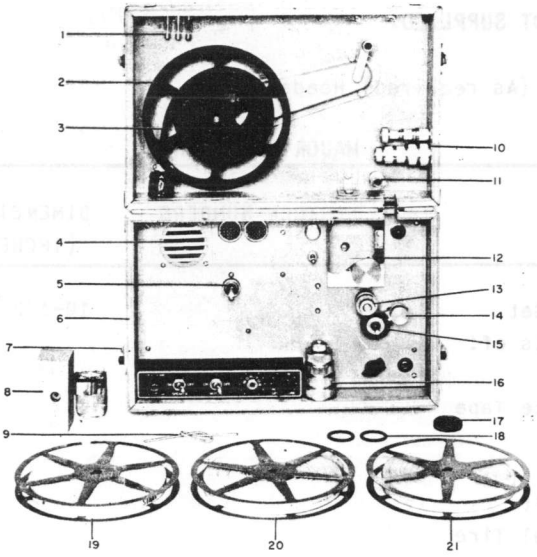
25 July 1962 **SOUND, REPRODUCER SET AN/UGH-1**

Cog Service: USN FSN: Functional Class:

	USA	USN	USAF
TYPE CLASS:	Used by	Used by	

MANUFACTURER'S NAME/CODE NUMBER: Automatic Telegraph Keyer Corp., (00793).



1. Spare Fuses
2. Empty Tape Reel
3. Power Cord, W100
4. Loudspeaker, LS100
5. Take-Up Reel Shaft
6. Carrying Case
7. Snap Clasp
8. Spare Parts Kit and Oil Can
9. Spare Spring Belt
10. Extra Capstans
11. Upper Tape Guide
12. Keying Head
13. Capstan Mount Shaft
14. Lower Tape Guide
15. Tension Idler Wheel
16. Extra Capstans
17. Spare Idler Wheel Tire
18. Spare O-Rings
19. Practice Tape Reel--Normal Spaced Code Groups
20. Practice Tape Reel--Double Spaced Code Groups
21. Practice Tape Reel--Triple Spaced Code Groups

Sound, Reproducer Set AN/UGH-1

FUNCTIONAL DESCRIPTION:

The Sound, Reproducer Set AN/UGH-1 is a Keyer which is designed for student instruction in the audible and visual reception of telegraphic code signals.

No field changes in effect at time of preparation (28 February 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Portable.
TYPE OF MOUNTING: Desk or Table.
TYPE OF REPRODUCTION: Electromechanical reproducing.
TYPE OF REPRODUCING MEDIUM: Tape.
NUMBER OF CHANNELS: One channel.
OUTPUT IMPEDANCE: 15 ohms.
OUTPUT POWER: 3 W.

AN/UGH-1 SOUND, REPRODUCER SET

REPRODUCING SPEED: Variable from 3 to 30 wpm.
FREQUENCY RESPONSE: 70 to 3000 cps.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/UGH-1 is the same as Trainer, Telegraphic Code Device 8M3A.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Set of Hand Keys; (As required) Headsets.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Sound, Reproducer Set AN/UGH-1 consists of:		10-1/2 x 10-9/16 x 15-3/16	35
1	Power Cord			
3	Reels of Practice Tape			
1	Empty Reel			
1	Oil Can			
1	Spare Spring Belt			
1	Spare Idler Wheel Tire			
1	Spare O-Ring			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93364: Technical Manual for Reproducer Set, Sound AN/UGH-1.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 6SN7 (1) 6V6 (1) 2053 (1) 5Y3.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips

PROCUREMENT DATA (CONT'D)

SPEC &/OR DWG: ENG. SPEC 3132-312
U. S. Naval Training
Device Spec. 721-950

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Automatic Telegraph Keyer Corp. Model no. 103C	New York, New York	N140(61339)67156B	

PERFORATOR SET, TAPE, TELEGRAPH AN/UGT-1

FUNCTIONAL DESCRIPTION

The AN/UGT-1 is a general purpose, lightweight, manually operated unit designed to provide means for transmitting telegraph messages at speeds of 10 or 60 words per minute. It features character selection accomplished by rotary dial containing numerical characters, and additional positions for dot, dash, letter space and word space, and provides necessary keying speed to automatically actuate Alarm C-867/U.

