 30	390
1	Master Control-Keying Control Unit No. 10		29 x 30 x 60	1375
1	Master Control-IPA Control Unit No. 11		29 x 30 x 60	1375
4	Master Control-PA Power Control Unit No. 12		29 x 30 x 60	1375
1	Master Control-Main Power Control Unit No. 13		29 x 30 x 60	1375
1	Master Control-Antenna Tuning and De-ice Control Unit No. 14		29 x 30 x 60	1375
1	Master Control-Reactive Keying Panel Unit No. 15		29 x 30 x 60	1375
2	Transmission Line Impedance Indicator Unit No. 16A		29 x 30 x 60	1375
2	IPA Preliminary Amplifiers Unit No. 17		44 x 48 x 88	1400
2	IPA Driver Amplifier Unit No. 18		44 x 48 x 88	1400
2	IPA Control Unit No. 19		44 x 48 x 88	1400
2	IPA 12 kv Rectifier Tube Assy Unit No. 20		44 x 48 x 88	1675

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
2	IPA Power Equipment Unit No. 21		18 x 68 x 78-1/2	750
2	IPA ac Distribution Unit, Unit No. 22		30 x 36 x 88	1200
2	IPA Cooler Unit No. 23		39-7/8 x 41-3/8 x 43	460
4	Power Amplifier Tube Unit, Unit 24		48 x 88 x 144	4200
4	Power Amplifier Output Circuit Section Unit No. 25 includes EPL No.			
1	C2501 Plate Tank Tuning Capacitor		54-1/4 x 70 x 119-1/2	13000
1	C2502 Plate Tank Fixed Capacitor		31-3/4 x 72-3/16 x 114-1/2	7500
1	C2503 Plate Tank Fixed Capacitor		51-3/4 x 72-3/16 x 114-1/2	12000
1	L2502 Output Tank Inductor		108	3600
4	Power Amplifier Output Switching Unit No. 26		42-1/2 x 54 x 86	1200
4	Power Amplifier Plate Filter and Fault Amplifier Unit No. 27		31-1/2 x 68 x 171	4000
4	Power Amplifier Cooler Unit No. 28		77-3/8 x 85 x 95-5/16	3950
2	2400 kw Rectifier Tube Assembly Unit No. 29		44 x 48 x 88	1675
2	2400 kw Rectifier Plate Transformer Equipment Unit No. 30		52-1/2 x 72 x 102-1/2	7600
1	24 kw Rectifier Regulator Equipment Unit No. 31		90-1/2 x 113-5/8 x 118-3/4	22680
1	4160 v Distribution System Unit No. 32		73-1/2 x 90 x 156-1/2	16000
4	Power Amplifier-460/280 v Distribution System Unit No. 33		30 x 36 x 88	1000
1	4160/460 W Substation Equipment Unit No. 34		48-1/4 x 60 x 80-1/2	4950
2	Saturable Reactor Pulse Generator Unit No. 35		36 x 37-1/2 x 83-1/2	650
2	Saturable Reactor Modulator-Rectifier Unit No. 36		36 x 37-1/2 x 83-1/2	750
2	Saturable Reactor Power Supplies Unit No. 37		36 x 37-1/2 x 83-1/2	1300
	Saturable Reactor ac Distribution Unit No. 38		36 x 37-1/2 x 83-1/2	1300
2	Saturable Reactor Unit No. 39 includes:		112 x 140 x 145	46000
2	Pulse Transformer		36 x 36 x 48	2270
2	Variometer Unit No. 42		21-1/2 x 158 x 253-1/2	22000

AN/FRT-31 TRANSMITTING SET, RADIO

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	General 460/208 v Distribution System Unit No. 44		30 x 36 x 88	1000
1	Station Cooling System Unit No. 45		72-5/8 x 74-7/8 x 83-9/16	3125
1	Phantom Antenna (500 kw) Unit No. 46		18 x 75 x 93	1700
1	Power Amplifier Coupling and Line Matching Network Unit No. 47A includes:			
3	Output Loading Capacitor Pt No. 144-0261		43-1/4 x 44 x 62-1/2	2968
1	PA Tuning Capacitor Pt No. 144-0263		24-3/4 x 38-3/8 x 42-7/8	962
2	PA Tuning Capacitor Pt No. 144-0266		37-3/8 x 45-3/4 x 62-3/4	2595
3	PA Tuning Capacitor Pt No. 144-0261		43-1/4 x 44 x 62-1/2	2968
4	PA Tuning Capacitor Pt No. 144-0265		37 x 38-3/8 x 42-7/8	1482
1	Matching Capacitor Pt No. 144-0261		43-1/4 x 44 x 62-1/2	2968
1	PI-Input Capacitor Pt No. 144-0261		43-1/4 x 44 x 62-1/2	2968
2	PI-Output Capacitor Pt No. 144-0266		37-3/8 x 45-3/4 x 62-3/4	2595
1	Input L-Series Inductor Pt No. 350-0022		35 x 36 x 36	250
1	Input L-Shunt Inductor Pt No. 350-0021		30 x 30 x 36-1/2	200
2	Input L-Shunt Inductor Pt No. 350-0025		30 x 30 x 36-1/2	200
1	Output L-Series Inductor Pt No. 350-0024		34 x 34 x 36-1/2	320
1	PI-Network Inductor Pt No. 350-0019		60 x 60 x 60	765
1	PI-Network Inductor Pt No. 350-0020		49-1/2 x 60 x 60	895
1	Set of Auxiliary Equipment			
1	Test Oscillator Unit No. 50		24 x 40 x 40	275

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94356: Technical Manual for Radio Transmitter AN/FRT-31.
NAVSHIPS 94356: Complementary Technical Manual for Modified Power Amplifier Coupling and Line Matching Network Radio Transmitter AN/FRT-31.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 6AL5W (7) 8578 (21) 12AU7WA (1) 6130 (2) 6AQ5W (1) 5R4GY (4) 6AK5W
(7) CL-870-A (2) 12AT7 (6) 5687 (1) 6AS6 (2) 5-65A (9) 0A2WA (4) 3X3000A1
(18) 2D21W (3) 5751WA (2) 807WA (5) 4B32 (2) 4-125A (4) 3B28 (3) 4-400A
(1) 6336 (12) 4-1000A (3) 6AU6WA (7) 872A (1) 5651WA (6) 575A (1) 5931/5U4G
(12) ML-6697

CRYSTALS Data not available.

SEMI-CONDUCTORS: (39) 1N2071 (1) 1N34

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

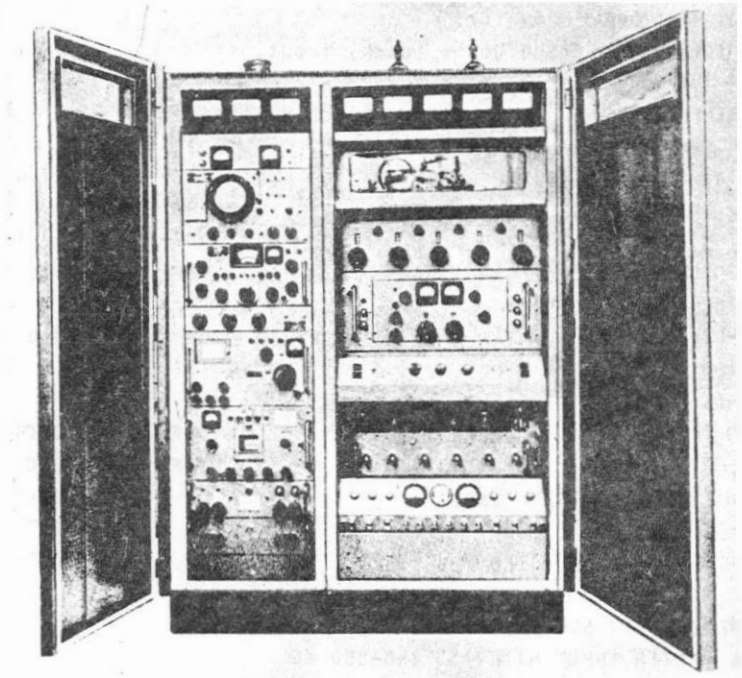
PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-R-2235

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Continental Electronics Mfg Co.	Dallas, Texas	NObsr 71360	$2530814.00

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: The Technical Materiel Corporation, (82679).



TRANSMITTING SET, RADIO AN/FRT-39

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-39 is designed to effect communications with reliability and precision from shore to ship or point to point. It is used to transmit intelligence over long and difficult circuits by means of single sideband operation primarily, but may be used for many other types of transmissions.

No field changes in effect at time of preparation (15 May 1964).

RELATION TO OTHER EQUIPMENT:

The Transmitting Set, Radio AN/FRT-39 is the same as The Technical Materiel Corp Model GPT-10K.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(13) Crystals CR-27/U; (1) Microphone; (2) Audio Line Channels.

TECHNICAL CHARACTERISTICS:

SIDEBAND LEVEL MONITOR SLM-1

INPUT CIRCUIT: 0.1 mf blocking capacitor between input jack and control grid 2 of 1/2 6U8A vacuum tube.

OUTPUT CIRCUIT: 0-200 microammeter.

SENSITIVITY: Full scale with 0.008 v (peak) input.

INPUT FREQUENCY: 17 ± 3 kc sidebands.

STAGES: Two amplifiers and one rectifier (each sideband).

FREQUENCY SPECTRUM ANALYZER AN/URM-116

SWEEP WIDTHS:	SWEEP WIDTH SELECTOR SWITCH	AFC SWITCH	SWEEP WIDTH	
	VAR	OFF	0 to 100 kc,	continuously variable
	VAR	ON	0 to 2 kc,	continuously variable
	30KC	*OFF	30KC	Preset with
	10KC	*OFF	10KC	automatically
	2KC	ON	2KC	optimum IF
	500 ~	ON	500 ~	bandwidth
	150 ~	ON	150 ~	

INPUT CENTER FREQUENCY: 500 KC.

BANDPASS REGION (AFTER INPUT MIXER): 450-550 KC.

BANDPASS REGION AMPLITUDE CHARACTERISTICS, 450-550 KC: Uniform within 5% or 1/2 db.

IMAGE REJECTION: Better than (130 to 1) at input center freq.

INPUT IMPEDANCE: 50 ohms at each of two input terminals.

INPUT ATTENUATOR: 0 to 65 db attenuation of the input signal in 5 db steps. Accuracy 2% to 30 MC.

AMPLITUDE SCALES: Linear and 2 decade log, selectable by front panel switch. A front panel 20 db attenuator may be used to extend calibrated range to 60 db.

DIRECT SENSITIVITY: Max rms voltage (at signal input terminal) in center frequency band (450-550 KC) required for full scale linear deflection: 30 uv.

CONVERSION SENSITIVITY: Max rms signal required at signal input terminal for full scale log deflection when 0.1 v rms from an external signal generator is injected into VFO input terminal: 3 mv. (The signal generator frequency should be adjusted to heterodyne the signal down to the input frequence band of the FSA).

INPUT MIXER RANGE: The SA input aperiodic mixer is suitable for signals up to approximately 1000 mc.

SCAN RATES: 0.1 cps to 30 cps continuously variable. On preset sweep widths of 150 cps, 500 cps, 2 kc 0.1 cps scan rate. On preset sweep widths of 10 KC and 30 KC 1 cps scan rate.

RESOLUTION: Continuously adjustable with IF BANDWIDTH control except on preset sweep widths. Range from approximately 3 KC down to less than 10 cps. (Resolution is defined as the frequency separation between two equal adjacent signals such that the intersection between their respective pip indications is 30% below the apex amplitude). The SA is capable of 10 cps resolution or better at slow scan rates and reduced sweep widths.

DYNAMIC AMPLITUDE RANGE: Two Tone Test: All in band residual (odd order) inter-modulation products better than 60 db below level of two equal reference signals deflected 20 db above full scale log provided that: (a) Reference signals are separated so that their intersection is at least 60 db down; (b) All front panel gain settings are max; (c) IF BANDWIDTH control is adjusted for broadest position consistent with visual separation of signals. On preset sweep widths of 150 ~, 500 ~, 2KC, 10KC, and 30KC the 60 db dynamic range is provided automatically; (d) Signal generator amplitude of at least 300 mv rms.

AUXILIARY OUTPUTS: Vertical amplitude and horizontal frequency output terminals provided. Connector provided for operation with chart recorder.

INDICATOR: 5 inch diameter flat face CRT (5ADP7) with edge lit reticule and scale illumination, and a standard oscilloscope camera mounting bezel.

POWER CONSUMPTION: Approx 180 W.

POWER SOURCE: 95 to 125 v 60 cps, Line regulator supplied. Special regulators available for 220 v or 50 cps operation.

The AFC switch may be turned on in the 30 kc and 10 kc ranges for use as a center frequency control.

TRANSMITTING MODE SELECTOR AN/URA-23

FREQUENCY RANGE: 2 to 32 mc continuous, bandswitched.

OPERATING MODES:
- Single sideband.
- Double sideband.
- Independent sideband (separate intelligence) amplitude modulation, CW or MCW, FSK.

FREQUENCY CONTROL: Temperature controlled crystals or external VFO.

FREQUENCY DETERMINING ELEMENTS: Contained in two temperature controlled high mass aluminum ovens designed for high thermal inertia.

CRYSTAL OVEN TEMPERATURES: 75° C for 17 and 287 kc oscillators, and 70° C for medium frequency and high frequency oscillator.

STABILITY: 1 PPM for 24 hour period.

MF INJECTION REQUIREMENTS, CRYSTAL OR VMO: Crystal positions: 10 crystals, each with independent trimmer. Selection by front panel switch. Crystals CR-27/U to be inserted in Holders HC-6/U.

VMO INPUT FREQUENCY: 2 to 4.0 mc to serve for entire SBE output range of 2 to 32 mc.

VMO INPUT IMPEDANCE: 72 ohms nom.

VMO INPUT VOLTAGE: Approx 1.5 V RMS.

TUNING CONTROLS: Directly calibrated in freq.

OUTPUT POWER: Continuously adjustable from zero to a max of 3 W PEP.

OUTPUT IMPEDANCE: 72 ohms nom.

CARRIER SUPPRESSION: At least 55 db down from PEP level.

CARRIER INSERTION: Continuously adjustable.
SPURIOUS OUTPUT: At least 60 db below PEP output.
DISTORTION PRODUCTS: At full PEP output, third order distortion products are at least 45 db below either tone of a standard two tone test.
HARMONIC RADIATION: Second harmonic at least 40 db below PEP output. All other harmonics at least 50 db below PEP output.
REJECTION OF UNUSED SIDEBAND: 500 cps tone 60 db below transmitted PEP.
AUDIO INPUT: Two independent 600 ohm channels, balanced or unbalanced, 20 db level for full RF output. 500 k for high impedance crystal or dynamic mike, 50 db for full RF output.
AUDIO RESPONSE PER SIDEBAND: Within 3 db from 350 to 3000 cps.
VOX OPERATION: Voice control with anti-trip features, adjustable gain, and squelch controls.
METERING: Peak reading VTVM indicates: (a) Audio level in USB or LSB channel; (b) Mid frequency level for tuning purposes; (c) SBE RF output (percent of max power).
* May be used with any degree of carrier insertion.

VARIABLE FREQUENCY OSCILLATOR O-330/FR

HF OSCILLATOR
FREQUENCY RANGE: 2 to 64 mc continuous.
OUTPUT IMPEDANCE: 75 ohms coaxial.
OUTPUT LEVEL: 2 W throughout basic range of 2 to 4 mc and 0.5 W, 4 to 64 mc, adjustable.
CRYSTAL FREQUENCIES: 2 to 4 mc for output frequencies of 2 to 64 mc.
CRYSTAL UNIT: CR-18/U.
CRYSTAL POSITION: Three each, available on front panel switch.
OUTPUT VOLTAGE: Sinusoidal with no spurious freq.
STABILITY: 20 cyc per mc for 0 to 50 degree change in ambient temperature.
CALIBRATION: Direct reading calibration in cps from 2 to 4 mc.
READABILITY: 20 cyc per mc.
RESETABILITY: 20 cyc per mc to a calibrated freq.
LINE VOLTAGE CHANGE EFFECTS: 10 cyc for ± 10% change in line v.
HUMIDITY EFFECTS: No appreciable change for 50 to 95 percent humidity.
HIGH-FREQUENCY OSCILLATOR CALIBRATION: Against 100 kc crystal oscillator at 50 kc points.

BEAT FREQUENCY OSCILLATOR
FREQUENCY RANGE: 300 to 1000 kc.
OUTPUT LEVEL: 6 v across 1000 ohms with output level control.
CRYSTAL HOLDERS: CR-45/U.
CRYSTAL POSITION: Two each, available on rear panel switch.

INTERMEDIATE FREQUENCY OSCILLATOR
FREQUENCY RANGE: 3.2 to 3.9 mc (crystal oscillator).
OUTPUT LEVEL: 2 v in 75 ohms.
CRYSTAL TYPE: CR-18/U.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps. Approximately 100 W average or 250 W peak, depending upon cycling of oven heating elements.

FREQUENCY SHIFT EXCITER C-2749/URT
OUTPUT FREQUENCY RANGE: 1 to 2.5 mc on band 1; 2.5 to 6.9 mc on band 2.
FREQUENCY SHIFT: Linear to 1000 cyc.
OUTPUT POWER: Adjustable to 3 W.

OUTPUT IMPEDANCE: 50 to 70 ohms.
KEYING SOURCES: (a) Contact closing to ground; (b) Polar or neutral positive; (c) Linear input 30,000 ohms impedance.
KEYING SPEED: 1000 wpm max.
KEYING INPUT IMPEDANCE: Polar or neutral operation 1000,000 ohms may be bridged by external 1800 ohm loop resistance. Contact closing to ground must be open circuit.
RF SOURCE: Internal crystal oscillator or external oscillator.
INPUT IMPEDANCE FOR EXTERNAL RF SOURCE: 70 ohms, 6 to 8 v rms.
FREQUENCY CONTROL: High-frequency crystal oscillator 0.8 to 6.7 mc. High stability 200 kc oscillator.
CRYSTAL HOLDERS: FT-243 three positions and HC-6/U three positions.
OVEN TEMPERATURE: 70° C held constant within ± 0.1° C.
KEYING BIAS: Not greater than 10% at 1000 wpm.
OVER-ALL STABILITY: (a) 10 cps for ambient temperature change of 0° C to 50° C; (b) 10 cps for line v change of 10%; (c) No drift for input signal variations of + 25 v to + 150 v (mark freq).
CRYSTAL FREQUENCY: Assigned transmitter freq minus 200 kc transmitter multiplication.
METERING: PA plate current (tuning).
MONITORING: 100 mv across 70 ohm coaxial connector.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps. Both ovens off - 100 W; each oven - 40 W.

TWO TONE GENERATOR O-579/URT

AUDIO FREQUENCY OSCILLATOR

OUTPUT FREQUENCIES: 935 cps-2805 cps.
HARMONIC DISTORTION: More than 65 db down.
INTERMODULATION DISTORTION: More than 55 db down.
OUTPUT IMPEDANCE: 600 ohms unbalanced.
OUTPUT LEVEL: 0 to 0.5 v continuously variable.
OUTPUT CONNECTION: Terminal strip.