No field changes in effect at time of preparation (1 May 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TELEGRAPH CODE: Continental.
TAPE: 1/4 in. wide, fully punched.
SPEED: 10 or 60 wpm.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

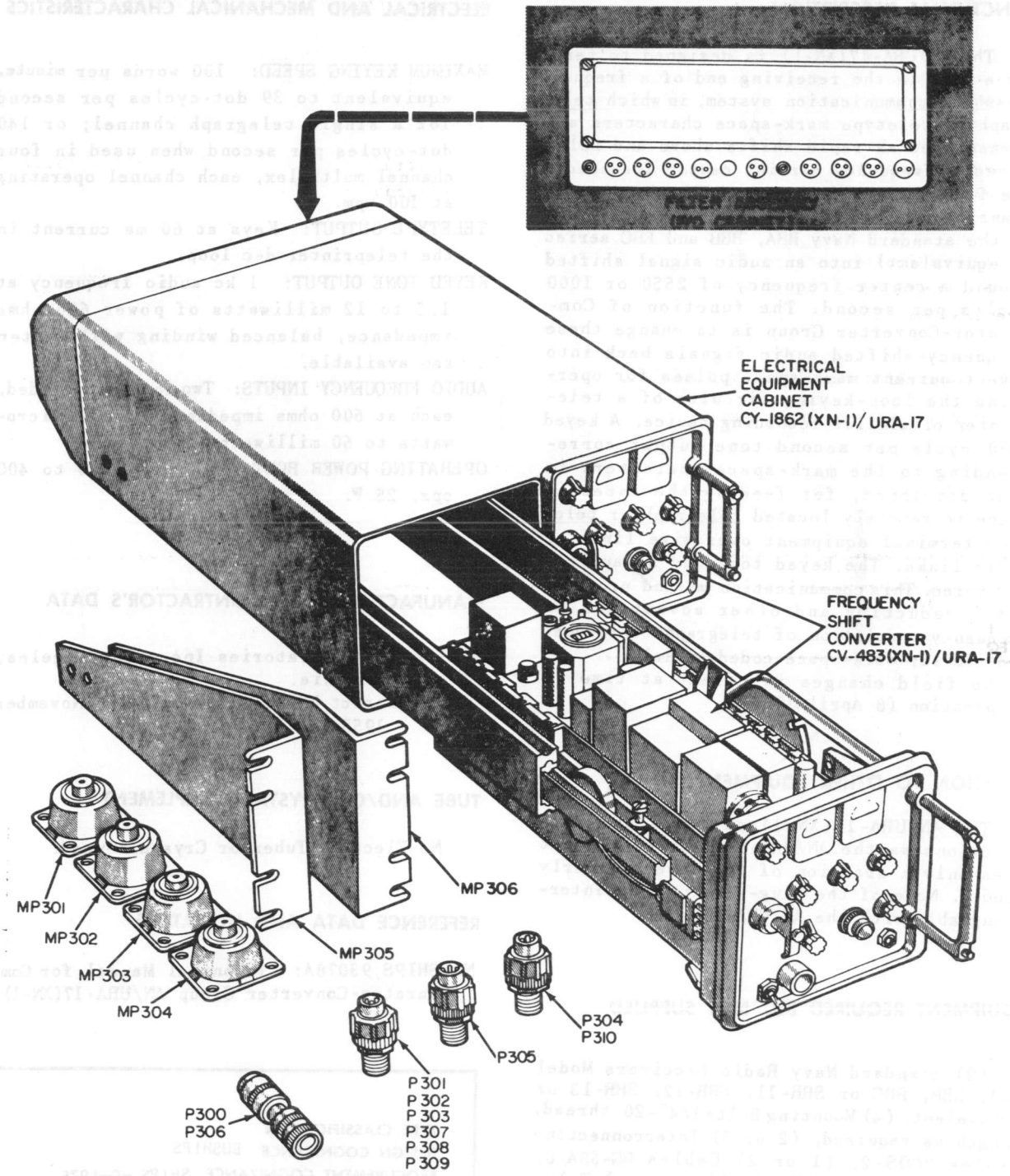
Nomenclature Card for Perforator Set, Tape, Telegraph AN/UGT-1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer KY-201/UGT		
1	Perforator, Tape, Telegraph TH-24/UGT		

COMPARATOR CONVERTER GROUP AN/URA-17(XN-1)



Comparator-Converter Group AN/URA-17(XN-1)

Radio-Communication Terminal Equipment

April 1959

AN/URA-17(XN-1) COMPARATOR CONVERTER GROUP

FUNCTIONAL DESCRIPTION

The AN/URA-17(XN-1) is designed to serve as a link in the receiving end of a frequency-shift communication system, in which telegraph or teletype mark-space characters are transmitted as rapid shifts above and below a radio frequency carrier center frequency. The frequency-shift-keyed (FSK) signals are translated by a standard communication (such as the standard Navy RBA, RBB and RBC series or equivalent) into an audio signal shifted around a center frequency of 2550 or 1000 cycles per second. The function of Comparator-Converter Group is to change these frequency-shifted audio signals back into direct current mark-space pulses for operating the loop-keying circuits of a teleprinter or similar recording device. A keyed 1000 cycle per second tone output corresponding to the mark-space characters is also developed, for feeding the intelligence to remotely located telegraph or teletype terminal equipment over wire lines or radio links. The keyed tone may be audibly monitored. This communication method provides noise reduction and other advantages of frequency modulation of telegraph, teletype, and similar mark-space coded signals.

No field changes in effect at time of preparation (8 April 1959).

RELATION TO OTHER EQUIPMENT

The AN/URA-17(XN-1) performs the same functions as the AN/URA-8B, except that it uses only a fraction of the power formerly needed. None of the plug-in units are interchangeable with the AN/URA-8B.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(2) Standard Navy Radio Receivers Model RBA, RBB, RBC or SRR-11, SRR-12, SRR-13 or equivalent, (4) Mounting Bolts 1/4"-20 thread, length as required, (2 or 3) Interconnecting Cables MCOS-2, (1 or 2) Cables RG-58A/U, (2 or 6) Cable TTHFWA-1, (1 or more) Teleprinter or Telegraph automatic printer and/or terminal equipment, (1 or more) Teleprinter battery or other source of loop current.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

MAXIMUM KEYING SPEED: 100 words per minute, equivalent to 39 dot-cycles per second for a single telegraph channel; or 140 dot-cycles per second when used in four channel multiplex, each channel operating at 100 wpm.

TELETYPE OUTPUT: Keys at 60 ma current in the teleprinter d-c loop.

KEYED TONE OUTPUT: 1 kc audio frequency at 1.5 to 12 milliwatts of power 600 ohms impedance, balanced winding with center tap available.

AUDIO FREQUENCY INPUTS: Two inputs provided, each at 600 ohms impedance from 60 microwatts to 60 milliwatts input power.

OPERATING POWER RQMT: 115 v AC, 50 to 400 cps, 25 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Hoffman Laboratories Inc., Los Angeles, California.
Contract NObsr-71119 dated, 30 November 1955.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93078A: Technical Manual for Comparator-Converter Group AN/URA-17(XN-1).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE SHIPS -C-1975
STOCK NO.
R.D.B. IDENT. NO.

Radio-Communication Terminal Equipment

COMPARATOR CONVERTER GROUP AN/URA-17(XN-1)

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Comparator-Converter Group AN/URA-17 (XN-1)	5.5	14-1/4 X 27-1/4 X 27-3/8	75