RADIO FREQUENCY OSCILLATOR

OUTPUT FREQUENCIES: 1999 kc crystal controlled, 2001 kc crystal controlled.
DISTORTION: More than 60 db down.
OUTPUT IMPEDANCE: 70 ohms unbalanced.
OUTPUT LEVEL: 1.0 v.
PRIMARY POWER: 115 and 230 v, 50 and 60 cps, approx 35 W.

ISOLATION KEYER (REAR CHASSIS) ISK

KEYING SOURCES: (a) Teletype; (b) CW.
KEYING MODES: (a) 50 v (neutral pulse); (b) 100 v (neutral pulse); (c) 60 mils (neutral pulse); (d) 20 mils (polar pulse).
KEYLINE INPUT IMPEDANCE (REFER TO ITEM 2 ABOVE): (a) 50 k; (b) 100 k; (c) 100 ohms; (d) 300 ohms.
OUTPUT KEYING VOLTAGE (REFER TO ITEM 1 ABOVE): (a) 0 to 30 v pulse (terminated into XFK); (b) Dry keying (ground on, ground off).
KEYING SPEED: 120 wpm max.
OPERATING CONTROLS: (a) Threshold adjust; (b) Voltage adjust.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps, 20 W.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-39			
	includes:			
1	Sideband Level Monitor SLM-1		3-1/2 x 8 x 19	8.5
1	Frequency Spectrum Analyzer			
	AN/URM-116 includes:			
1	Analyzer TS-1236/URM-16		10-1/2 x 19 x 21-7/8	31
1	Analyzer Cabinet		12-9/16 x 21-3/8 x 22	27
1	Power Supply PP-2206/URM-116		8-23/32 x 14-5/8 x 19	28
1	Power Supply Cabinet		8-3/4 x 14-1/8 x 16-1/4	12
1	Constant Voltage Transformer		4-1/2 x 7-1/2 x 8-3/8	18
1	Power Interconnecting Cable		60 lg	
2	Input Cables, Signal		36 lg	
3	Spare Fuses			
1	Alignment Tool			
1	Transmitting Mode Selector			
	AN/URA-23 includes:			
1	RF Oscillator O-503A/URA-23		8-3/4 x 15 x 19	41
1	Power Supply PP-1769/URA-23		5-1/4 x 15 x 19	38
1	Power Interconnecting Cable		84 lg	5
1	Signal Interconnecting Cable		144 lg	
1	AC Cable (Power Supply)		72 lg	
1	Monitor Control Panel		3-1/2 x 5-3/4 x 19	4
	SB-971/URT-39			
1	Variable Frequency Oscillator		10-1/2 x 16 x 19	70
	O-330/FR includes:			
3	Auxiliary Service Cable		72 lg	1.5
10	Coaxial Connector UG-260/U			
1	Tube Puller GP-104			
1	Frequency Shift Exciter		10-1/2 x 16 x 19	48
	C-2749/URT includes:			
1	Cable Assembly		72 lg	0.5
1	Two Tone Generator O-579/URT		5-1/4 x 13 x 19	19
1	Auxiliary Power Panel APP-1		3-1/2 x 19	2.5

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93166: Technical Manual for Transmitting Set, Radio, Model GPT-10K (AN/FRT-39 and -39A).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 4CX5000A (3) 6CL6 (2) 6146 (1) PL172 (2) 5R4 (4) 6X4 (6) 0A2
(6) 872A (4) 6AB4 (6) 6U8 (7) 12AT7 (18) 12AU7 (4) 6AH6 (1) 6J6
(1) 2E26 (2) 0B2 (2) 6U8A (1) 12BE26 (2) 6BH6 (1) 12AL5 (2) 6AU6

TUBES: (1) 5ADP7 (2) 5651 (1) 5Y3GT (1) 6AS7G (1) 12AX7 (1) 6AL5 (1) 5V4G (4) 6BE6 (6) 6AQ5 (1) 6C4 (1) 6AB4

CRYSTALS: (2) 100 kc (1) 500 kc (9) CR-27/U (1) CR-47/U (1) CR-50/U (2) CR-25/U (6) CR-18/U

SEMI-CONDUCTORS: (5) 1N67 (10) 1N303 (1) AX-126 (3) CK711 (4) 1N34

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	68.7	1083
1	45.5	543
1	11.1	175
1	54.3	593
1	7.5	507
1	18.4	380
1	5.9	86
1	7.5	81
1	3.1	55
1	2.8	50
1	8.5	176
1	8.5	156
1	11.1	163

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG:

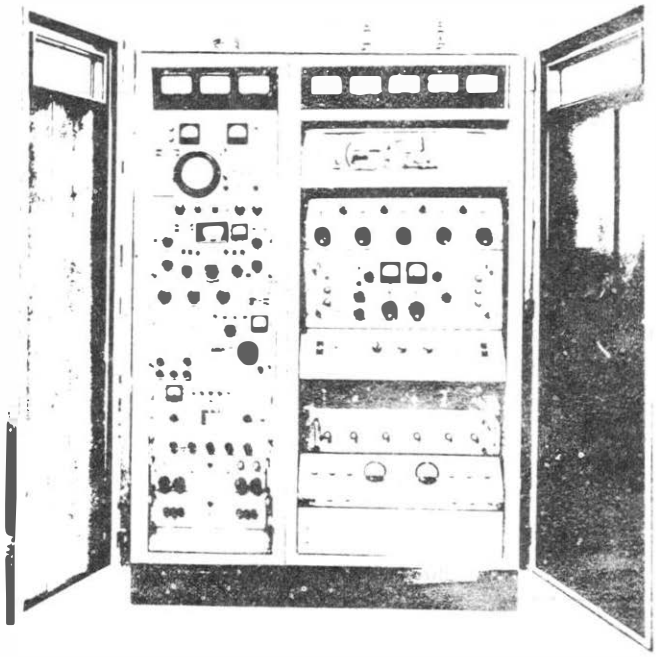
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Technical Materiel Corporation	Mamaroneck, New York	NObsr 71790	$15,000.00

Cog Service: USN FSN: 2F5820-666-2635 Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: The Technical Materiel Corporation, (82679).



TRANSMITTING SET, RADIO AN/FRT-39A

FUNCTIONAL DESCRIPTION:

The Transmitting Set, Radio AN/FRT-39A is designed to effect communications with reliability and precision from shore to ship or point to point. It is used to transmit intelligence over long and difficult circuits by means of single sideband operation primarily, but may be used for many other types of transmission.

No field changes in effect at time of preparation (15 May 1964).

RELATION TO OTHER EQUIPMENT:

The Transmitting Set, Radio AN/FRT-39A is the same as The Technical Materiel Corp. Model TPT-10K-A2.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(13) Crystals CR-27/U; (1) Microphone; (2) Audio Line Channels.

TECHNICAL CHARACTERISTICS:

SIDEBAND LEVEL MONITOR SLM-2

INPUT CIRCUIT: 1,000 ohm potentiometer to ground; swinger to control grid 2 of 1/2 6U8A vacuum tube.

OUTPUT CIRCUIT: 0-200 microammeter.

SENSITIVITY: Full scale with 0.008 v (peak) input.

INPUT FREQUENCY: 250 ± 7.5 kc sidebands.

STAGES: Two amplifiers and one rectifier (each sideband).

FREQUENCY SPECTRUM ANALYZER AN/URM-116

SWEEP WIDTH:

SWEEP WIDTH SELECTOR SWITCH	AFC SWITCH	SWEEP WIDTH	
VAR	OFF	0 to 100 kc,	continuously variable
VAR	ON	0 to 2 kc,	continuously variable
30 KC	*OFF	30 KC	Preset with
10KC	*OFF	10KC	automatically
2KC	ON	2KC	optimum IF
500 ~	ON	500 ~	bandwidth
150 ~	ON	150 ~	

INPUT CENTER FREQUENCY: 500 kc.

BANDPASS REGION (AFTER INPUT MIXER): 450-550 kc.

BANDPASS REGION AMPLITUDE CHARACTERISTIC, 450-550 KC: Uniform within 5% of 1/2 db.

IMAGE REJECTION: Better than (130 to 1) at input center freq.

INPUT IMPEDANCE: 50 ohms at each ot two input terminals.

INPUT ATTENUATOR: 0 to 65 db attenuation of the input signal in 5 db steps. Accuracy 2% to 30 mc.

AMPLITUDE SCALES: Linear and 2 decade log, selectable by front panel switch. A front panel 20 db attenuator may be used to extend calibrated range to 60 db.

DIRECT SENSITIVITY: Max rms v (at signal input terminal) in center freq band (450-550 kc) required for full scale linear deflection: 30 uv.

CONVERSION SENSITIVITY: Max rms signal required at signal input terminal for full scale log deflection when 0.1 v rms from an external signal generator is injected into VFO input terminal: 3 mv. (The signal generator freq should be adjusted to heterodyne the signal down to the input freq band of the FSA.)

INPUT MIXER RANGE: The SA input aperiodic mixer is suitable for signals up to approx 1,000 mc.

SCAN RATES: 0.1 cps to 30 cps continuously variable. On preset sweep widths of 150 cps, 500 cps, 2 kc-0.1-cps scan rate. On preset sweep w of 10 kc and 30 kc-1-cps scan rate.

RESOLUTION: Continuously adjustable with IF BANDWIDTH control except on preset sweep w. Range from approx 3 kc down to less than 10 cps. (Resolution is defined as the freq separation between two equal adjacent signals such that the intersection between their respective pip indications is 30% below the apex amplitude.) The SA is capable of 10 cps resolution or better at slow scan rates and reduced sweep widths.

DYNAMIC AMPLITUDE RANGE: Two Tone Test: All in-band residual (odd order) inter-modulation products better than 60 db below level of two equal reference signals deflected 20 db above full scale log provided that: (a) Reference signals are separated so that their intersection is at least 60 db down; (b) All front panel gain settings are max; (c) IF BANDWIDTH control is adjusted for broadest position consistent with visual separation of signals. On preset sweep widths of 150 ~, 500 ~, 2KC, 10KC, and 30KC the 60 db dynamic range is provided automatically; (d) Signal generator amplitude of at least 300 mv rms

AUXILIARY OUTPUTS: Vertical amplitude and horizontal freq output terminals provided. Connector provided for operation with chart recorder.

INDICATOR: 5 in. dia flat face crt (5ADP7) with edge lit reticule and scale illumination, and a standard oscilloscope camera mounting bezel.

POWER CONSUMPTION: Approx 180 W.

POWER SOURCE: 95 to 125 v 60 cps. Line regulator supplied. Special regulators available for 220 v or 50 cps operation.

*The AFC switch may be turned on in the 30 kc and 10 kc ranges for use as a center freq control.

TRANSMITTING MODE SELECTOR AN/URA-28

FREQUENCY RANGE: 2 to 32 mc continuous, bandswitched.

OPERATING MODES: *Single sideband.
*Double sideband.
*Independent sideband (separate intelligence) amplitude modulation, CW or MCW, FSK.

FREQUENCY CONTROL: Temperature-controlled crystals or external VFO.

FREQUENCY DETERMINING ELEMENTS: Contained in two temperature-controlled high mass aluminum ovens designed for high thermal inertia.

CRYSTAL OVEN TEMPERATURES: 75 deg C for 250 kc oscillator, and 70 deg C for medium-freq and high-freq oscillator.

STABILITY: 1 PPM for 24-hour period.

MF INJECTION REQUIREMENTS, CRYSTAL OR VMO: Crystal positions: 10 crystals, each with independent trimmer. Selection by front panel switch. Crystals CR-27/U to be inserted in Holders HC-6/U.

VMO INPUT FREQUENCY: 2 to 4.0 mc to serve for entire SBE output range of 2 to 32 mc.

VMO INPUT IMPEDANCE: 72 ohms nom.

VMO INPUT VOLTAGE: Approx 1.5 v rms.

TUNING CONTROLS: Directly calibrated in freq.

OUTPUT POWER: Continuously adjustable from zero to a max of 1 W PEP.

OUTPUT IMPEDANCE: 72 ohms nom.

CARRIER SUPPRESSION: At least 55 db down from PEP level.

CARRIER INSERTION: Continuously adjustable.

SPURIOUS OUTPUT: At least 60 db below PEP output.
DISTORTION PRODUCTS: At full PEP output, third order distortion products are at least 45 db below either tone of a standard two tone test.
HARMONIC RADIATION: Second harmonic at least 40 db below PEP output. All other harmonics at least 50 db below PEP output.
REJECTION OF UNUSED SIDEBAND: 500-cps tone 60 db below transmitted PEP.
AUDIO INPUT: Two independent 600-ohm channels, balanced or unbalanced, - 20 db level for full RF output. 500 k for high impedance crystal or dynamic mike, - 50 db for full RF output.
AUDIO RESPONSE PER SIDEBAND: Within 3 db from 350 to 7500 cps.
VOX OPERATION: Voice control with anti-trip features, adjustable gain, and squelch controls.
METERING: Peak reading VTVM indicates: (a) Audio level in USB or LSB channel; (b) Mid frequency level for tuning purposes; (c) SBE RF output (percent of max power).
• May be used with any degree of carrier insertion.

VARIABLE FREQUENCY OSCILLATOR O-330/FR

HF OSCILLATOR
FREQUENCY RANGE: 2 to 64 mc continuous.
OUTPUT IMPEDANCE: 75 ohms coaxial.
OUTPUT LEVEL: 2 W throughout basic range of 2 to 4 mc and 0.5 W, 4 to 64 mc, adjustable.
CRYSTAL FREQUENCIES: 2 to 4 mc for output freq of 2 to 64 mc.
CRYSTAL UNIT: CR-18/U.
CRYSTAL POSITION: Three each, available on front panel switch.
OUTPUT VOLTAGE: Sinusoidal with no spurious freq.
STABILITY: 20 cyc per mc for 0- to 50-degree change in ambient temperature.
CALIBRATION: Direct reading calibration in cps from 2 to 4 mc.
READABILITY: 20 cyc per mc.
RESETABILITY: 20 cyc per mc to a calibrated freq.
LINE VOLTAGE CHANGE EFFECTS: 10 cyc for ± 10% change in line.
HUMIDITY EFFECTS: No appreciable change for 50 to 95 percent humidity.
HIGH-FREQUENCY OSCILLATOR CALIBRATION: Against 100 kc crystal oscillator at 50 kc points.

BEAT FREQUENCY OSCILLATOR
FREQUENCY RANGE: 300 to 1000 kc.
OUTPUT LEVEL: 6 v across 1000 ohms with output level control.
CRYSTAL HOLDERS: CR-45/U.
CRYSTAL POSITION: Two each, available on rear panel switch.

INTERMEDIATE FREQUENCY OSCILLATOR
FREQUENCY RANGE: 3.2 to 3.9 mc (crystal oscillator).
OUTPUT LEVEL: 2 v in 75 ohms.
CRYSTAL TYPE: CR-18/U.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps. Approx 100 W average or 250 W peak, depending upon cycling of oven heating elements.

FREQUENCY SHIFT EXCITER C-2749/URT
OUTPUT FREQUENCY RANGE: 1 to 2.5 mc on band 1; 2.5 to 6.9 mc on band 2.
FREQUENCY SHIFT: Linear to 1000 cyc.
OUTPUT POWER: Adjustable to 3 W.
OUTPUT IMPEDANCE: 50 to 70 ohms.

KEYING SOURCES: (a) Contact closing to ground; (b) Polar or neutral positive; (c) Linear input 30,000 ohms impedance.
KEYING SPEED: 1000 wpm max.
KEYING INPUT IMPEDANCE: Polar or neutral operation 1,000,000 ohms may be bridged by external 1800 ohm loop resistance. Contact closing to ground must be open circuit.
RF SOURCE: Internal crystal oscillator or external oscillator.
INPUT IMPEDANCE FOR EXTERNAL RF SOURCE: 70 ohms, 6 to 8 v rms.
FREQUENCY CONTROL: High freq crystal oscillator 0.8 to 6.7 mc. High stability 200 kc oscillator.
CRYSTAL HOLDERS: FT-243 three positions and HC-6/U three positions.
OVEN TEMPERATURE: 70° C held constant within ± 0.1° C.
KEYING BIAS: Not greater than 10% at 1000 wpm.
OVER-ALL STABILITY: (a) 10 cps for ambient temperature change of 0° C to 50° C; (b) 10 cps for line voltage change of 10%; (c) No drift for input signal variations of + 25 v to + 150 v (mark frequency).
CRYSTAL FREQUENCY: Assigned transmitter freq minus 200 kc transmitter multiplication.
METERING: PA plate current (tuning).
MONITORING: 100 mv across 70 ohm coaxial connector.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps. Both ovens off - 100 W; each oven - 40 W.

TWO TONE GENERATOR O-579/URT

AUDIO FREQUENCY OSCILLATOR
OUTPUT FREQUENCIES: 935 cps. - 2805 cps.
HARMONIC DISTORTION: More than 65 db down.
INTERMODULATION DISTORTION: More than 55 db down.
OUTPUT IMPEDANCE: 600 ohms unbalanced.
OUTPUT LEVEL: 0 to 0.5 v continuously variable.
OUTPUT CONNECTION: Terminal strip.

RADIO FREQUENCY OSCILLATOR
OUTPUT FREQUENCIES: 1999 kc crystal controlled, 2001 kc crystal controlled.
DISTORTION: More than 60 db down.
OUTPUT IMPEDANCE: 70 ohms unbalanced.
OUTPUT LEVEL: 1.0 v.
PRIMARY POWER: 115 and 230 v, 50 and 60 cps, approximately 35 W.

ISOLATION KEYER (REAR CHASSIS) ISK

KEYING SOURCES: (a) Teletype; (b) CW.
KEYING MODES: (a) 50 v (neutral pulse); (b) 100 v (neutral pulse); (c) 60 mils (neutral pulse); (d) 20 mils (polar pulse).
KEYLINE INPUT IMPEDANCE (REFER TO ITEM 2 ABOVE): (a) 50 k; (b) 100 k; (c) 100 ohms; (d) 300 ohms.
OUTPUT KEYING VOLTAGE (REFER TO ITEM 1 ABOVE): (a) 0 to 30 v pulse (terminated into XFK); (b) Dry keying (ground on, ground off).
KEYING SPEED: 120 wpm max.
OPERATING CONTROLS: (a) Threshold adjust; (b) Voltage adjust.
PRIMARY POWER: 110 and 220 v, 50 and 60 cps, 20 W.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-39A includes:			
1	Sideband Level Monitor SLM-2		3-1/2 x 8 x 19	8.5
1	Frequency Spectrum Analyzer AN/URM-116 includes:			
1	Analyzer TS-1236/URM-16		10-1/2 x 19 x 21-7/8	31
1	Analyzer Cabinet		12-9/16 x 21-3/8 x 22	27
1	Power Supply PP-2206/URM-116		8-23/32 x 14-5/8 x 19	28
1	Power Supply Cabinet		8-3/4 x 14-1/8 x 16-1/4	12
1	Constant Voltage Transformer		4-1/2 x 7-1/2 x 8-3/8	18
1	Power Interconnecting Cable		60 lg	
2	Signal Input Cable		36 lg	
3	Spare Fuses			
1	Alignment Tool			
1	Transmitting Mode Selector AN/URA-28 includes:			
1	RF Oscillator O-672/URA-28		8-3/4 x 15 x 19	41
1	Power Supply PP-1769/URA-23		5-1/4 x 15 x 19	38
1	Power Interconnecting Cable		84 lg	5
1	Signal Interconnecting Cable		144 lg	
1	AC Cable (Power Supply)		72 lg	
1	Monitor Control Panel SB-971A/URT-39		3-1/2 x 5-3/4 x 19	4
1	Variable Frequency Oscillator O-330/FR includes:		10-1/2 x 16 x 19	70
3	Auxiliary Service Cable		72 lg	1.5
10	Coaxial Connector UG-260/U			
1	Tube Puller GP-104			
1	Frequency Shift Exciter C-2749/URT includes:		10-1/2 x 16 x 19	48
1	Cable Assembly		72 lg	0.5
1	Two Tone Generator O-579/URT		5-1/4 x 13 x 19	19
1	Auxiliary Power Panel APP-1		3-1/2 x 19	2.5
1	Isolation Keyer (Rear Chassis) ISK		5-1/4 x 15 x 19	28

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93166: Technical Manual for Transmitting Set, Radio, Model GPT-10K (AN/FRT-39 and AN/FRT-39A).

TUBES, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 4CX5000A (3) 6CL6 (2) 6146 (1) PL172 (2) 5R4 (4) 6X4 (6) 0A2
(6) 872A (2) 6U8A (4) 6A84 (7) 12AT7 (18) 12AU7 (4) 6AH6 (1) 6J6
(1) 2E26 (3) 082 (6) 6U8 (1) 128E26 (2) 68H6 (1) 12AL5 (1) 6AU6 (1) 6C4
(1) 5ADP7 (2) 5651 (1) 5Y3GT (1) 6AS7G (1) 12AX7 (1) 6AL5 (1) 5V4G
(4) 68E6 (6) 6AQ5 (1) 5U4G

CRYSTALS: (2) 100KC (1) 500KC (9) CR-27/U (1) CR-47/U (2) CR-50/U (6) CR-18/U

SEMI-CONDUCTORS: (8) 1N67 (8) 1N303 (1) AX-126 (2) DD-100 (4) 1N34

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	68.7	1083
1	45.5	543
1	11.1	175
1	54.3	593
1	7.5	507
1	18.4	380
1	5.9	86
1	7.5	81
1	3.1	55
1	2.8	50
1	8.5	176
1	8.5	156
1	11.1	163

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Technical Materiel Corp.	Mamaroneck, New York	NObsr-81106	$24,500.00

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION: AN/FRT-39C

CLASSIFICATION of Equip.	ITEM NAM	DATE
UNCLASSIFIED	Radio Transmitting Set	November 21, 1961
SPECIFICATION	CONTRACT NUMBER AND DATE	QUANTITY ON ORDER
- 6	NObsr-81106	-

CONTRACTOR'S NAME AND ADDRESS
The Technical Materiel Corporation
700 Fenimore Road
Mamaroneck, New York

SERVICE APPROVAL LETTER - SERIAL AND DATE: -

ELECTRICAL CHARACTERISTICS

POWER INPUT: 230 ±10% CYCLE 50 or 60 PHASE cps AMPS 3 phase WATTS | - V - CYCLE - PHASE - AMPS - WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	(see reverse)

OPERATING FREQ. AND FREQ. RANGE	EMISSION OR RECEPTION (TYPE)	FREQ. CONTROL (TYPE)	NO. OF CHANNELS
2 to 28 mc 6 bands	(see reverse)	Synthesizer	260,000

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	- °HORIZ. - °VERT. -

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	N.P.
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	VC of C H.D. (UNITS) (feet)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-39C consists of:					
1	Radio Frequency Oscillator O-714/UR					
1	Oscillator-Power Supply Group AN/URA-31A					
1	Telegraph Terminal TH-39A/UGT					
1	Power Distribution Panel SB-1225/UR					
1	Linear Radio Frequency Amplifier AM-2103A/Urt					
1	Cabinet/Frame Assembly(Mfr's Model AX-295)	88	56	42	2.4	
		1.6 AN/FRT-39C:		1		

85 CHANGE 74-687C2

IF ADDITIONAL EQUIPMENT OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

223

DESIGNATION	ITEM NAME
AN/FRT-39C	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH, MFG. DIMENSIONS, ETC.

The AN/FRT-39C is a band switched transmitter for general-purpose use in ship-to-ship, ship-to-air, amd ship-to-shore communications.

All power amplifier stages are linear and they utilize ceramic-type tubes for increased efficiency. The transmitter is used primarily for synthesized sideband service, but because of its power reserve and versatility, it may be used for many modes of operation, for example:

1. CW
2. Frequency Shift Telegraphy
3. Single Sideband, with any degree of suppressed carrier
4. Double Sideband
5. Independent Sideband, with any degree of suppressed carrier
6. Facsimile

The set is mechanically and electrically one-way interchangeable with AN/FRT-39B, except that it has improved Controlled Precision Oscillator CPO-1A (AN/URA-31A) and is equipped with Model AX-295 Cabinet/Frame Assembly for shipboard installation.

Output data: A0 - 5 kw, A1 - 5 kw, A3 - 2.5 kw, A3a - 10 kw PEP, A3b - 10 kw PEP, A4 - 5 kw, F1 - 5 kw, and F4 - 5 kw.

Special features:
50 or 70 ohms unbalanced, 600 ohms balanced, PI-L output network; automatic load and drive control provided to limit distortion during drive peaks or load changes, overlaod and bias protection with automatic recycling and alarm; 100-cycle increments throughout the frequency range, built-in high stability oscillator for CW and FS operation; filtered, forced-air cooling, semipressurized cabinet; safety interlocks at all high voltage points; stability of 1 part in 10^8 per day; equipped with Robinson Technical Products Model W-1175-1, dual-suspension mounting system for protection of the transmitter in a shipboard environment.

No unit cost available

Source of information: Request for Nomenclature

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION: AN/FRT-39D

CLASSIFICATION of Equip.	ITEM NAME	DATE
UNCLASSIFIED	Radio Transmitter Set	19 January 1962
SPECIFICATION	CONTRACT NUMBER AND DATE	QUANTITY ON ORDER
-	NObsr-87149, Item 1	125

CONTRACTOR'S NAME AND ADDRESS
The Technical Materiel Corporation
700 Fenimore Road
Mamaroneck, New York

SERVICE APPROVAL LETTER - SERIAL AND DATE
679C3B-667
12 June 1962

ELECTRICAL CHARACTERISTICS

POWER INPUT: 230 v 50/60 CYCLE 3 PHASE - AMPS - WATTS | - v - CYCLE - PHASE - AMPS - WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	- (see reverse)
OPERATING FREQ. AND FREQ. RANGE	**EMISSION OR RECEPTION (TYPE)**	**FREQ. CONTROL (TYPE)**	**NO. OF CHANNELS**
2 to 28 mc, 6 bands	(see reverse)	Synthesizer Frequency	260,000

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN °HORIZ.	BEAM PATTERN °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	A
			OPERATING INSTRUCTION CHART	N.P.
			PERFORMANCE STANDARD SHEET	N.P.
			MAINTENANCE STANDARD BOOK	N.P.

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-39D (Mfr's Model GPT-10KR) consists of:					
1	Radio Frequency Amplifier AM-2103A/URT					
1	Power Distribution Panel SB-1225/UR					
1	Telegraph Terminal TH-39A/UGT					
1	Radio Frequency Oscillator O-714/UR					
1	Oscillator-Power Supply Group AN/URA-31A					
1	Cabinet-Power Supply CY-3712/FRT-39D					
1	Power Supply PP-3362/FRT					
1	Power Supply PP-3363/FRT					
					1.6	AN/FRT-39D: 1

CHANGE 74 - 687C2

UNCLASSIFIED

IF ADDITIONAL EQUIPMENTS OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

217419

225

87

DESIGNATION	ITEM NAME
AN/FRT-39D	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH, MFG. DIMENSIONS, ETC.

The AN/FRT-39D is a band-switched transmitter for general purpose use in fixed-plant, point-to-point, ground-to-air, and shore-to-ship communications in the frequency range of 2 to 28 megacycles. All power amplifier stages are linear, utilizing ceramic type tubes for increased efficiency. The transmitter is primarily designed for synthesized sideband service. Because of its power reserve and versatility, it may be used for many modes of operation such as CW, frequency shift telegraphy, single sideband with any degree of suppressed carrier, double sideband, independent sideband with any degree of suppressed carrier, and facsimile.

Output data: A0 - 5 kw, A1 - 5 kw, A3 - 2.5 kw, A3a - 10 kw PEP, A3b - 10 kw PEP, A4 - 5 kw, F1 - 5 kw, and F4 - 5 kw.

Special features:

50 or 70 ohms unbalanced, 600 ohms balanced, PI-L output network; automatic load and drive control provided to limit distortion during drive peaks or load changes; overload and bias protection with automatic recycling and alarm; 100-cycle increments throughout the frequency range; built-in high stability oscillator for CW and FS operation; filtered forced air cooling, semi-pressurized cabinet; safety interlocks at all high voltage points; stability of 1 part in 10^8 per day.

The unit is mechanically and electrically one-way interchangeable with AN/FRT-39C except that it has improved Radio Frequency Oscillator O-715A/URA-31.

No unit cost available.

Source of information: Request for Nomenclature
Contract
Nomenclature correspondence Serial 679C3B-720

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION
AN/FRT-39E

CLASSIFICATION of Equip.	ITEM NAME	DATE of Request.
UNCLASSIFIED	Radio Transmitting Set	9 March 1964
SPECIFICATION	CONTRACT NUMBER AND DATE	QUANTITY ON ORDER
-	N600(24)61628	-

CONTRACTOR'S NAME AND ADDRESS
The Technical Materiel Corporation
700 Fenimore Road
Mamaroneck, New York

SERVICE APPROVAL LETTER - SERIAL AND DATE
-

ELECTRICAL CHARACTERISTICS

POWER INPUT
230 v 50/60 CYCLE 3 PHASE - AMPS - WATTS | - v - CYCLE - PHASE - AMPS - WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	(see reverse)

OPERATING FREQ. AND FREQ. RANGE	EMISSION OR RECEPTION (TYPE)	FREQ. CONTROL (TYPE)	NO. OF CHANNELS
2 to 28 mc, 6 bands	(see reverse)	Synthesizer	260

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	- °HORIZ. - °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	-
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-39E					
	(Mfr's Model No. CPT-10K-R5)					
	consists of:					
1	Radio Frequency Amplifier AM-2103A/URT					
1	Power Distribution Panel SB-1225/UR					
1	Telegraph Terminal TH-39A/UGT					
1	Radio Frequency Oscillator O-714/UR					
1	Oscillator-Power Supply Group AN/URA-31B					
1	Cabinet-Power Supply CY-3712/FRT-39D					
1	Power Supply PP-3362/FRT					
1	Power Supply PP-3363/FRT					
		1.6 AN/FRT-39E: 1				
	CHANGE 74 - 687C2			UNCLASSIFIED		

IF ADDITIONAL EQUIPMENT OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

DESIGNATION	ITEM NAME
AN/FRT-39E	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH. MFG. DIMENSIONS. ETC.

The AN/FRT-39E is a hand-switched transmitter used for fixed plant, point-to-point, ground-to-air, and ship-to-ship communications. All power amplifier stages are linear and use ceramic-type tubes for increased efficiency. The transmitter is primarily designed for synthesized sideband service but, because of its power reserve and versatility, it may be used for many modes of operation such as: CW, FST, SSB, and ISB (with any degree of suppressed carrier), and FSK. The emissions and their respective output power are: A0 - 3 kw, A1 - 5 kw, A3 - 2.5 kw, A3a - 10 kw PEP, A3b - 10 kw PEP, A4 - 5 kw, F1 - 5 kw, and F4 - 5 kw.

Special features:

50 or 70 ohms unbalanced, 600 ohms balanced, PI-L output network; automatic load and drive control which limits distortion during drive peaks or load changes; overload and bias protection with automatic cycling and alarm; 100-cycle increments throughout the frequency range; built-in, high-stability oscillator for CW and FS operation; filtered and forced-air cooling in a semi-pressurized cabinet; safety interlocks at all high-voltage points; and a stability of 1 part in 10^8 per day.

The AN/FRT-39E is mechanically and electrically two-way interchangeable with the AN/FRT-39D except that an improved RF Oscillator O-715B/URA-31, and an improved RF Amplifier AM-2505B/URA-31, are contained within Amplifier-Oscillator Group AN/URA-31B.

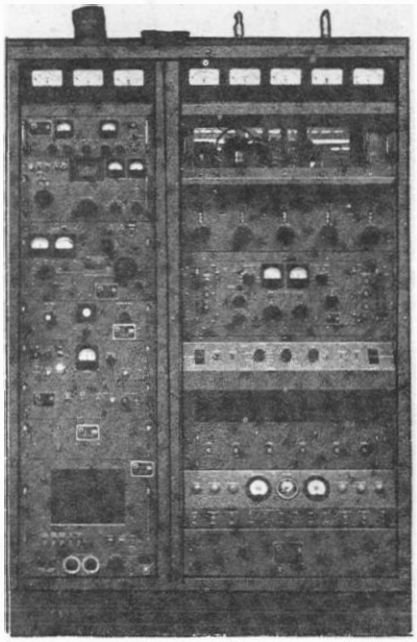
No unit cost available.

Source of information: Request for Nomenclature.

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Technical Material Corp. (82679)



TRANSMITTING SET, RADIO AN/FRT-39H

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-39H is a general purpose synthesized transmitter that provides SSB, ISB, AM and CW modes of operation in the frequency range of 2 to 28 mc. The AN/FRT-39H featuressynthesized frequency control with 100 cps incremental tuning throughout the tuning range, with stability and accuracy of 1 part in 10^8 for a 24-hour period, with an included frequency standard. The synthesizer may be operated from a station standard if higher stability is desired. An emergency frequency stability of 1 part in 10^6 per day is also available. A 1-kw transmission capability is readily available from the IPA section. All amplifier stages are linear. The over-all minimum bandwidth of the final linear amplifier is at least 20 kc between 3 db voltage points over the entire frequency range. A front panel controlled VSWR meter provides protection to the transmitter by opening the high voltage interlocks when pre-set VSWR 2:1 is reached. In addition, a front panel switch allows the VSWR meter to read forward power. All band-switching and tuning controls are on the front panel. Bandswitches are of the self-cleaning type.

No field changes in effect at time of preparation (29 December 1966).

RELATION TO OTHER EQUIPMENT:

The AN/FRT-39H is similar to the AN/FRT-39G except that it is equipped w/C-6652/URT in lieu of TH-39A/UGT(TIS-3). It is similar to the AN/FRT-39F, except that it is equipped with CY-3712/FRT-39D. Maintenance parts differ.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2 to 28 mc.
OPERATING MODES: SSB, ISB, CW, AME, AM, FSK, and FAX.
POWER OUTPUT: 10,000 W: 2-tone PEP signal to distortion ratio at least 35 db: 5000 W: 2-tone PEP signal to distortion ratio at least 40 db; 5000 W average CW, FSK, or FAX.
OUTPUT IMPEDANCE: 50 or 70 ohms unbalanced; 600 ohms balanced Pi-L network w/VSWR up to 2: 1.
STABILITY: 1 part in 10^8 per day for ambient temp change of 15°C within range of 0° to 50°C.
UNWANTED SIDEBAND REJECTION: 500 cps singletone 60 db down from PEP output.
SPURIOUS SIGNALS: At least 60 db below full PEP output.
CARRIER INSERTION: -55 db to full PEP output, variable.
HARMONIC SUPPRESSION: Second harmonic at least 50 db down from PEP output; Third harmonic at least 65 db down from PEP output.
AUDIO RESPONSE: Crystal lattice filters flat within ±1.5 db 250 to 7500 cps.
AUDIO INPUTS: 600 ohm balanced -20 to +10 dbm continuously adjustable to full PEP output.
HEAT DISSIPATION: Max 15 kw.
NOISE: Pwr supply ripple 55 db down from full PEP output.
POWER REQUIREMENTS: 190 to 250 vac, 3 ph, 50 to 60 cps, 50 amp per leg.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-39H includes:	43-1/2 x 56 x 84	2800
1	Oscillator, Radio Frequency O-714/UR		
1	Oscillator, Power Supply Group AN/URA-31B		
1	Control, Transmitter, C-6652/URT		
1	Panel, Power Distribution SB 2392/UR		
1	Amplifier, Radio Frequency AM-2103A/URT		
1	Cabinet, Power Supply CY-3712/FRT-39D		
1	Control, Antenna Coupler C-6465/FRT		
1	Power Supply PP-3362/FRT		
1	Power Supply PP-3363/FRT		

REFERENCE DATA AND LITERATURE:

Manuscript for Transmitting Set, Radio AN/FRT-39H.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
12	260.6	5000

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, NavShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Technical Material Corp.	Mamaroneck. N.Y.	N600(63133-11-126) 63002	

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

DESIGNATION: AN/FRT-40B

CLASSIFICATION of Equip.	ITEM NAME	DATE
UNCLASSIFIED	Radio Transmitting Set	of Request, 9 January 1962
SPECIFICATION	**CONTRACT NUMBER AND DATE**	**QUANTITY ON ORDER**
-	NObsr-87149, Item 2, 29 Nov. 61	34

CONTRACTOR'S NAME AND ADDRESS

The Technical Materiel Corporation
700 Fenimore Road
Mamaroneck, New York

SERVICE APPROVAL LETTER - SERIAL AND DATE

679C3B-667
12 June 1962

ELECTRICAL CHARACTERISTICS

POWER INPUT							
208/230 v AC 50/60 cycle 3 phase	watts	- v	- cycle	- phase	- amps	-	watts

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	(see reverse)

OPERATING FREQ. AND FREQ. RANGE	EMISSION OR RECEPTION (TYPE)	FREQ. CONTROL (TYPE)	NO. OF CHANNELS
2 to 28 mc, 9 bands	(see reverse)	-	1

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	- °HORIZ. - °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	A
			OPERATING INSTRUCTION CHART	N.P.
			PERFORMANCE STANDARD SHEET	N.P.
			MAINTENANCE STANDARD BOOK	N.P.

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-40B (Mfr's Model GPT-40KE-3 consists of:					
1	Radio Frequency Amplifier AM-2103A/URT					
1	Power Distribution Panel SB-1225/UR					
1	Telegraph Terminal TH-39A/UGT					
1	Radio Frequency Oscillator O-714/UR					
1	Power Supply Group Oscillator AN/URA-31A					
1	Power Supply Cabinet CY-3713/FRT-40B					
1	Power Supply PP-3362/FRT					
1	Power Supply PP-3363/FRT					
1	Power Supply PP-3364/FRT-54A					
1	Power Supply PP-3365/FRT-54A					
		1.6 AN/FRT-40B: 1				
	CHANGE 75 - 687C2			UNCLASSIFIED		

IF ADDITIONAL EQUIPMENTS OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

DESIGNATION	ITEM NAME
AN/FRT-40B	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH. MFG. DIMENSIONS. ETC.

The AN/FRT-40B is a band switched transmitter used for fixed plant, point-to-point, ground-to-air, and shore-to-ship communications in the frequency range of 2 to 28 mc.

All power stages are linear, utilizing ceramic-type tubes for increased efficiency. The transmitter is primarily designed for synthesized single sideband service but, because of its large power reserve and versatility, it may be used for many differnet purposes such as CW (keyed carrier), frequency shift telegraphy, single sideband, suppressed carrier, double sideband (same intelligence), independent sideband (different intelligence), and single or double sideband AM.