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Comparator-Converter Group AN/URA-17(XN-1) Including:	6-31/32 X 17 X 20-1/4	50
2	Frequency Shift Converter CV-483(XN-1)/URA-17	6-15/32 X 8-7/16 X 14-3/4	27.6
1	Electrical Equipment Cabinet CY-1862 (XN-1)/URA-17 Including:		15.7
1	Filter Assy	2-27/32 X 6-31/32 X 17	6.7
1	Set of Accessories and Plugs		
6	Connector Plug AN3106B-14S-7P		
2	Connector Plug UG-88C/U		
2	Connector Plug AN3106B-14S-7S		
1	Connector Plug AN3106B-14S-9S		
11	Cable Clamp AN3057-6A		
9	Solder Rings AN3111-3		
1	Set of Brackets and Screws for Rack or Rigid Mounting		
1	Set of Equipment Spares		

RADIO SET CONTROL GROUP AN/URA-19

FUNCTIONAL DESCRIPTION

The AN/URA-19 provides facilities that permit the calling of individual aircraft over normal ground-to-air communications using existing types of ground-to-air transmitters and airborne receivers.

No field changes in effect at time of preparation (25 July 1956).

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes

REFERENCE DATA AND LITERATURE

Nomenclature Card for RADIO SET CONTROL GROUP AN/URA-19

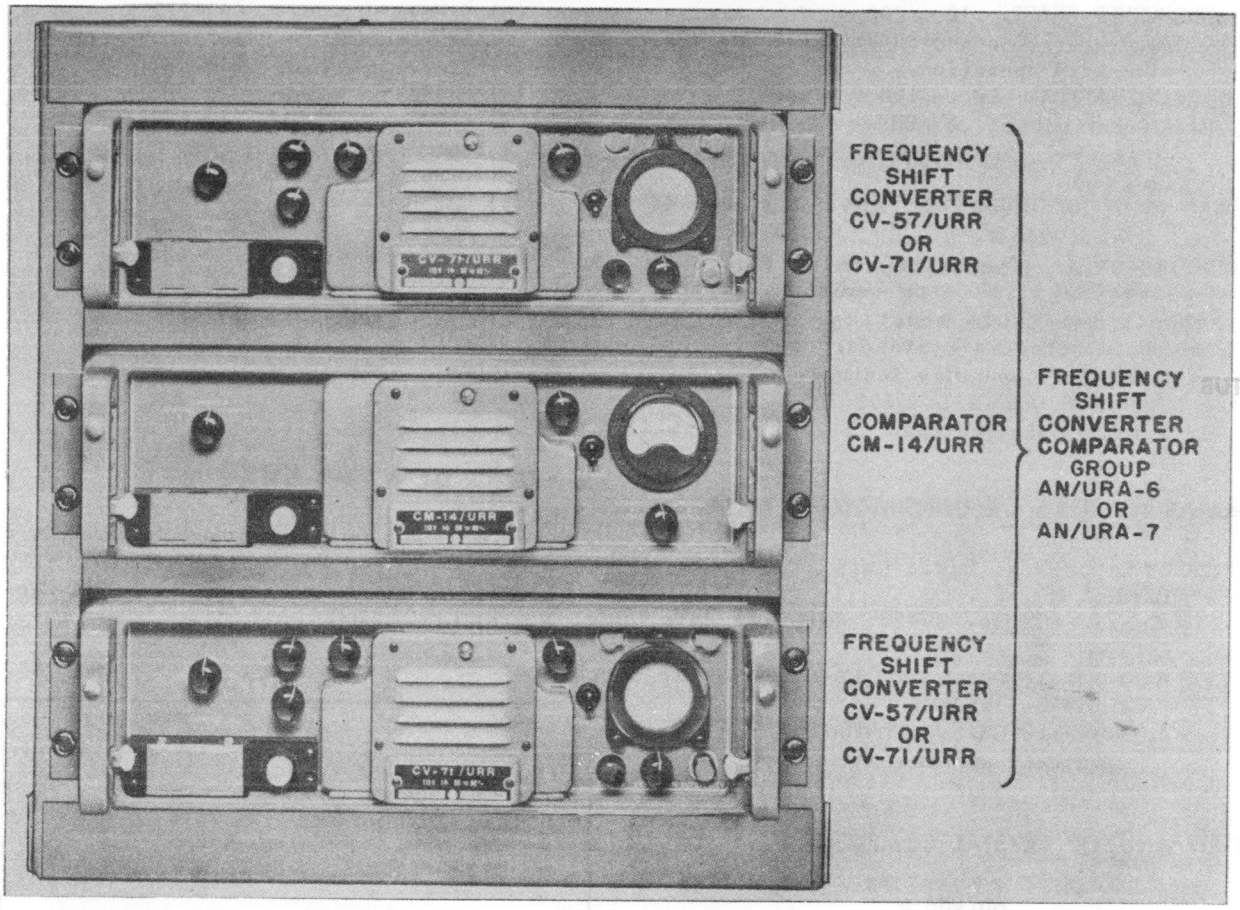
TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Digital-Tone-Code Generator		
1	Digital-Tone-Decoder		

FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP

AN/URA-6,-7



Frequency Shift Converter - Comparator Group AN/URA-6, -7

FUNCTIONAL DESCRIPTION

The AN/URA-6 or AN/URA-7 is designed to operate on frequency shift keyed radio telegraph signals, as derived from the IF circuits of radio receivers, to provide keying facilities for the operation of teletype printers or other similar automatic recording devices. Two receiving channels are used in a diversity arrangement, and a Comparator CM-14/URR selects the stronger signal to control the teletypewriter loop and the keyed tone.

No field changes in effect at time of preparation (8 April 1958).

RELATION TO OTHER EQUIPMENT

The AN/URA-6 and AN/URA-7 are used with two radio receivers and a standard or high speed teletypewriter with loop power supply. The AN/URA-6 is used with RBB, RBC, RDM series radio receivers or equivalent, and the AN/URA-7 is used with RBP or RCP sereis radio receivers.

Equipment Required but not Supplied: Interconnecting cables and (1) 600 ohms headset.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
AN/URA-6: 395 to 470 kc (Dual Channel).
AN/URA-7: 50 kc (Dual Channel).
POWER OUTPUT: Electron tube keyer for keying 60 ma teletype loop.
TONE SIGNAL: 12 mw into 600 ohm load.
RF INPUT
INPUT SIGNAL LEVEL: 2500 uv to 0.5 v.

Radio-Communication Terminal Equipment

AN/URA-6,-7 FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP

FREQUENCY SHIFT: 10 to 200 cps for narrow-band operation and 200 to 1000 cps for wide-band operation.
KEYING SPEEDS: Up to 100 dot cps.
INPUT IMPEDANCE: AN/URA-6 70 ohms, unbalanced, and AN/URA-7 910 ohms, unbalanced.
POWER INPUT REQUIREMENTS: 105/115/125 v, 1 ph, 60 cps, 240 W.
MOUNTING DATA: The units are housed in a cabinet supplied with removable shock mounts for table mounting. The units may be mounted in a standard relay rack without shock mounting feature.
TONE SIGNAL FREQUENCIES: 595,765,935,1105, 1275,1445,1615,1785 cps.

MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Victor Div, Radio Corp of America, Camden, N. J.
Contract NObsr-39421, dated 30 June 1947.
Approximate Cost: AN/URA-6 $2774 with equipment spares.
Approximate Cost: AN/URA-7 $2656 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

AN/URA-6

(3) OA2WA
(8) 6AU6WA
(2) 5750/6BE6W
(2) 12AX7
(3) 6X4WA
(2) 6AB7
(7) 5726/6AL5W
(3) 1Z2
(3) 6C4WA
(19) 5814A
(2) 2BP1
(6) 6005/6AQ5W

Total Tubes: (60)

AN/URA-7

(3) OA2WA
(3) 6C4WA
(2) 5750/6BE6W
(2) 12AX7
(6) 6005/6AQ5W
(8) 6AU6WA
(7) 5726/6AL5W
(3) 1Z2
(3) 6X4WA
(19) 5814A
(2) 2BP1

Total Tubes: (58)
No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91355: Technical Manual for Frequency Shift Converter-Comparator Groups AN/URA-6, AN/URA-7 and Frequency Shift Converter CV-57/URR.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Converter Comparator AN/URA-6 or	13	25.5 X 29 X 29	241
1	Frequency Shift Converter Comparator AN/URA-7	13	25.5 X 29 X 29	238
1	Set of Equipment Spares for AN/URA-6	1.4	8.5 X 16.5 X 16.75	47
1	Set of Equipment Spares for AN/URA-7	1.4	8.5 X 16.5 X 16.75	42