The set is for general purpose use. It is mechanically and electrically one-way interchangeable with AN/FRT-40A xcept that the frequency range has been extended downward from 4 mc to 2 mc and it has improved units O-715A/URA-31, AM-2505A/URA-31, and PP-2561A/URA-31.

Output data: A0, A1, A4 and F4 at 20 kw or 5 kw; A3 at 10 kw or 2.5 kw; A3a and A3b at 40 PEP or 10 kw PEP.

Special features:

72 ohms unbalanced and 600 ohms balanced PI-L network output; automatic load and drive control provided to limit distortion during drive peaks or load changes; overload and bias protection with automatic recycling and alarm, safety interlocks at all high-voltage points; 100-cycle increments throughout the frequency range; built-in high stability oscillator for CW and FS operation; filtered forced air cooling with semi-pressurized cabinet; and stability of 1 part in 10^8 per day.

No unit cost available.

Source of information: Request for Nomenclature
Contract
Nomenclature correspondence Serial 679C3B-720

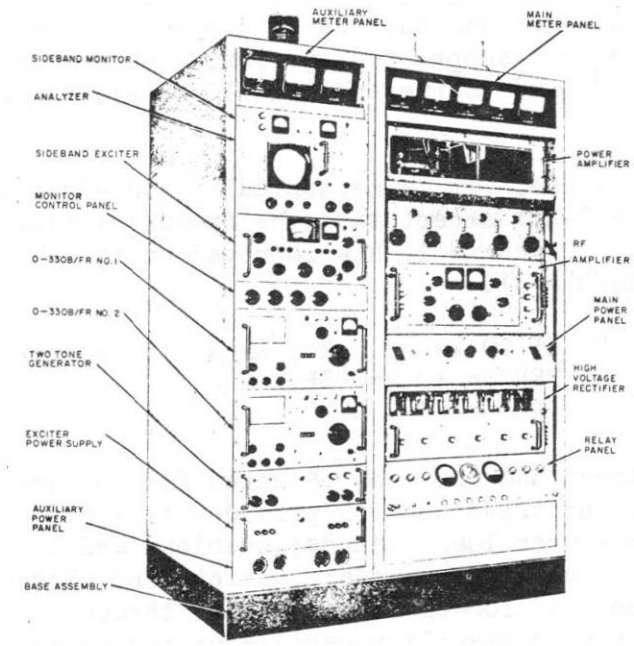
28 July 1964 TRANSMITTING SET, RADIO AN/FRT-52

Cog Service: USA FSN: 2F5820-856-7464 Functional Class:

USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Technical Material Corp., (82679).



TRANSMITTING SET, RADIO AN/FRT-52

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-52 is a radio transmitter that provides multi-channel long range communication using single-sideband, double-sideband, independent-sideband, continuous-wave or amplitude modulation operation within the frequency range of 2 to 28 magacycles.

The equipment is capable of transmitting four 3-kilocycle channels of intelligence in a multiplexed communication system. When the equipment is used as a continuous wave or amplitude modulation transmitter, the average output power is 5,000 watts; when it is used as a sideband transmitter, the peak envelope power output is 10,000 watts.

No field changes in effect at time of preparation (26 May 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(a) High impedance (500,000 ohms) microphone for voice modulation of the sideband exciter; (b) A standard telegraph key is required for cw operation; (c) A standard headset (high impedance) such as Headset HS-30, for operation of the O-330B/FR; (d) When unbalanced antenna connections are required the use of an adaptable coaxial connector is necessary; (e) Two (2) 0-5 RF ammeters with internal thermocouples for output monitoring of balanced output.

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2 mc to 28 mc.
OUTPUT POWER
- SINGLE SIDEBAND: 10,000 W peak envelope power.
- DOUBLE SIDEBAND: 10,000 W peak envelope power.
- INDEPENDENT SIDEBAND: 10,000 W peak envelope power.
- CONTINUOUS WAVE: 5,000 W.
- AMPLITUDE MODULATION: 5,000 W.

OPERATING MODES: Ssb; dsb; isb; cw; and am.
OUTPUT IMPEDANCE
- BALANCED: 600 ohms.
- UNBALANCED: 72 ohms.

HARMONIC SUPPRESSION
- THIRD ORDER HARMONICS: 35 db down from pep.
- FIFTH ORDER HARMONICS: 45 db down from pep.

CARRIER INSERTION: Variable to 45 db below pep.
AUDIO INPUT: - 20 db to + 10 db, adj for full RF output.
AUDIO RESPONSE: Flat within ± 1.5 db, 350 to 7,500 cps.
PRIMARY POWER REQUIREMENTS: 230 v ac, 50 to 60 cps, 3 ph, 13,000 W.
SAFETY FEATURES: Mechanical and electrical interlocks.
COOLING: Forced-air cooling.
OPERATING TEMPERATURE: 0° C to 50° C (32° F to 112° F).
HUMIDITY RANGE: 90%.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-52 includes:	2F5820-856-7464		
1	Auxiliary frame (AX-180) includes:		21 x 38 x 72	366
1	Sideband monitor (SLM-2)	5820-856-7453	3-1/2 x 8 x 19	8.5
1	Spectrum analyzer (FSA-2) includes:			
1	Analyzer (SA-2)		10-1/2 x 19 x 21-7/8	31
1	Analyzer power supply (PS-2)		8-3/4 x 14-5/8 x 19	28
1	Sideband exciter assembly (S8E) includes:	5820-715-4043		

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Sideband exciter (AO-101)	5820-892-3469	8-3/4 x 15 x 19	41
1	Exciter power supply (A-1397)	5820-823-2980	5-1/4 x 15 x 19	38
1	Monitor control panel (MCP-2)	5820-856-7452	3-1/2 x 5-3/4 x 19	4
2	Oscillator Radio Frequency O-330B/FR	6625-518-4661	10-1/2 x 16 x 19	75
1	Two-tone generator (TTG-2)	6625-856-9363	3-1/2 x 15 x 19	19
1	Auxiliary power panel (APP-1)	5820-856-7451	3-1/2 x 5-1/2 x 19	2.5
1	Isolation keyer (AK-100)	5820-856-7465	5-1/4 x 15 x 19	28
1	Main frame (AX-186) includes:		33 x 38 x 72	500
1	RF amplifier (RFC-1 and AX-104)	5820-856-7463 5820-856-7456	11-3/4 x 18 x 28-3/4	100
1	High voltage rectifier (AX-103)	5820-856-7454	10-3/4 x 15 x 28-3/4	80
1	Relay panel (AX-139)	5820-856-7462	3 x 10 x 28-3/4	20
1	Base assembly (MS-1458-1 and MS-2175)		7 x 38 x 54	152

REFERENCE DATA AND LITERATURE:

TM11-5820-475-12: Operator and Organizational Maintenance Manual for Radio Transmitting Set AN/FRT-52.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (8) OA2 (2) 6BH6 (1) 082 (2) 6C4 (1) 5ADP7 (3) 6CL6 (3) 5V4G (7) 6U8A (2) 5R4 (3) 6X4 (6) 6AB4 (1) 4XC5000A (1) 6AS7G (1) 12AL5 (4) 6AH6 (7) 12AT7 (1) 6AL5 (18) 12AU7 (2) 6AU6 (1) 12AX7 (1) 6J6 (1) TV-100 (12) 6AQ5 (6) 872A (3) 6BE6 (2) 5651 (2) 6146

CRYSTALS: (1) 8 mc (1) 12 mc (1) 18 mc (1) 13 mc (1) 10 mc (1) 14 mc (1) 11 mc (1) 17 mc

SEMI-CONDUCTORS: (6) 1N67 (8) 1N34 (10) 1N303 (2) RX-104 (2) CR2005 (1) CR2021 (2) DD-100

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

AN/FRT-52 TRANSMITTING SET, RADIO

PROCUREMENT DATA

PROCURING SERVICE: USA
DESIGN COG: USA
SPEC &/OR DWG:

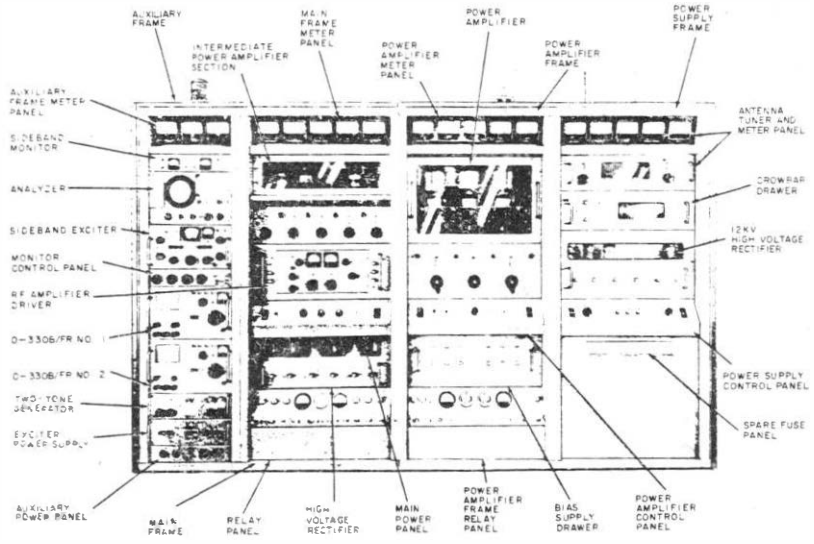
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Technical Material Corp.	Mamaroneck, New York	DA-36-039-SC-84848 MIPR-M62-627-25047	

Cog Service: USA FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: The Technical Materiel Corporation, (82679).



TRANSMITTING SET, RADIO AN/FRT-54A

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-54A provides multi-channel long range communication using single sideband, double sideband, independent sideband, cw, or AM operation within the frequency range.

No field changes in effect at time of preparation (15 June 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Microphone; (1) Headset HS-30/U; (1) Telegraph Key.

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2 to 28 mc.
OUTPUT POWER
SINGLE SIDEBAND, DOUBLE SIDEBAND, INDEPENDENT SIDEBAND: 40,000 W peak envelope power.
CW AND AM: 20,000 W (avg power).
OPERATING MODES: Single sideband, double sideband, independent sideband, cw and AM.
OUTPUT IMPEDANCE: 600 ohms balanced, 50 ohms unbalanced.
HARMONIC SUPPRESSION
THIRD ORDER HARMONICS: 40 db down from pep.
FIFTH ORDER HARMONICS: 45 db down from pep.
CARRIER INSERTION: Variable to 55 db below pep.
AUDIO INPUT: − 20 to + 10 db, ADJ for full rf output.
AUDIO RESPONSE: Flat within + 1.5 db, 350 to 7,500 cps.
POWER REQUIREMENTS: 230 v, 50 to 60 cyc, 3 ph, 7500 W.
SAFETY FEATURES: Mechanical and electrical interlocks.
COOLING: Forced air cooling.
OPERATING TEMPERATURE: 0 to 50° C (+ 32 to + 112° F).
HUMIDITY: 95%.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-54A includes:			
1	Auxiliary Frame		21 x 38 x 72	366
1	Sideband Monitor		3-1/2 x 8 x 19	8.5
1	Spectrum Analyzer Group AN/URM-116A includes:			
1	Analyzer, Spectrum TS-1236A/URM-116A		10-1/2 x 19 x 21-7/8	31
1	Power Supply PP-2206/URM-116		8-3/4 x 14-5/8 x 19	28
1	Modulator-Power Supply Group AN/URA-28A includes:			
1	Oscillator, RF O-672A/URA-28		8-3/4 x 15 x 19	41
1	Power Supply PP-1769/URA-23		5-1/4 x 15 x 19	38
1	Panel, Monitor SB-971A/FRT-39		3-1/2 x 5-3/4 x 19	4
2	Oscillator, RF O-330B/FR		10-1/2 x 16 x 19	75
1	Generator, Signal O-579A/URT		3-1/2 x 15 x 19	19
1	Panel, Power Distribution SB-1574/FRT		3-1/2 x 5-1/2 x 19	2.5
1	Keyer KY-429/FRT		5-1/4 x 15 x 19	28
1	Main Frame		33 x 38 x 72	500
1	RF Amplifier Driver Includes:		11-3/4 x 18 x 28-3/4	100
1	Amplifier, RF AM-2103A/URT			
1	Power Supply PP-3362/FRT			
1	Power Supply PP-3363/FRT		10-3/4 x 15 x 28-3/4	80

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Relay Panel		3 x 10 x 28-3/4	20
1	Power Amplifier Frame		33 x 38 x 72	995
1	Power Supply PP-3364/FRT-54A		12-3/4 x 27 x 28-3/4	166
1	Power Amplifier Frame Relay Panel		3 x 10 x 28-3/4	20
1	Power Supply Frame includes:		33 x 38 x 72	985
1	Antenna Tuner and Meter Panel		21-1/2 x 22-3/4 x 30-1/2	200
1	Crowbar Drawer		16-1/4 x 17 x 26-3/4	127
1	Power Supply PP-3365/FRT-54A		16-1/4 x 22-3/4 x 30-1/2	242

REFERENCE DATA AND LITERATURE:

TM11-5820-476-12: Operator and Organizational Maintenance Manual for Radio Transmitting Set AN/FRT-54A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (10) 0A2 (1) 0B2 (1) 5ADP7 (3) 5V4G (4) 5R4 (6) 6AB4 (1) 6AS7G (4) 6AH6. (1) 6AL5 (2) 6AU6 (1) 6J6 (12) 6AQ5 (3) 6BE6 (2) 6BH6 (2) 6C4 (3) 6CL6 (7) 6U8 (4) 6Y4 (1) 4CX5000A (1) 12AL5 (9) 12AT7 (18) 12AU7 (1) 12AX7 (1) TV-100 (6) 872A (2) 5651 (6) 6895 (1) 7568 (2) 6146 (1) 6336A

CRYSTALS: Data not available.

SEMI-CONDUCTORS: (6) 1N67 (8) 1N34 (10) 1N303 (2) RX-104 (2) DD-100

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USA DESIGN COG: USA, Sig C
SPEC &/OR DWG:

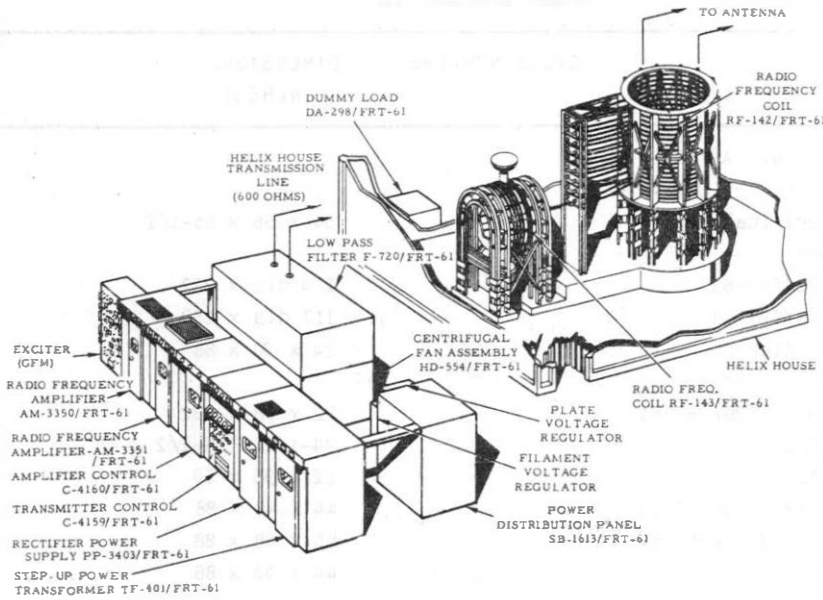
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Technical Materiel Corporation	Mamaroneck, New York		

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Continental Electronics Manufacturing Company, (08440).



TRANSMITTING SET, RADIO AN/FRT-61

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-61 is a medium-power shore installation which is designed for radio telegraph and radio teletype communications.

No field changes in effect at time of preparation (15 June 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Modulator-Oscillator Group AN/URA-30.

AN/FRT-61 TRANSMITTING SET, RADIO

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 50 to 150 kc.
TYPE OF EMISSION: CW, single sideband, double sideband, independent sideband.
TYPE OF KEYING: "On-off" International Morse, Facsimile, FSK.
POWER OUTPUT: 50 kw avg, 100 kw peak envelope.
ANTENNA TUNING: Remote control from transmitter.
OUTPUT IMPEDANCE: 600 ohm, balanced.
POWER REQUIREMENTS: 230 v, 50 to 60 cyc, 3 ph.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-61 includes:			
1	Dummy Load, Electrical DA-298/FRT-61		54 x 56 x 66-1/2	800
1	Coil, RF RE-142/FRT-61		174 dia x 222	3000
1	Coil, RF RE-143/FRT-61		117 dia x 159-3/4	3000
1	Control, Transmitter C-4159/FRT-61		24 x 30 x 88	900
1	Filter, Low Pass F-720/FRT-61		72 x 78 x 132	3250
1	Regulator, Voltage		24-1/2 x 26-1/2 x 47	670
1	Regulator, Voltage		22 x 35 x 50	1300
1	Amplifier, RF AM-3350/FRT-61		44 x 48 x 88	1600
1	Amplifier, RF AM-3351/FRT-61		44 x 48 x 88	1425
1	Control, Amplifier C-4160/FRT-61		44 x 48 x 88	1600
1	Power Supply-Rectifier PP-3403/FRT-61		44 x 48 x 88	1675
1	Transformer, Power, Step-Up TF-401/FRT-61		44 x 48 x 88	1850
1	Panel, Power Distribution SB-1613/FRT-61		44 x 48 x 88	1600
1	Fan Assy, Centrifugal HD-554/FRT-61		60 x 72 x 132	2150
1	Transformer, RF TF-423/FRT-61		11-1/4 x 16-1/2 x 20	165
*1	Coupler, Directional CU-1065/FRT-61			
**1	Alarm-Monitor BZ-75/FRT-61			

* Mtd on F-720/FRT-61.
** Mtd in C-4159/FRT-61.

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94592: Technical Manual for Radio Transmitting Set AN/FRT-61.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (6) OD3 (7) 857B (1) 5AQP (4) B72A (1) 6AQ5 (2) 5642 (1) 6AU6 (1) 5651 (1) 6CH (2) 5933WA (3) 6QJB (2) ML6697 (3) 6UB (5) 12AU7 (1) 4-400A (6) 575A (6) 4-1000A (2) 12B4A

CRYSTALS: None used.

SEMI-CONDUCTORS: (4) 1N38A (5) 2N1516 (1) 2N301

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	183.4	1050
1	274.6	6171
1	442.7	4721
1	80.8	1175
1	437	3675
1	41.6	875
1	43.5	1550
1	171.9	1875
1	171.9	1700
1	171.9	1850
1	171.9	1825
1	171.9	1950
1	171.9	1875
1	471.6	2425
1	11.4	310

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Continental Electronics Mfg Company Type No. 218A	Dallas, Texas	NObsr-85582	$299,663.00

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

CLASSIFICATION of Equip.: UNCLASSIFIED	ITEM NAME: Radio Transmitting Set	DESIGNATION: AN/FRT-62
		DATE of Request: 19 March 1962
SPECIFICATION: -	CONTRACT NUMBER AND DATE: NObsr-87181, Item 1	QUANTITY ON ORDER: 5
CONTRACTOR'S NAME AND ADDRESS: The Technical Materiel Corporation, 700 Fenimore Road, Mamaroneck, New York		SERVICE APPROVAL LETTER - SERIAL AND DATE: 679C3B-771, 3 July 1962

ELECTRICAL CHARACTERISTICS

POWER INPUT: 230 V 50/60 CYCLE 3 PHASE - AMPS - WATTS | - V - CYCLE - PHASE - AMPS - WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	(see reverse)
OPERATING FREQ. AND FREQ. RANGE	EMISSION OR RECEPTION (TYPE)	FREQ. CONTROL (TYPE)	NO. OF CHANNELS
2 to 28 mc, 9 bands	(see reverse)	Synthesizer	260,000

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	- °HORIZ. - °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	A
			OPERATING INSTRUCTION CHART	N.P.
			PERFORMANCE STANDARD SHEET	N.P.
			MAINTENANCE STANDARD BOOK	N.P.

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Radio Transmitting Set AN/FRT-62 (Mfr's Model GPT-200KA) consists of:					
1	Radio Frequency Oscillator O-714/UR					
1	Oscillator-Power Supply Group AM-2103(A)					
1	Radio Frequency Amplifier AM-2103(A)/URT					
1	Panel SB-1225/UR					
1	Linear Power Amplifier Mfr's Model PAL-10K					
1	Linear Power Amplifier Mfr's Model PAL-40K					
1	Linear Power Amplifier Mfr's Model PAL-200K					

1.6 AN/FRT-62: 1

CHANGE 74 - 687C2 UNCLASSIFIED

IF ADDITIONAL EQUIPMENTS OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

DESIGNATION	ITEM NAME
AN/FRT-62	Radio Transmitting Set

FUNCTIONAL DESCRIPTION: SKETCH, MFG. DIMENSIONS, ETC.

The AN/FRT-62 is a band switched transmitter for fixed plant, point-to-point, ground-to-air, and shore-to-ship communications in the frequency range of 2 to 28 megacycles. The unit is capable of 200 kw PEP output.

All power stages are linear, using ceramic type tubes for increased efficiency. The transmitter is designed primarily for synthesized sideband service but, because of its large power reserve and versatility, it may be used for many different modes of operation such as: CW (keyed carrier), frequency shift telegraphy, single sideband (suppressed carrier), double sideband (same intelligence), independent sideband (separate intelligence), or single or double sideband AM.

Types of emissions: A0, A1, A4, F1 and F4 at 100 kw; A3 at 50 kw; A3a and A3b at 200 kw PEP.

Special features:

50 or 70 ohms unbalanced, 600 ohms balanced, PI-L output network; automatic load and drive control to limit distortion during high drive peaks or load changes; overload and bias protection with automatic recycling and alarm; 100-cycle incremental tuning throughout the frequency range; built-in high stability oscillator for CW and FS operation filtered, forced air cooling, semi-pressurized cabinet; safety interlocks at all high voltage points; stability of 1 part in 10^8 per day.

No unit cost available.

Source of information: Request for Nomenclature
Contract

14 September 1967 TRANSMITTING SET, RADIO AN/FRT-62B

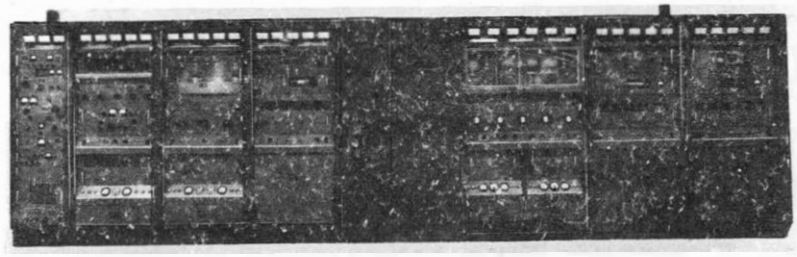
Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: The Technical Materiel Corp. (82679).



TRANSMITTING SET, RADIO AN/FRT-62B

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-62B is a general purpose transmitter featuring 260,000 synthesized channels from 2 to 28 mc at 200 kw PEP output in SSB, ISB, AM, AM equivalent, CW, and FSK and FAX when TH-39B/UGT is included. Stability of at least 1 part in 10^8 per day is achieved after aging of the equipments frequency standard for a period not exceeding 30 days. The transmitter is constructed on a modular basis for ease in installation and contains all elements, including blowers and transformers, required to operate the equipment. The power amplifier is designed with two tubes operating in parallel and powered by two independent power supplies. 100 kw PEP output is available should failure occur to one of the final tubes or its associated power supply, without otherwise affecting the technical characteristics of the equipment. Also, 40 kw, 10 kw, and 1 kw emergency outputs are available. The transmitter is controlled from its front panels throughout the frequency range. Band-switching provides positive RF connection with no rolling contacts. The final amplifier and

40 kw driver are protected against mismatch overload by VSWR protect circuitry, which can preset to a given value.

NO field changes in effect at time of preparation (3 January 1967).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2 to 28 mc.

MODES OF OPERATION: AM, AM equivalent, SSB, ISB, CW, FSK and FAX.

POWER OUTPUT: 200,000 W two tone PEP, distortion of least 35 db down from either tone of two tone test; 100,000 W two tone PEP, distortion at least 40 db down from either tone of two tone test; 125,000 W average CW or FSK.

OUTPUT IMPEDANCE: 50 ohms nom unbalanced, 600 ohms balanced; double Pi-network will match load w/VSWR up to 2:1.

STABILITY AND FREQUENCY CONTROL: Stability of 1 part in 10^8 per day for ambient temp change of 15°C within range of 0° to 50°C; exciter provides emergency freq stability of 1 part of 10^6 per day.

UNWANTED SIDEBAND REJECTION: A signal at 500 cps is at least 60 db down from full PEP in the unwanted sideband.

SPURIOUS SIGNALS: At least 60 db below full PEP output.

VSWR PROTECT CIRCUITS: The 40 kw driver and 200 kw final amplifiers are provided w/VSWR meters that may be preset to disable the transmitter when VSWR of 2:1 is reached.

NOISE LEVEL: At least 70 db down from full PEP; hum level is at least 55 db down from full PEP output.

CARRIER INSERTION: -55 db to full PEP output.

HARMONIC SUPPRESSION: All harmonics are at least 65 db below full PEP output; Not to exceed 50 mw.

AUDIO RESPONSE: Crystal lattice filters flat within ±1.5 db from 250 to 7500 cps ±25 cps.

AUDIO INPUTS: 600 ohms balanced -20 to +10 dbm, adjustable, -20 dbm input will provide full RF output; unbalanced input can also be applied.

METERING: Front panel meters provide indications of the operation of all critical circuits.

COOLING: Filtered forced air cooling, semi-pressurized cabinet.

SAFETY FEATURES: Overload protection w/audio alarm; safety interlocks provided on all high voltage points.

POWER REQUIREMENTS: 240 v ac, 3 ph, 50 to 60 cps, 1000 amps per leg, or 480 v ac, 3 ph, 50 to 60 cps, 500 amps per leg; primary transformer may be connected to eigher Delta or Wye input.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-62B	40 x 84 x 282	26,000

REFERENCE DATA AND LITERATURE:

Manuscript for Transmitting Set, Radio, AN/FRT-62B.

TRANSMITTING SET, RADIO AN/FRT-62B

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
69	2600	36,000

PROCUREMENT DATA

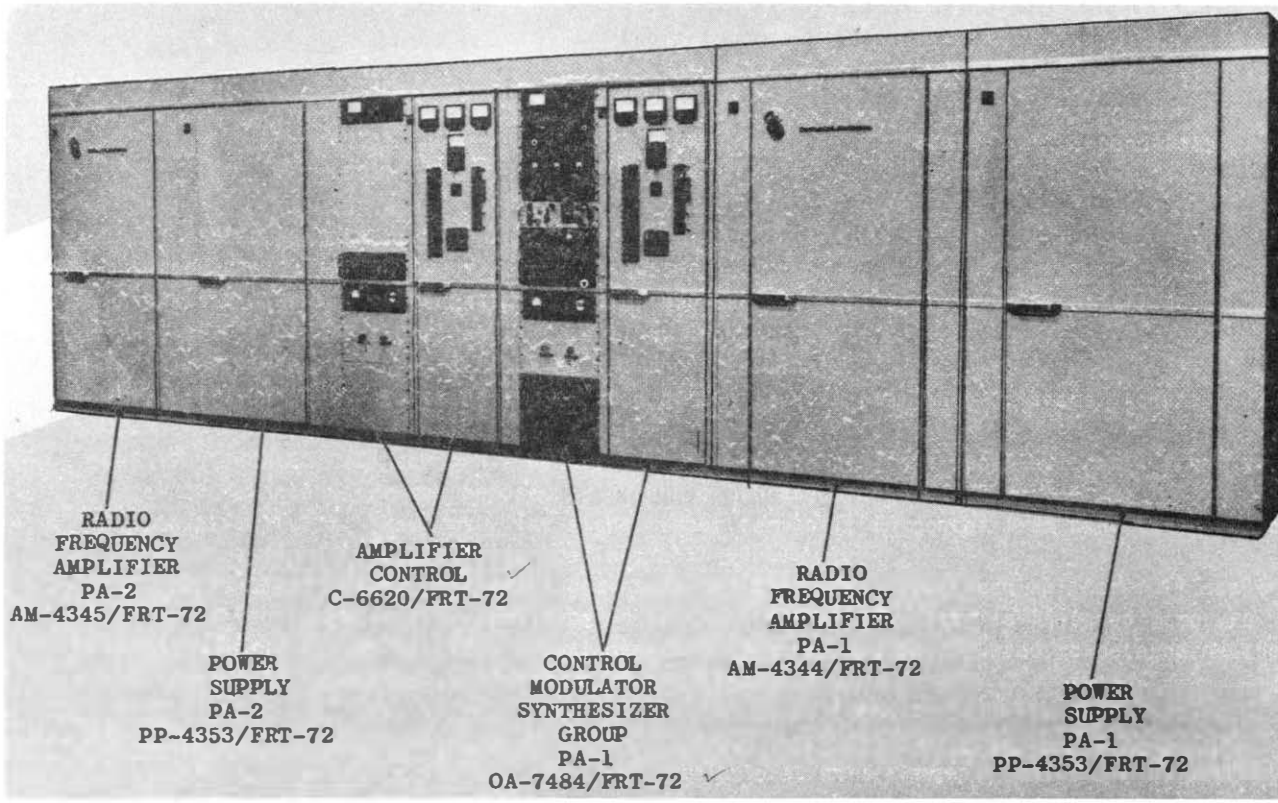
PROCURING SERVICE: USN
DESIGN COG: USN, NavShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Technical Materiel Corp.	Mamaroneck, N.Y.	N600(63133-11-126)63002	

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Continental Electronics Mfg. Co. (08440).



TRANSMITTING SET, RADIO AN/FRT-72

FUNCTIONAL DESCRIPTION:

Transmitting Set AN/FRT-72 develops 100 kw PEP (50 kw average) radio frequency power in the LF frequency band. The set provides radio communications (transmission) with choice of the following types of emission: A0, A1, F1, A2, A3, A3a, A3b, A3j and A9b.

The transmitting set is designed for installation ashore.
No field changes in effect at time of preparation (3 March 1967).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) - Antenna
(1) - Microphone
(1) - Preamplifier
(1) - Line Amplifier
(1) - Switching Equipment
(1) - Telegraph Key
(1) - Facsimile Set
(1) - Teletype writer

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 30 to 150 kc/s.
TYPE OF EMISSION - A0: (Absence of any modulation)
A1: (Continuous wave telegraphy)
F1: (Frequency Shift Keying)
F4: (Facsimile)
A2: (Modulated Continuous wave telegraphy)
A3: (Telephony-Double Sideband, full-Carrier)
A3a: (Telephony-Single Sideband, reduced carrier)
A3b: (Telephony-Two independent sidebands)
A3j: (Telephony-Single Sideband suppressed carrier)
A9b: (Two independent sidebands- Combination of Telephony and telegraphy).
NOMINAL OUTPUT POWER: 100 kw PEP (50 KW average)
FREQUENCY STABILITY: 1 part in 10^8 per 24 hours in continuous operation.
POWER REQUIREMENTS: 460 ± 10% v ac, 45 to 65 cps, 3 phase.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio AN/FRT-72 includes:	38 x 75 x 288	9530
1	Control-Modulator-Synthesizer Group:	36 x 48 x 78	1110
	OA-7484/FRT-72 includes:		
1	Modulator, Radio Transmitter: MD-637/FRT-72		
1	Filter, Bandpass		
1	Filter, Broadband		
1	Oscillator, Synthesizer: O-1212/URC		

TRANSMITTING SET, RADIO AN/FRT-72

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Tone Intelligence: TH-393/UGT		
1	Control, Transmitter: C-6619/FRT-72		
2	Stepper, Recycle		
2	Panel, Fuse		
4	Indicator-Protector: ID-1294/FRT-72		
1	Power Supply, Modulator		
1	Amplifier, Radio Frequency: AM-4344/FRT-72 includes:	36 x 48 x 78	1570
1	Switch, Radio Frequency		
2	Power Supply: PP-4353/FRT-72	36 x 48 x 78	2200 ea.
1	Control, Amplifier: C-6620/FRT-72 includes:	36 x 48 x 78	900
1	Indicator, Voltage Standing Wave: ID-1295/FRT-72		
1	Amplifier, Radio Frequency AM-4345/FRT-72 includes:	36 x 48 x 78	1550
1	Switch, Radio Frequency		

REFERENCE DATA AND LITERATURE:

NAVSHIPS 0967-033-8000: Instruction Manual for Transmitting Set, Radio AN/FRT-72.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
2	117.15	900
2	121.84	1350
1	117.15	1200
1	117.15	1250
2	19.98	1350
1	8.15	397
1	6.08	406
1	7.47	390
1	21.96	199
1	7.63	105
1	2.80	104
1	10.03	132
1	20.08	359
1	6.79	110

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, NAVSHIPS

SPEC &/OR DWG:

TRANSMITTING SET, RADIO AN/FRT-72

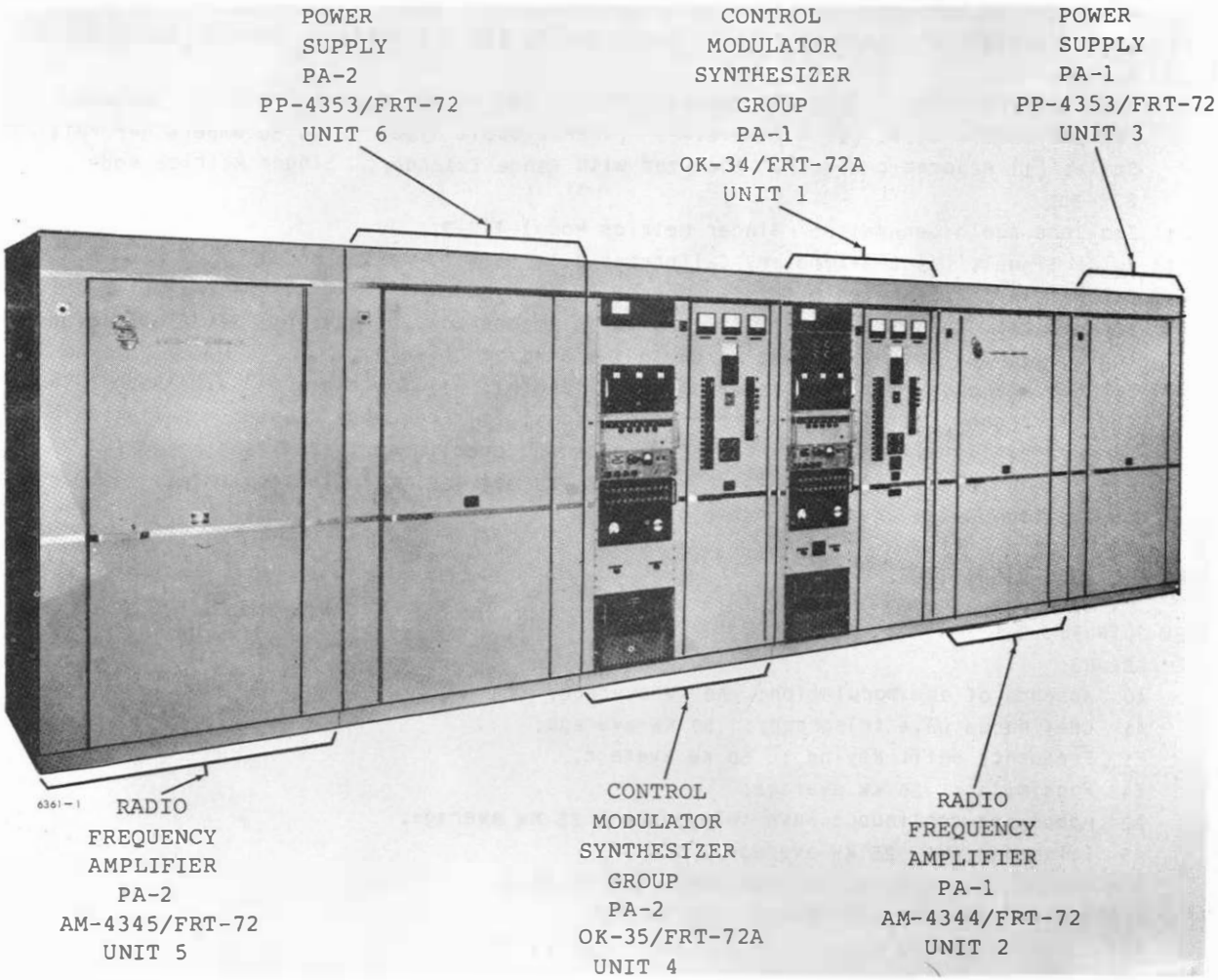
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Continental Electronics Mfg. Co.	Dallas, Texas	N600(63133)63573 N600(11)62530	

20 July 1967
Cog Service: USN FSN: TRANSMITTING SET, RADIO AN/FRT-72A
Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Continental Electronics Mfg. Co.,(08440).



TRANSMITTING SET, RADIO AN/FRT-72A

AN/FRT-72A TRANSMITTING SET, RADIO

FUNCTIONAL DESCRIPTION:

Transmitting Set, Radio AN/FRT-72A is a medium power, low frequency, independent sideband, radio communication transmitting system designed for installation ashore. The Transmitter operates from 30 kc to 150 kc and consists of two separate power amplifiers, each capable of generating 50 kw PEP (25 kw average power).

No field changes in effect at time of preparation (6 Feb 1967).