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Frequency Shift Converter CV-57/URR*	5-1/8 X 15-1/4 X 19	
	CV-57/URR**	5-1/8 X 15-1/4 X 19	

FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP AN/URA-6,-7

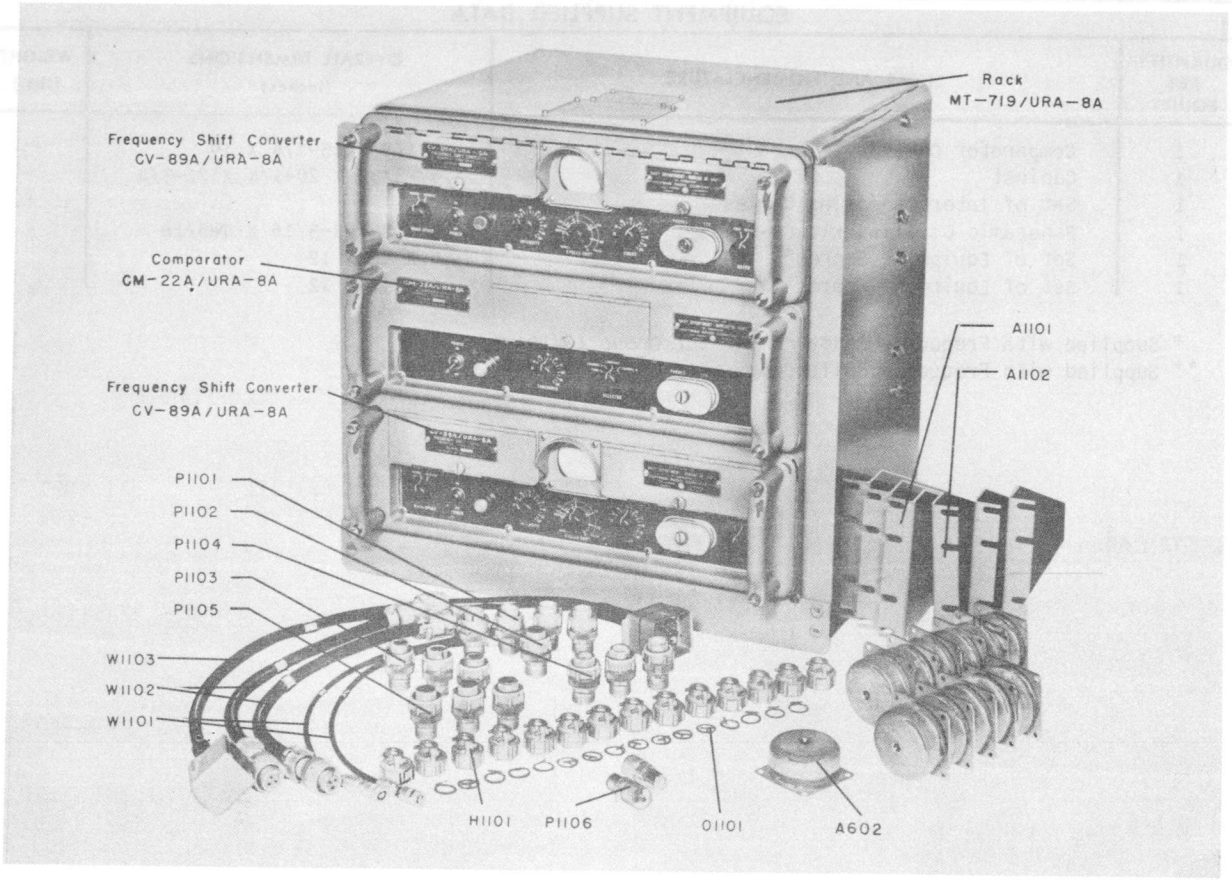
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Comparator CM-14/URR	5-1/8 X 15-1/4 X 19	
1	Cabinet	17-5/32 X 20-1/4 X 21-3/4	
1	Set of Interconnecting Cables		
1	Panoramic Coupling Kit CN-10563*	1-7/8 X 3-3/16 X 4-5/16	
1	Set of Equipment Spares*	6 X 12 X 12	
1	Set of Equipment Spares**	6 X 12 X 12	

* Supplied with Frequency Shift Comparator Group AN/URA-6.
** Supplied with Frequency Shift Comparator Group AN/URA-7.