RELATION TO OTHER EQUIPMENT:

The AN/FRT-72A is similiar to the AN/FRT-72 except maintenance parts.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Counter: Berkley Model-550; (1) Multimeter: Simpson Model-260;
(1) Oscilloscope: Tektronix Model-545A; (1) R-F Signal Generator: AN/URM-25E(10K to 50MC)
(1) Alignment Tool: B-N317C-158; (1) Alignment Tool: B-N317-159;
(1) Multiple Spline Key-Wrench Handle: B-N317-76; (1) Cable: RG-58/U 50 ft;
(4) Connectors: UG88E/U; (1) Phase Rotation Indicator: Knopp Model-K-3;
(1) Audio Oscillator: Hewlett-Packard Model-200CD; (1) R-F Bridge: General Radio-Model 916AL;
(1) Selective Receiver: (Use with above bridge;) (1) Vacuum Tube Voltmeter: Hewlett-Packard Model- 410B; (1) R-F Ammeter: (Thermocouple Type) 35 to 50 ampers R-F Full Scale; (1) Panoramic Spectrum Analyzer with Range Extender; Singer Metrics Mode-SSB-3b;
(1) Two-Tone Audio Generator: Singer Metrics Model-TTG-2;
(1) Voice Signal; (1) D-C Ammeter, Calibrated 0 to 15 amp; Weston Model;
(1) D-C Ammeter, Calibrated 0 to 1.5 ampers: weston Model; (1) AC Clamp-on-Ammeter 0 to 250 ampers; (1) Power Supply: D-C, 0 to 15 ampers Low Voltage; (1) Set Electrician tools; (1) Set Socket Wrenchs (1/4" to 1-1/4" 1/2" drive)
(1) Set End Wrenches (1/4" to 1-1/4" standard length); (1) Towmeter: (1) Wire Rope Sling: Capacity 5000 lbs; (1) Set Wiring: 5A3J2 Coax; (1) Frequency Counter: Hewlett-Packard 5212A; (1) Handbook of Test Methods and practices: NAVSHIPS 91828A; (1) Handbook of Electronic Circuits: NAVSHIPS 900,000.102; (1) Electronic Test Equipment Application Guide NAVSHIPS 0969-019-7000.

TECHNICAL CHARACTERISTICS:

POWER OUTPUT
EMISSIONS:
A0 Absence of any modulation: 50 KW average;
A1 Continuous wave telegraphy: 50 KW average;
F1 Frequency shift Keying : 50 KW average;
F4 Facsimile : 50 KW average;
A2 Modulated continuous wave telegraphy: 25 KW average;
A3 Telephony AM: 25 kW average;
A3A Single Sideband reduced carrier: 100 KW pep;
A3B Two independant sidebands: 100 KW pep
A3J Single sideband suppressed carrier: 100 Kw pep;
A9B Two independant sidebands: combination of telephony and telegraphy: 100 Kw pep;
FREQUENCY RANGE: 30 KC to 150 KC.
POWER AMPLIFIER: Broadband linear.
FIRST AMPLIFIER: Class A.

DRIVER AMPLIFIER: Class A.
FINAL POWER AMPLIFIER: Class AB$_1$
OUTPUT IMPEDANCE: 50 ohm, VSWR less than 2 to 1.
FREQUENCY STABILITY: 1 part in 10^8 per 24 hours in continuous operation.
MODULATION CAPABILITY: Voice modulated and composite voice-frequency-carrier modulated, FSK-up to 300 bauds, FAX-up to 400 bauds, and CW up to 140 bauds.
BANDWIDTH: 6 KC-two sidebands each capable of a 3 KC passband.
HARMONIC RADIATION: 50 db below the full power output or 50 mw which ever is less.
SPURIOUS RADIATION: 60 db below full power output of the transmitter.
CARRIER RIPPLE AND NOISE: 50 db below full power as measured across the specified loads.
DUTY CYCLE: Continuous full load 100%.
AUDIO INPUTS
LOWER SIDEBAND: -20 dbm to +10 dbm continuously adjustable for full output into a 600 ohm load.
UPPER SIDEBAND: -20 dbm to +10 dbm continuously adjustable for full output into a 600 ohm load.
OPERATING TEMPERATURE: 0 deg C to +50 deg C.
OPERATING HUMIDITY: 0 to 95% relative humidity.
INPUT POWER: 460 volts ac ±10%, 135 KVA 50 to 60 ±5% cycles per second, 3-phase.
ALTITUDE: Up to 10.000 ft above sea level.

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transmitting Set, Radio: AN/FRT-72A includes:	36 x 78 x 288	9530
1	Control-Modulator-Synthesizer Group: OK-34/FRT-72A;	36 x 48 x 78	1110
1	Modulator, Radio Transmitter: MD-637/FRT-72A;		
1	Filter, Band Pass, Unit-1A1FL-3;		
1	Filter, Broadband, Unit 1A1FL-4;		
1	Frequency Synthesizer: Model-3038;		
1	Terminal Telegraph: TH-398/UGT;		
1	Control, Transmitter: C-6619/FRT-72A;		
1	Stepper, Recycle: Unit-1A5;		
1	Panel Fuse, Unit 1A6		
1	Indicator Protector: ID-1294/FRT-72A;		
1	1-MC Sample Amplifier: Unit-1AB:		
2	Power Supply Bias: PP-4352/FRT-72A;		
1	Power Supply Modulator: Lambda-PT-C-881		
1	Cooling Panel: Unit-1B1;		
2	Amplifier, Radio Frequency: AM-4344/FRT-72A (PA-1).	36 x 48 x 78	1570
2	Parasitic Suppressor: Unit-2A1, A-2;		
1	Switch, Radio Frequency, PA-1, Unit-2A3;		
4	Parasitic Suppressor: Unit-2A4, 5, 6, 7;		
2	Power Supply: PP-4353/FRT-72A;	36 x 48 x 78	2200 ea.
1	Control-Modulator Synthesizer	36 x 48 x 78	1110

AN/FRT-72A TRANSMITTING SET, RADIO

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
	Group: OK-35/FRT-72A;		
1	Frequency Synthesizer: Model-3038;		
1	Stepper, Recycle: Unit-4A5;		
1	Panel-Fuse: Unit-4A6;		
1	Indicator Voltage Standing Wave: ID-1295/FRT-72A;		
1	Amplifier Radio Frequency AM-4345/FRT-72A(PA-2);		
2	Technical Manual: NAVSHIPS 0967-033-8040		
2 Sets	Operators Instruction Charts: NAVSHIPS 0967-033-8010;		1
2	Maintenance Standard Book: NAVSHIPS 0967-033-8020;		2
2	Performance Standard Sheets: NAVSHIPS 0967-033-8030;		1
1 Kit	Conversion-Kit 50 cps Power Operation;		
1 Kit	Tone Intelligence Unit alignment Tools;		
1 Pkg	Assembly Bolts.		

REFERENCE DATA AND LITERATURE:

NAVSHIPS 0967-033-8040: Technical Manual for Radio Transmitting Set AN/FRT-72A.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT(LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, NavShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Continental Electronics Mfg. Co. Type 303B-1	Dallas, Texas	N600(63133)65434	

256

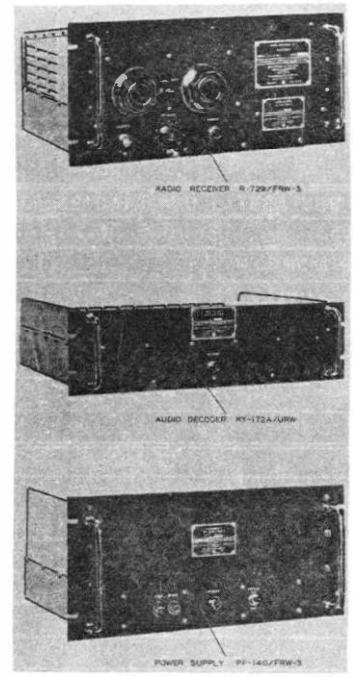
25 July 1967 RECEIVING SET RADIO AN/FRW-3A

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: LEL, Inc., (07745).



RECEIVING SET RADIO AN/FRW-3A

FUNCTIONAL DESCRIPTION:

The Receiving Set Radio AN/FRW-3A monitors radio control signals sent to guided missiles and pilotless aircraft. The equipment includes a radio receiver for reception and dc modulation of frequency-modulated UHF carrier and an audio decoder for separating audio tones corresponding to the control functions. The set is for fixed installation and has an audio type presentation.

No field changes in effect at time of preparation (20 April 1966).

RELATION TO OTHER EQUIPMENT:

The AN/FRW-3A, is electrically and mechanically one-way interchangeable with AN/FRW-3, except maintenance parts.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Antenna; (1) Power Source; (1) Relay Rack CY-614/G; (1) Radio Frequency Cable RG-8/U; (1) Power Cable (as required).

TECHNICAL CHARACTERISTICS:

RADIO RECEIVER R-729/FRW-3

FREQUENCY RANGE: 406 to 549 mc.

CHANNEL SPACING: Every integral megacycle frequency.

FREQUENCY CHANNELS: 144.

FREQUENCY STABILITY: ± 0.01 percent.

TYPE OF RECEPTION: F-3 type.

SENSITIVITY: 5 microvolts or less input for 6 db signal-plus noise-to-noise ratio with ± 300 kc deviation.

SELECTIVITY: 1.7 ± 0.3 mc at 6 db; 5 mc at 60 db.

SUPPLY VOLTAGES: 150 v dc; 6.3 v ac, 55 to 65 cps (supplied by PP-1401/FRW-3).

INPUT IMPEDANCE: 52 ohms, approx, unbalanced.

SPURIOUS RESPONSE: 60 db down level. The 6 db bandwidth of the 14 channels ending in 5 mc (415 mc, 425 mc, etc) may be slightly greater than 4.5 mc, but should not exceed 5.0 mc. A spurious response 60 db down and at the edge of the 60 db bandwidth effectively increases the bandwidth.

AUDIO FREQUENCY RESPONSE: ± 1 db from 1 kc to 25 kc, ± 1 to − 3 db from 0.3 kc to 100 kc with 10 kc as reference.

HARMONIC DISTORTION: From 300 cps to 1 kc is 3% maximum; from 1 kc to 100 kc harmonic distortion is 2% max.

PHASE RESPONSE: Is linear with frequency from 300 cps to 100,000 cps with a maximum deviation from linearity of ± 2 degrees.

TEMPERATURE RANGE

OPERATING: − 55 deg C to + 65 degrees C.

NONOPERATING: − 55 deg C to + 85 degrees C.

AUDIO DECODER KY-172A/URW

FREQUENCY CHANNELS: 20.

CHANNEL NO.	CHANNEL FREQ	CHANNEL NO.	CHANNEL FREQ
1	7.50 kc	11	25.01 kc
2	8.46	12	28.21 kc
3	9.54	13	31.83 kc
4	10.76	14	35.90 kc
5	12.14	15	40.49 kc
6	13.70	16	45.68 kc
7	15.45	17	51.52 kc
8	17.43	18	58.12 kc
9	19.66	19	65.56 kc
10	22.17	20	73.95 kc

FREQUENCY STABILITY: ± 1 percent.

INPUT IMPEDANCE: 560 ohms, approximately; unbalanced.

SUPPLY VOLTAGES: 265 volts dc; − 20 volts dc; 6.3 volts ac, 55 to 65 cps (supplied by Power Supply PP-1401/FRW-3).

POWER SUPPLY PP-1401/FRW-3

OUTPUTS: 150 v dc at 200 ma; 265 v dc at 65 ma; − 20 v dc at 25 ma; 6.3 v ac at 14 amp.

INPUT: 115 v ac, 55 to 65 cps, single ph; 2.0 amp; 230 watts, operating.

RECEIVING SET RADIO AN/FRW-3A

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Receiving Set, Radio AN/FRW-3A includes:		
1	Radio Receiver: R-729A/FRW-3	8-23/32 x 18-3/8 x 19	25.5
1	Audio Decoder: KY-172B/URW	5-7/32 x 19 x 20-1/2	30.5
1	Power Supply: PP-1401A/FRW-3	8-23/32 x 17-7/8 x 19	51.0
1	Connector: AN-3108B-18-20D		
1	Connector: AN-3108B-18-3S	1-5/16 x 2-1/8 x 2-11/16	0.2
7	Cable Clamp: AN-3057-10	1-1/8 x 7-7/16 x 1-7/16	0.2
2	Connector: AN-3108B-18-12P	29/64 x 1-11/32 x 2-11/16	0.05
1	Connector: AN-3108B-18-20S		0.15
1	Connector: AN-3108B-18-12S		0.145
4	Connector: UG-88/U	5/8 x 5/8 x 1-1/32	0.03

REFERENCE DATA AND LITERATURE:

NA16-30FRW3-501: Handbook for Radio Receiving Set AN/FRW-3.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuWeps
SPEC &/OR DWG: MIL-R-19430(AER)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Lel, Inc.	Copiague, N. Y.	N600(19)55814(PMR)	

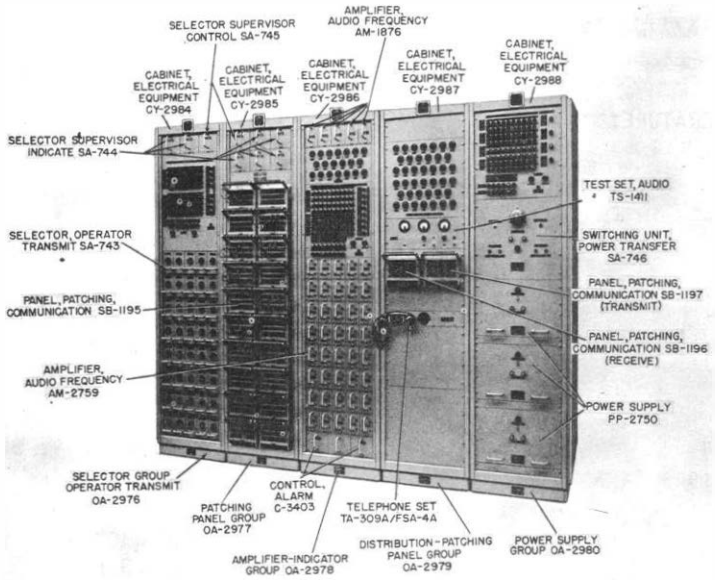
19 April 1965 CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Federal Television Corporation, (95937).



CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

FUNCTIONAL DESCRIPTION:

Console Group, Communication Control AN/FSA-22(V) is a complete, integrated communication control system capable of exercising control over all radio and wire communications necessary for the direction of air traffic at radar air traffic control centers. This multi-channel communications system is controlled by a supervisor and up to 20 operators (including a tower control position exercised by an AN/FRC-19 console).

No field changes in effect at time of preparation (1 April 1965).

RELATION TO OTHER EQUIPMENT: None.

CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Tower Control AN/FRC-19; (40) Radio Transmitters and Receivers; (1) Distribution Main Frame; As required: Telephone Wire Lines; Cable Control SB-270A/FSA-4; Cable, 3 Cond. DCOP-14 and Cable.

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed.
AUDIO RECEPTION AND AUDIO TRANSMISSION
FREQUENCY RANGE: 300 to 3,000 cps.
IMPEDANCE: 600 ohm line w/bandpass.
SIGNAL INPUT AND OUTPUT LEVEL: At 0 dbm.
POWER SOURCE REQUIRED: 115 v ac, 60 cps, single ph at 3100 W for the central site; 240 W for remote transmitter site; 680 W for remote receiver site.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Console Group, Communication Control AN/FSA-22(V) includes:			
1	Selector Group Operator Transmit OA-2976/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	500
1	Patching Panel Group OA-2977/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	300
1	Amplifier-Indicator Group OA-2978/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	500
1	Patching Panel & Distribution Group OA-2979/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	200
1	Power Supply Group OA-2980/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	875
1	Amplifier Group OA-2986/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	350
1	Power Supply Group OA-2987/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	350
1	Amplifier Group OA-2988/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	500
1	Power Supply Group OA-2989/FSA-22(V)		21-1/16 x 25-1/2 x 85-7/8	300
5	Flight Data Console OA-2983/FSA-22(V)		22 x 24-1/16 x 56	415
2	Flight Data Console OA-2981/FSA-22(V)		24-1/16 x 37 x 56	540
1	Communication Control Console OA-2984/FSA-22(V)		30 x 60-1/4 x 61	511
1	Communication Control Group OA-2985/FSA-22(V)			

CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
17	Loudspeaker LS-466/U		5 x 6 x 7	5.0
16	Headset-Microphone H-192/U		3 x 10 x 10	0.5
16	Electrical Floor Switch SA-749/FSA-22(V)		2 x 6 x 7	2.0
1	Patch Panel Test Set TS-1412/FSA-22(V)		7 x 10 x 20	15.0
1	Radio Test Set TS-1413/FSA-22(V)		7 x 10 x 20	25.0
160	Electrical Cord Assy CX-6471/FSA-22(V)			
400	Electrical Cord Assy CX-6472/FSA-22(V)			
16	Electrical Power Cable Assy CX-6473/FSA-22(V)			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94364: Technical Manual for Communication Control Console Group AN/FSA-22(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (150) 12AT7WA (368) PT510 (80) 5726/6AL5W/6097 (5) 5751 (37) 5814A
(16) 6AU6WA (80) 6B6W/5749 (16) 6X4WA (16) 6005/6AQ5W/6095

CRYSTALS: Not required.

SEMI-CONDUCTORS: (15) 1N249A (12) 1N253 (347) 1N281 (32) 1N540 (67) 1N645

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	106.2	1320
1	65.0	570
1	49.9	725
1	54.7	405
1	65.6	1035
1	54.7	650
1	54.7	610
1	54.7	650
1	54.7	550
1	45.0	340
1	45.0	530
1	36.8	552

CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-22(V)

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	36.8	407
1	39.6	415
1	21.5	505
1	32.0	875

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-C-21434 Amend 2

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Federal Television Corporation	Long Island City, N. Y.	NObsr-75880	

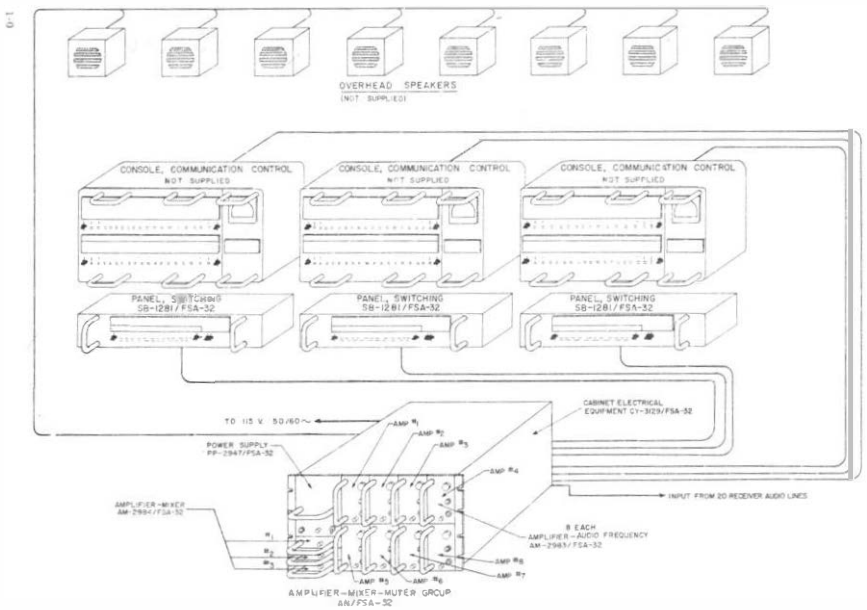
6 April 1966 AMPLIFIER MIXER MUTER GROUP AN/FSA-32

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Virginia Electronics Co., Inc., (98473).



AMPLIFIER MIXER MUTER GROUP AN/FSA-32

FUNCTIONAL DESCRIPTION:

The Amplifier Mixer Muter Group AN/FSA-32 provides overhead speaker monitoring of 20 audio channels with individual channel muting. This muting capability permits overhead speaker monitoring in systems where total receiver muting is not desired or permitted.

No field changes in effect at time of preparation (4 February 1966).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(8) Speakers; * Cable, 10 pr shielded TTRS-10; * Cable, 26 pr (special purpose), (MIL-C-19547); * Cable, 16 pr (special purpose), (MIL-C-19547); * AC Cable, (3 No. 16 Conductors).

* As Required.

TECHNICAL CHARACTERISTICS:

NUMBER OF CHANNELS: 20 Input, 8 Output.
INPUT IMPEDANCE, EACH CHANNEL: 1200 ohms balanced.
OUTPUT IMPEDANCE, TO EACH SPEAKER: 600 ohms balanced.
POWER OUTPUT, TO EACH SPEAKER: 2 watts.
INPUT LEVEL, EACH CHANNEL: 0.8 volts rms balanced.
FREQUENCY RESPONSE: 300 to 3000 cps, ± 3 db.
DISTORTION: Less than 5% at rated output.
MUTING ATTENUATION: 40 db (min.).
"HI-LO" ATTENUATION: 15 db.
INTERCHANNEL ISOLATION: 80 db.
POWER REQUIREMENTS: 105 to 125 v, 50 to 60 cps, single ph, 170 watts.
AMBIENT TEMPERATURE: 0 deg C to 50 deg C.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Amplifier Mixer Muter Group AN/FSA-32 includes:			
2	Power Supply PP-2947/FSA-32		5-1/8 x 6-3/4 x 11-1/2	17-1/2
9	Amplifier, Audio Freq. AM-2983/FSA-32		3 x 5-1/4 x 11-1/2	3-1/2
4	Amplifier, Mixer AM-2984/FSA-32		1-1/4 x 5-1/8 x 11-1/2	1.0
3	Panel, Switching SB-1281/FSA-32		3-1/2 x 4.0 x 20.0	4.0
1	Test Set, Electronic TS-1664/FSA-32		7.0 x 8-1/2 x 14-1/2	20.0
1	Cabinet, Electrical Equipment CY-3129/FSA-32		10-1/2 x 16.0 x 19.0	18.0
2	Technical Manuals NAVSHIPS 94420		1/2 x 8-3/4 x 11-1/2	.75

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94420: Technical Manual for Amplifier Mixer Muter Group AN/FSA-32.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT(LBS)
1	3.43	25
2	6.86	60
1	3.43	35

AMPLIFIER MIXER MUTER GROUP AN/FSA-32

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: C-2672 SHIPS

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Virginia Electronics Co , Inc	Bethesda, Md.	NObsr 85151	

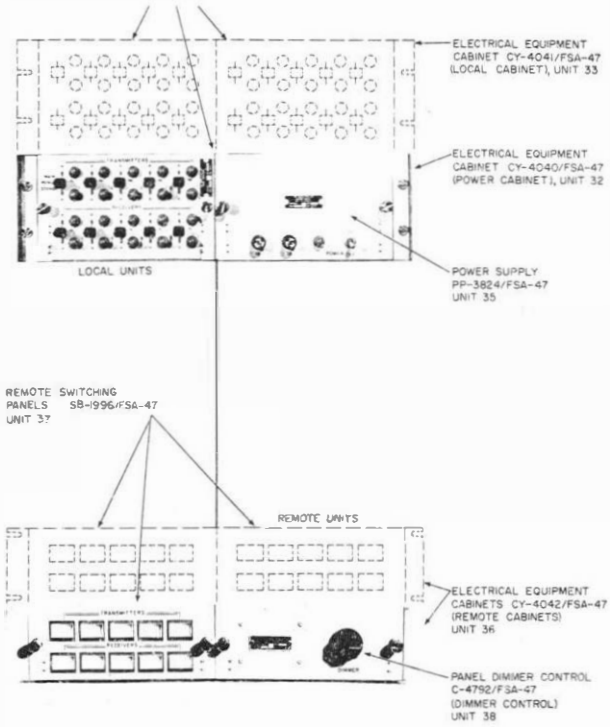
4 April 1966 TRANSFER CONTROL GROUP AN/FSA-47(V)

Cog Service: USN FSN: Functional Class:

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Virginia Electronics Co., Incorporated.



TRANSFER CONTROL GROUP AN/FSA-47(V)

FUNCTIONAL DESCRIPTION:

Transfer Control Group AN/FSA-47(V) is a modular transfer control system. The system provides fast transfer of control functions between two similar equipments or groups of circuitry or conversely it can be used to quickly transfer the control of one common equipment between two remote and separated control locations. The transfer function is accomplished by merely depressing a button. This system enables an operator to control the transfer function without having to call on any other person for assistance. This is particularly applicable in air traffic control operations.

No field changes in effect at time of preparation (29 November 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Multimeter AN/USM-117.

1.2 AN/FSA-47(V): 1

TRANSFER CONTROL GROUP AN/FSA-47(V)

TECHNICAL CHARACTERISTICS:

CHANNEL CAPACITY
- NOMINAL: 15 radiophone channels using transmitters and receivers in a one-for-one back-up ratio.
- MINIMUM: 5 channels (one local and one remote switching panel, one power supply, one dimmer panel).
- MAXIMUM: 25 channels (5 local and 5 remote switching panels, one power supply, one dimmer panel).

CIRCUIT RATING: 5 amps max per relay contact (L circuit) at 32 v dc or 110 v ac.
AUDIO LINES: Balanced with respect to ground.
KEYING LINES: Metalic pair.
AMBIENT TEMPERATURE: 0 to 50° C.
PRIMARY POWER
- INPUT: 115 v ac, 60 cyc, single ph, 115 W.

MAXIMUM HEAT DISSIPATION
- POWER SUPPLY: 20 W.
- LOCAL SWITCHING PANEL: 7 W.
- REMOTE SWITCHING PANEL: 14 W.
- DIMMER PANEL: 1 W.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Transfer Control Group AN/FSA-47(V) includes:			
1	Cabinet Electrical Equipment CY-4040/FSA-47		5-7/32 x 15-3/4 x 19	7
1	Cabinet Electrical Equipment CY-4041/FSA-47		5-7/32 x 15-3/4 x 19	7
2	Cabinet Electrical Equipment CY-4042/FSA-47		3-15/32 x 12 x 15	6.5
1	Control Panel Dimmer C-4792/FSA-47		3-15/32 x 8-11/16 x 8-3/4	2
3	Panel Switching SB-1995/FSA-47		5-7/32 x 8-11/16 x 8-3/4	4
3	Panel Remote Switching SB-1996/FSA-47		3-15/32 x 8-11/16 x 8-3/4	3
1	Power Supply PP-3824/FSA-47		5-7/32 x 8-11/16 x 8-3/4	3
2	Technical Manual NAVSHIPS 95725			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 95725: Technical Manual for Transfer Control Group AN/FSA-47(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (20) 1N538 (2) 1N1614

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT(LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: SHIPS-C-2672

DESIGN COG: USN, BuShips

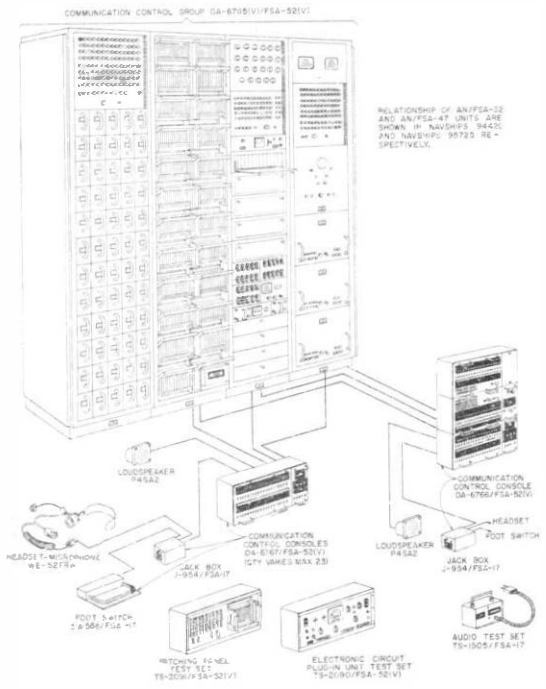
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Virginia Electronics Co., Incorporated	Washington, D.C.	NObsr 87707	

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Virginia Electronics Company, Incorporated, (98473).



CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-52(V)

FUNCTIONAL DESCRIPTION:

Console Group Communication Control AN/FSA-52(V) is a communications control system used by Naval Shore Facilities and other activities engaged in air traffic control, surveillance, and similar missions where many controllers are used to operate multi-channel radio communications while at the same time maintain interphone contact with each other. This system provides communication control consoles for twenty-three controllers and one supervisor for the control of sixty radio transmitters and receivers (fifteen additional channels are available when Transfer Control Group AN/FSA-47(V) is connected to the equipment.

No field changes in effect at time of preparation (29 November 1965).

RELATION TO OTHER EQUIPMENT:

The functions of the AN/FSA-52(V) are similar to those of the modified AN/FSA-17 system. The components and circuits used in the AN/FSA-52(V) represents an improvement in reliability

and a considerable reduction in size and power consumption over the older system. Several new functions have been added which enhance the versatility and capability of the system.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Audio Oscillator AN/URM-27; (1) Multimeter AN/USM-116.

TECHNICAL CHARACTERISTICS:

SYSTEM CAPABILITIES

RADIOPHONE CHANNELS: Sixty Active Plus Fifteen Standbys.

HOT LINES: A maximum of 10 two-wire telephone hot lines and as many four-wire hot lines as required may be substituted for radiophone channels.

INTERPHONE LINES: 276 direct private channels (23 from each position). Additional interphone positions can be added as required.

PARTY LINES: Five.

CONTROLLER'S POSITIONS: Maximum of 23.

SUPERVISOR'S POSITION: One.

CONTROL CENTRAL TO SUPERVISOR, MAINTENANCE INTERPHONE LINES: One.

TRANSMISSION LEVELS: 0 dbm (0.78 volts rms across 600 ohms resistive) to transmitters and from receivers. All audio lines are balanced with respect to ground.

PRIMARY POWER REQUIREMENT: 115 v, 50 to 60 cycles, single phase at 2000 watts.

AMBIENT TEMPERATURE: For operation, 0 deg to plus 50 deg C. For non-operation, − 62 deg to + 75 degree.

MAJOR COMPONENTS

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QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Console Group, Communication Control AN/FSA-52(V) includes:			
80	Amplifier Group OA-4391/FSA-17			
*	Amplifier-Mixer Muter Group AN/FSA-32			
1	Communication Control Console OA/6766(V)/FSA-52(V)			
23	Communication Control Console OA/6767/FSA-52(V)			
1	Communication Control Group OA-6765(V)/FSA-52(V)		22 x 85 x 86-1/2	
15	Transfer Control Group AN/FSA-47(V)			
1	Audio Test Set TS-1505/FSA-17		0.01 x 2 x 2	
1	Electronic Circuit Plug-In Unit Test Set TS-2090/FSA-52(V)		6-1/2 x 10 x 20	21.0
1	Patching Panel Test Set TS-2091/FSA-52(V)		10 x 10 x 20	10.0

CONSOLE GROUP, COMMUNICATION CONTROL AN/FSA-52(V)

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
2	Technical Manual NAVSHIPS 94757		0.1 x 9 x 12	
2	Technical Manual NAVSHIPS 94420		0.2 x 9 x 12	
2	Technical Manual NAVSHIPS 94975		3 x 9 x 12	
2	Technical Manual NAVSHIPS 95725	*Optional	0.1 x 9 x 12	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94975: Technical Manual for Console Group, Communication Control AN/FSA-52(V).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (13) 1N270 (1) 2N297 (1) 1N281 (1) 2N297A (76) 1N538 (5) 2N388 (4) 1N540 (1) 2N398 (1) 1N645 (62) 2N404 (1) 1N751A (1) 2N652A (14) 1N1202 (18) 2N697 (1) 1N2973B (1) 2N1039 (1) 1N2985B (1) 1N2988B

SHIPPING DATA

PKGS VOLUME (CU FT) WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-A-4383

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO	APPROX. UNIT COST
Virginia Electronics Co., Inc.	Bethesda, Maryland	NObsr 89531	

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

		DESIGNATION: AN/FYA-7 ( )
CLASSIFICATION of Equip.: UNCLASSIFIED	ITEM NAME: Automatic Bearing Instrumentation Group	DATE of Request.: 10 February 1964
SPECIFICATION: SHIPS-A-4465	CONTRACT NUMBER AND DATE: NObsr-89416	QUANTITY ON ORDER: -
CONTRACTOR'S NAME AND ADDRESS: Radio Corporation of America, Camden, New Jersey		SERVICE APPROVAL LETTER - SERIAL AND DATE: -

ELECTRICAL CHARACTERISTICS

POWER INPUT									
115 V	60 CYCLE	1 PHASE	- AMPS	- WATTS	- V	- CYCLE	- PHASE	- AMPS	- WATTS

OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.)	WAVE GUIDE OR CABLE LIMITATIONS	INPUT SIGNAL CHARACTERISTICS	POWER OUTPUT
-	-	-	-
OPERATING FREQ. AND FREQ. RANGE	**EMISSION OR RECEPTION (TYPE)**	**FREQ CONTROL (TYPE)**	**NO OF CHANNELS**
-	-	-	-

ANTENNA OR TRANSDUCER (TYPE)	IMPEDANCE (OHMS)	FEED TYPE	BEAM PATTERN
-	-	-	- °HORIZ. - °VERT.

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	-
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Automatic Bearing Instrumentation Group AN/FYA-7 ( ) consists of:					
1	Analog to Digital Converter					
1	Signal Processing Unit					
1	Input-Output Buffer					
1	Power Supply TR 18/17-3R					
1	Digital Data Computer					
1	Motor Generator Set PU-598/U					
1	Electronic Equipment Cabinet					
		1.2 AN/FYA-7( ):		1		

CHANGE 74 - 680E

UNCLASSIFIED

123 IF ADDITIONAL EQUIPMENT OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

217419

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ELECTRONIC EQUIPMENT - PRELIMINARY DATA NAVSHIPS 93400
NAVSHIPS 4457 (Rev. 9-62) (CONT'D)

DESIGNATION	ITEM NAME
AN/FYA-7 ( )	Automatic Bearing Instrumentation Group

FUNCTIONAL DESCRIPTION: SKETCH, MFG. DIMENSIONS, ETC.

The AN/FYA-7 ( ) accepts directionally-modulated, video signals from a direction-finding receiver. It computes the bearing and standard deviation. It is for general purpose use. The AN/FYA-7( ) is used with the AN/FRD-10(V), AN/FRD-10A(V), AN/GRD-6, and other D/F sets.

No unit cost available.

Source of information: Request for Nomenclature.

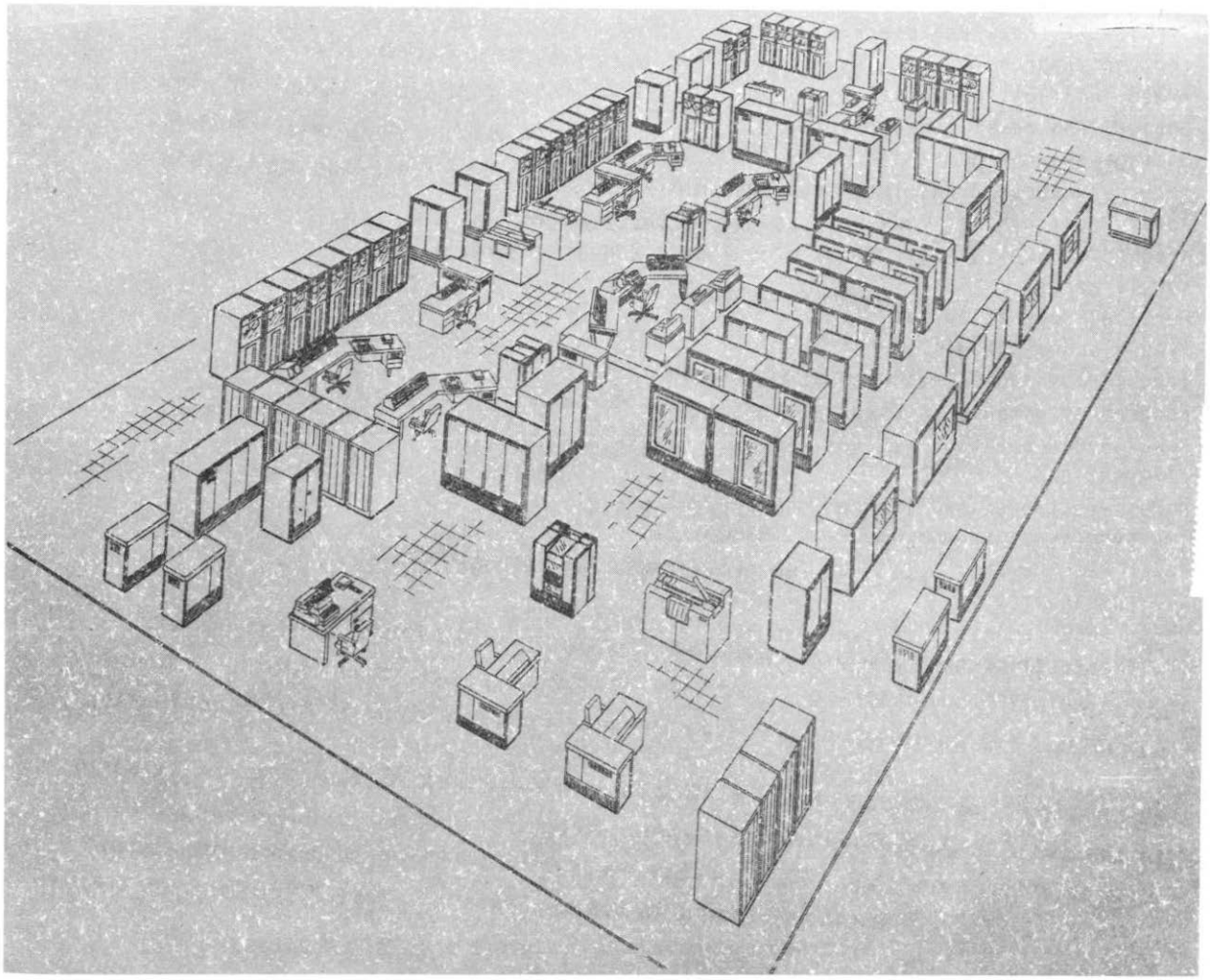
24 July 1967 DATA PROCESSING SET AN/FYK-1 (V)

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Control Data Corporation (09639).



DATA PROCESSING SET AN/FYK-1(V)

1.5 AN/FYK-1(V): 1

DATA PROCESSING SET AN/FYK-1(V)

FUNCTIONAL DESCRIPTION:

The Data Processing Set AN/FYK-1(V) is designed to process and make calculations on strategic and tactical data of all kinds and to display and print out the resulting information. A number of large, general purpose, binary digital computers, a matrix selection switch and various input/output equipment such as magnetic and paper tape handlers, disc files, communications channels, and high speed printers are connected together to provide a large data processing facility.