April 1958

FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP AN/URA-8, -8A, -8B



Frequency Shift Converter-Comparator Group AN/URA-8B

FUNCTIONAL DESCRIPTION

The AN/URA-8, AN/URA-8A, and AN/URA-8B are designed primarily to operate from the audio output of two Navy Type RBA, RBB, RBC or similar standard Navy radio receivers in dual diversity reception of frequency-shift transmissions, converting the audio frequency shifts into pulses which are used to key the DC loop circuit energizing automatic teletype printers. A keyed tone output signal is also produced for feeding the intelligence to remotely located telegraph or teletype terminal equipment over wire lines or radio links.

These equipments will operate with the radio receivers in either space-diversity or frequency-diversity on carriers within the frequency range(s) of the receivers employed.

In diversity reception the output of each receiver is connected to one of the two converters, the DC signals from the discriminator circuits of the two converters are fed to the comparator. In the comparator the two signals are compared in a circuit automatically selecting the better mark and the better space pulse for each character. In this manner optimum characters are obtained from diversity reception.

The Frequency Shift Converters may be used separately for single receiver reception. Each Converter has its own output circuits for keying the teletype DC loop and providing a keyed audio tone. When the Converters are on single receiver operation the Comparator may be associated with one of them to provide an additional set of output circuits, if desired.

The equipments are originally supplied mounted in the table type rack, however, the units may be mounted separately on individual sets of shock mounts or each unit may be adapted to mount in a standard relay rack.

No field changes in effect at time of preparation (31 January 1958).

Radio-Communication Terminal Equipment

AN/URA-8, FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP -8A, -8B

April 1958

RELATION TO OTHER EQUIPMENT

The AN/URA-8 and AN/URA-8B each have blowers, and are electrically and mechanically interchangeable except for the additional space and ventilation requirements of the AN/URA-8B. The AN/URA-8B equipment is similar to the AN/URA-8A equipment except for the addition of the blower assy on each unit, the blower power connection the cable filter, and the openings for air passage on the AN/URA-8B.

Equipment Required but not Supplied: (2) Radio Receivers RBA, RBB or RBC series, (1) Teletypewriter and loop power supply, (1) Handset (as required) mounting hardware and Interconnecting Cables.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING FREQUENCIES

NARROW SHIFT: Mean (or center) frequency 1000 cps, ±1%, width of shift 10 to 200 cps.

WIDE SHIFT: Mean frequency 2550 cps ±1%, width of shift 200 to 1000 cps.

MAXIMUM KEYING SPEED: Sixty words per minute, equivalent to 23 dot cps (fundamental frequency) for a single telegraph channel, or 100 wpm, equivalent to 100 dot cps (fundamental frequency) when employed with external apparatus for the reception of four channel multiplex telegraph signals, diversity or single unit operation.

TELETYPE OUTPUT: Keys current in teletype DC loop, 60 ma at 70 v DC.

KEYED TONE OUTPUT: Any one of eight Audio Frequencies, 1.5 to 12 mw of power, 600 ohms impedance, balance winding with center tap available.

TONE SIGNAL FREQUENCIES: 595, 765, 935, 1105, 1275, 1445, 1615, and 1785 cps.

AF INPUT: Two inputs, 1 for narrow shift and 1 for wide shift, each 600 ohms impedance; 60 microwatts to 60 mw input power.

POWER SOURCE REQUIRED

AN/URA-8: 105/115/125 v, 60 cps, single ph, 220 W at 115 v.

AN/URA-8A: 105,115,125 v, 50 to 60 cps, single ph, 1.383 amp (115 v), 154.9 W, 97.4% pf.