No field changes in effect at time of preparation (27 Sept 1966).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

1604-A COMPUTER CHARACTERISTICS:

48-bit words-2 instructions per word.
Parallel mode of operation.
Six 15-bit Index Registers.
Indirect Addressing.
Fixed and floating point.
Logical and masking operations.
Storage searching.
Internal and external interrupt system.
Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.

160A COMPUTER AND 169 AUXILLIARY MEMORY UNIT COMPUTER CHARACTERISTICS:

12-bit words.
Parallel mode of operation.
Single address logic.
1 or 1 and 2 word instructions.
Program selectable interrupts.
Power Requirements: 115 vac, 60 cyc, single ph.

161 TYPEWRITER

Power Requirements: 115 vac, 60 cyc, single ph.

DD51-A DISPLAY UNIT:

Power Requirements: 115 vac, 60 cyc, single ph; 208 vac, 400 cyc, 3 ph;

1604-A BUS ADAPTER

Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph, Logic Chassis.

SUBSYSTEM SELECTION SWITCH CABINET

SWITCH POSITION	FUNCTION
C (close)	Crosspoint manually closed
A (automatic)	Crosspoint under Computer program control
O (open)	Crosspoint manually opened

Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.

A Subsystem Selection Switch cabinet houses up to two 8 x 12 SSS modules.

TAPE CONTROL UNIT

Each TCU is connected to a Subsystem Selection Switch Vertical and provides the following functions necessary for the operation of the magnetic tape units:

(1) Read Control; (6) Command Timing;

(1) Read Control;
(2) Write Control;
(3) External-Function Translation;
(4) Data Assembly and Disassembly;
(5) Sense and Status Response;
(6) Command Timing;
(7) Parity Check;
(8) Parity Generation;
(9) Error Detection;
(10) Tape Motion Control.

Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.
TCU Logic Chassis per cabinet: 4.

606 MAGNETIC TAPE UNIT
OPERATING CHARACTERISTICS:
Density (characters per inch): 200 or 556
Tape Speed (inches per second): 112.5
Inter-Record Gap Size (inches): .75
Character Rate (characters per second): 22,500 or 62,500
Power Requirements: 208 vac, 60 cyc, 3 ph

729 MAGNETIC TAPE UNIT
OPERATING CHARACTERISTICS
Density (characters per inch): 200 or 556.
Tape Speed (inches per second): 112.5.
Inter-Record Gap Size (inches): .75.
Character Rate (characters per second): 22,500 or 62,500.
Power Requirements: 208 vac, 60 cyc, 3 phase.

OPCONCTR LINE PRINTER
Speed: 850 lines per minute w/full opconctr character set, (64 characters) or an optional 667 lines per minute.
Speed: 1000 lines per minute for Fortran characters only (49 characters) or an optional 667 lines per minute.
Power Requirements: 208 v ac, 60 cycles, 3 phase.

1402 CARD READ-PUNCH
Power Requirements: 208 v ac, 60 cycles, 3 phase.

1402 CONTROL UNIT
Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.

OPCONCTR CARD READER
Power Requirements: 115 v ac 60 cycles, single ph; 208 v ac, 400 cycles, 3 phase.

PAPER TAPE CONTROL UNIT
Power Requirements: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.
Logic Chassis: 2.

PAPER TAPE STATION
OPERATING CHARACTERISTICS:
Control Data 350 Reader:
Speed (characters per second): 350.
Tape Levels: 5 or 7.
TELETYPE 8RPE-11 PUNCH
Speed (characters per second) 110.
Tape Levels: 5 or 7.
FRIDEN FLEXOWRITER
Speed (characters per second): 10.(read or punch).
TAPE LEVEL (OPCONCTR character code) 7.

POWER REQUIREMENTS: 115 vac, 60 cycles, single ph.
LOGIC CHASSIS: 1.

DISK FILE CONTROL: The Disk File Control unit is connected to a Subsystem Selection Switch vertical and provides the following functions necessary for the operation of the disk system.

(1) Data Assembly and Disassembly;
(2) Signal Level Conversion;
(3) Function Translation;
(4) Parity Check;
(5) Parity Generation;
(6) Sense and Status Response.

POWER REQUIREMENTS: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.
DFC's per Logic Chassis: 2.
LOGIC CHASSIS PER CABINET: 4.

7631 FILE CONTROL
POWER REQUIREMENTS: 250 vac, 60 cycle, single phl

1301 DISK STORAGE
POWER REQUIREMENTS: 208 vac, 60 cycles, 3 phase.

INTER-COMPUTER COMMUNICATIONS UNIT
POWER REQUIREMENTS: 208 vac, 60 cycles, 3 phase; 208 vac, 400 cycles, 3 phase.
LOGIC CHASSIS: 4;

OPCONCTR CENTRAL CONTROL CONSOLES AND CABINET
(1) Communicate with all system Computers
(2) Interrupt all system computers;
(3) Control the subsystem selection switch;
(4) Provide timing checks and real time to all system computers via the C160-A;
(5) Communicate with the system operators.
POWER REQUIREMENTS:
Central Control Consoles

Small Console:	Large Console:
208 vac, 60 cyc, 3 ph;	208 vac, 60 cyc, 3 ph;
208 vac, 400 cyc, 3 ph.	208 vac, 400 cyc, 3 ph.

CENTRAL CONTROL CABINET
POWER REQUIREMENTS: 208 vac, 60 cyc, 3 ph; 208 vac,, 400 cyc, 3 ph.

CENTRAL CONTROL LINE PRINTER
POWER REQUIREMENTS: 115 vac, 60 cycle,, single-phase.

CENTRAL CONTROL DISPLAY
POWER REQUIREMENTS: 120 to 208 vac, 60 cycles,, 3 ph; 208 vac, 400 cycles, three-ph.

CENTRAL CONTROL TYPEWRITER
POWER REQUIREMENTS: 115 vac, 60 cycles, single-phase.

AUXILIARY EQUIPMENT
PAPER TAPE READER
POWER REQUIREMENTS: 115 vac, 60 cycles, single-ph.
PAPER TAPE PUNCH
POWER REQUIREMENTS: 115 vac, 60 cycles, single-ph.

400 CYCLE M-G SET AND CONTROL CABINET
POWER REQUIREMENTS: 120 to 208 vac, 60 cyc, 3 ph; 220 to 440 vacs 60 cyc, 3 ph.

OPCONCTR CROSSPOINT TESTER
POWER REQUIREMENTS: 115 vac, 60 cycles, single-ph.

OPCONCTR CARD TESTER
POWER REQUIREMENTS: 110 vac, 60 cycles, single-ph.

160A BUS ADAPTOR
POWER REQUIREMENTS: 208 vac, 60 cyc, 3 ph; 208 vac, 400 cyc, 3 ph.
LOGIC CHASSIS: 2.

DATA PROCESSING SET AN/FYK-1(V)

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Data Processing Set AN/FYK-1(V) includes:		
1	Computer No. 1604-A (Cabinet	27-1/2 x 67-7/8 x 89-1/8	3040
	(Console)	43 x 58-1/2 x 103	810
1	Computer No. 160A	30-3/4 x 36-3/4 x 61-1/4	790
1	Auxiliary Memory Unit No. 169	20-1/4 x 43 x 47-3/4	600
1	Typewriter No. 161	28-1/2 x 30 x 30-3/8	230
1	Display Unit No. DD51-A	20-3/4 x 30 x 41	170
1	Bus Adaptor No. 1604A	33 x 61-3/8 x 67-1/2	1800
1	Bus Adaptor No. 160A	20-1/4 x 43 x 47-3/4	550
1	Subsystem Selection Switch Cabinet	33 x 61-3/8 x 67-1/2	2400
1	Tape Control Unit	33 x 40-1/4 x 67-1/2	1550
1	Magnetic Tape Unit No. 606	28 x 33 x 72	1200
1	Magnetic Tape Unit No. 729	29 x 34 x 69	1200
1	Opconctr Line Printer	33-7/8 x 47 x 61	1600
1	Card Read Punch No. 1402	29-3/4 x 45-1/4 x 57-1/2	1300
1	Control Unit No. 1402	33 x 40-1/4 x 67-1/2	1450
1	Opconctr Card Reader	21 x 33-1/4 x 42	350
1	Paper Tape Control Unit	20-1/4 x 43 x 47-3/4	550
1	Paper Tape Station	28-3/4 x 39-1/4 x 52-3/4	600
1	Disk File Control	33 x 40-1/4 x 67-1/2	1500
1	File Control No. 7631	32 x 38 x 70	500
1	Disk Storage No. 1301	33 x 68-3/4 x 86	3825
1	Inter-Computer Communications Unit	33 x 61-3/8 x 67-1/2	1800
1	Opconctr Central Control Consoles		
1	Central Control Cabinet	33 x 61-3/8 x 67-1/2	1650
1	Central Control Console (small)	43 x 64 x 110	1000
1	Central Control Console (large)	45 x 73 x 178	1500
1	Central Control Card Reader		
1	Central Control Line Printer	29 x 42-1/2 x 48	850
1	Central Control Display	26-1/4 x 28 x 28	160
1	Central Control Typewriter No. 161	12 x 16-1/2 x 17	70
1	Paper Tape Reader	9 x 10 x 11-1/2	25
1	Paper Tape Punch	8 x 12 x 16-1/2	24-1/
1	M-G Set and Control Cabinet	19-1/8 x 19-7/8 x 39-1/2	610
1	Control Cabinet	20 x 22 x 79	450
1	Opconctr Crosspoint Tester	11-1/4 x 11-3/4 x 15-3/16	40
1	Opconctr Card Tester	38-1/2 x 52 x 56	550

REFERENCE DATA AND LITERATURE:

Publication Number CDC302: Book One System Manual General Description Manual for Data Processing Set AN/FYK-1(V).

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

DATA PROCESSING SET AN/FYK-1(V)

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, NAVSHIPS
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Control Data Corporation	Minneapolis, Minn.	NObsr-85339	

ELECTRONIC EQUIPMENT - PRELIMINARY DATA
NAVSHIPS 4457 (Rev. 9-62)

		DESIGNATION: AN/FYK-3(V)
CLASSIFICATION of Equip.: UNCLASSIFIED	ITEM NAME: Data Processing Set	DATE of Request: 28 January 1963
SPECIFICATION: -	CONTRACT NUMBER AND DATE: PR 627E3-687D2-36600	QUANTITY ON ORDER: -
CONTRACTOR'S NAME AND ADDRESS: -		SERVICE APPROVAL LETTER - SERIAL AND DATE: -

ELECTRICAL CHARACTERISTICS

POWER INPUT -	-	-	-	-	-
___ V ___ CYCLE ___ PHASE ___ AMPS ___ WATTS			___ V ___ CYCLE ___ PHASE ___ AMPS ___ WATTS		
OUTPUT SIGNAL CHARACTERISTICS (REP. RATE, I.F. ETC.): -	WAVE GUIDE OR CABLE LIMITATIONS: -		INPUT SIGNAL CHARACTERISTICS: -	POWER OUTPUT: -	
OPERATING FREQ. AND FREQ. RANGE: -	EMISSION OR RECEPTION (TYPE): -		FREQ. CONTROL (TYPE): -	NO. OF CHANNELS: -	
ANTENNA OR TRANSDUCER (TYPE): -	IMPEDANCE (OHMS): -	FEED TYPE: -	BEAM PATTERN: - °HORIZ.	- °VERT.	

REFERENCE DATA AND LITERATURE

DRAWING	DWG. NUMBER	DIST. DATE	PUBLICATION	PUB. NUMBER
-	-	-	TECHNICAL MANUAL	-
			OPERATING INSTRUCTION CHART	-
			PERFORMANCE STANDARD SHEET	-
			MAINTENANCE STANDARD BOOK	-

MAJOR UNITS

QTY	NOMENCLATURE AND NAME	OVERALL DIMENSIONS (IN) HEIGHT	WIDTH	DEPTH	H.D. (UNITS)	WEIGHT (LBS)
	Data Processing Set AN/FYK-3(V) consists of: (see reverse)					
1.5	AN/FYK-3(V): 1					

CHANGE 74 - 687

UNCLASSIFIED

127 IF ADDITIONAL EQUIPMENT OR UNITS ARE REQUIRED, ATTACH ADDITIONAL SHEETS AND SPECIFY SOURCE

217419

DESIGNATION	ITEM NAME
AN/FYK-3(v)	Data Processing Set

FUNCTIONAL DESCRIPTION: SKETCH, MFG. DIMENSIONS, ETC.

The AN/FYK-3(V) is designed to process and make calculations on strategic and tactical data of all kinds and to display and print out the resulting information. A number of general purpose, large and small scale binary digital computers, a manual and programmed controlled switching facility, and various input/output equipment such as magnetic and paper tape handlers, card readers and punches, mass storage subsystem, high speed printers, remote inquiry subsystems, and intercomputer communications units are connected together to provide a large data processing set. While a list of the proposed equipment for the basic system is set forth below, the types and quantities of units that are used may vary from the list depending on the user's requirements.

The data processing set shall be composed of:

(1) Two to six large-scale data processors
(2) Four to ten small-scale data processors
(3) Fourteen magnetic tape subsystems, each with two magnetic tape transports attached
(4) Four to sixteen mass storage subsystems, each with 190,000,000 alpha-numeric characters
(5) Three to six card readers
(6) Three to six card punches
(7) Three to six high-speed printers
(8) Four to six remote inquiry subsystems
(9) Three to eight intercomputer communications units
(10) One medium-speed card reader(part of system control)
(11) One medium-speed printer(part of system control)
(12) One soft copy control display(part of system control)
(13) One system console(part of system control)
(14) One central control unit(part of system control)
(15) A switching facility accommodating items (1) through (9) and providing 10 to 15 unspecified peripheral connections

No unit cost available.

Source of information: Request for Nomenclature.

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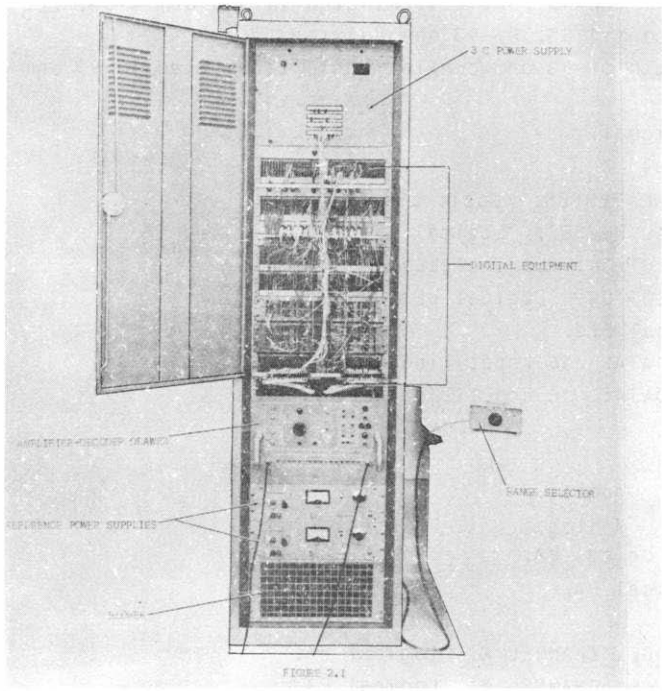
14 September 1967 — CONVERTER SET DIGITAL TO ANALOG AN/FYQ-12(XN-1)

Cog Service: USN **FSN:** **Functional Class:**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Ford Instrument Company (23021).



CONVERTER SET DIGITAL-TO-ANALOG AN/FYQ-12(XN-1)

FUNCTIONAL DESCRIPTION:

The Converter Set Digital to Analog AN/FYQ-12(XN-1) functions as a conversion link in an experimental radar time-base generating system. It accepts input data in the form of 16-bit parallel words or incremental pulses. It generates a dc analog voltage within the range of minus 10 to plus 10 volts proportional to the input.

No field changes in effect at time of preparation (26 Sept. 1966).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Fluke Meter: Model 821A.

CONVERTER SET DIGITAL TO ANALOG AN/FYQ-12(XN-1)

TECHNICAL CHARACTERISTICS:

POWER INPUT: 115 v ± 10%, 60 cps, single ph, 10.5 amp continuous, 30 amp surge.
CLOCK FREQUENCY: 10.4918 mc.
SIGNAL VOLTAGES
SINE WAVE: 8 v peak to peak nominal.
LOGICAL: LE_a, LE_b, zero level 0.5 volts nominal and PA one level 4.0 volts nominal.
ANALOG: Minus 10 v output plus 10 v.
SIGNAL TERMINATIONS
SINE WAVE: 51 ohm coaxial cable terminated in 51 ohm ± 5%.
LOGICAL: LE_a - 93 ohm coaxial cable terminated in 100 ohm ± 5%; LE_b - 93 ohm coaxial cable terminated in 89 ohm ± 5%; PA-93 ohm coaxial.
ANALOG: 6 foot length of 93 ohm coaxial cable terminated in 93 ohm ± 10%.
INPUTS
CLOCK: Sine Wave Signal.
SWEEP START: Logical LE_a.
CHANNEL X INCREMENTAL PLUSES: Logic LEa.
CHANNEL Y INCREMENTAL PLUSES: Logical LEa.
CHANNEL X COUNT DIRECTION: Logical LEa.
CHANNEL Y COUNT DIRECTION: Logical LEa.
END OF SWEEP: Logical LEa.
CHANNEL X PARALLEL DATA: 16 input lines LEb.
CHANNEL Y PARALLEL DATA: 16 input lines LEb.
OUTPUTS
FUNCTIONAL OPERATION
CHANNEL X ANALOG: Analog.
CHANNEL Y ANALOG: Analog.
END OF SCREEN: Logical PA.
OFF SCREEN: Logical PA.
TEST OPERATION
FINAL COUNTER STAGE, CHANNEL X: Logical PA.
FINAL COUNTER STAGE, CHANNEL Y: Logical PA.
EXTERNAL COUNTER: Logical PA.
SYNC: Logical PA.
WEIGHTED VALUES
INCREMENTAL - 31.25 yards/increment.
PARALLEL:
Sign PD0 - 1,024,000 yds - PD8-4,000 yds
PD1 - 512,000 yds - PD9-2,000 yds
PD2 - 256,000 yds - PD10-1,000 yds
PD3 - 128,000 yds - PD11-500 yds
PD4 - 64,000 yds - PD12-250 yds
PD5 - 32,000 yds - PD13-125 yds
PD6 - 16,000 yds - PD14-62.5 yds
PD7 - 8,000 yds - PD15-31.25 yds
INPUT RATES, MAXIMUM
INCREMENTAL: 5.25 mc (1/2 clock frequency).
PARALLEL: 0.42 mc.
ACCURACY
STATIC: ± 1 bit (± 5.0 mv).
DYNAMIC: Spikes less than 300 mv.

CONVERTER SET DIGITAL TO ANALOG AN/FYQ-12(XN-1)

MAJOR COMPONENTS

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Converter Set, Digital to Analog AN/FYQ-12 (XN-1) includes:		
1	Dual Channel Digital to Analog Converter with Associated Power Supply and Cables Equipment Contained in a Steel Cabinet.	19 x 19 x 84	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94778: Technical Manual for Converter Set, Digital to Analog AN/FYQ-12(XN-1).

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG: SPEC: MIL-STD-243

DESIGN COG: USN, NavShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Ford Instrument Company	Long Island City, N.Y.	Nobsr-85439	