AN/URA-8B: 105/115/125 v, 50 to 60 cps, single ph, 1.4 82 amp (115 v), 166 W, 97.4% pf.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corp of America, RCA Victor Div, Camden, N.J.
(AN/URA-8) Contract NObsr-39421, dated 30 June 1947.

Hoffman Radio Corp, Los Angeles, Calif.
(AN/URA-8A) Contract NObsr-42027, dated 8 October 1947.
(AN/URA-8B) Contract NObsr-52069, dated 13 February 1951.

TUBE AND/OR CRYSTAL COMPLEMENT

AN/URA-8

(3) OA2	(3) 1Z2	(2) 2BP1
(7) 6AL5W	(6) 6AQ5	(4) 6AU6
(3) 6C4	(3) 6X4	(4) 12AX7
(19) 12AU7		

Total Tubes: (54)

AN/URA-8A

(3) OA2	(2) 1Z2	(2) 2BP1
(8) 6AL5W	(6) 6AQ5	(3) 6X4
(10) 12AX7	(11) 12AU7	(3) 991

Total Tubes: (48)

AN/URA-8B

(3) OA2	(2) 1Z2	(2) 2BP1
(8) 6AL5W	(6) 6AQ5	(3) 6X4
(12) 12AX7	(9) 12AU7	(1) 991

Total Tubes: (46)

No Crystals.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91339: Technical Manual for Converter-Comparator Group AN/URA-8 and Frequency Shift Converter CV-60/URR.

NAVSHIPS 91278: Technical Manual for Converter-Comparator Group AN/URA-8A.

NAVSHIPS 91490: Technical Manual for Frequency Shift Converter-Comparator Group AN/URA-8B and Frequency Shift Converter CU-89A/URA-8A.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-C-15454(SHIPS),
STOCK NO. CS-946, CS-723

April 1958

FREQUENCY SHIFT CONVERTER-COMPARATOR GROUP AN/URA-8, -8A, -8B

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
	AN/URA-8			
1	Frequency Shift Converter-Comparator Group	13	25-1/2 X 29 X 29	242
1	Maintenance Parts Kit	1.4	8-1/2 X 16-1/2 X 16-3/4	40
	AN/URA-8A			
1	Frequency Shift Converter-Comparator Group	8.75	23-3/8 X 24 X 27	253
1	Maintenance Parts Kit	4.45	14-7/8 X 18-3/8 X 28-5/8	136
	AN/URA-8B			
1	Frequency Shift Converter-Comparator Group	10.4	23-1/4 X 24-1/2 X 31-1/2	265
1	Maintenance Parts Kit	4.45	14-7/8 X 18-3/8 X 28-5/8	136

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	AN/URA-8		
2	Frequency Shift Converter CV-60/URR	5-1/4 X 15-1/4 X 17-5/16	34
1	Comparator CM-14/URR	5-1/4 X 15-1/4 X 17-5/16	
1	Rack		
4	Cables CG-409/U	14 lg	
2	Power Cables		
1	Cable Assy, Special Purpose		
2	Technical Manuals NAVSHIPS 91339		
1	Set Equipment Spares		
	AN/URA-8A		
2	Frequency Shift Converter CV-89/URA-8A	5-1/4 X 17 X 17	47
1	Comparator CM-22/URA-8A	5-1/4 X 17 X 17	36
1	Rack MT-719/URA-8A	14-3/4 X 18 X 19-9/16	15-1/4
1	Set Accessories, Cables and Plugs		9
2	Technical Manuals NAVSHIPS 91278		
1	Set Maintenance Parts Kit	12-3/4 X 16-1/2 X 25	95
	AN/URA-8B		
2	Frequency Shift Converter CV-89A/URA-8A	5-1/4 X 17 X 21	50-1/4
1	Comparator CM-22A/URA-8A	5-1/4 X 17 X 21	39-1/4
1	Rack MT-719/URA-8A	14-3/4 X 18 X 19-9/16	13-1/4
1	Set Accessories, Cables and Plugs		9
2	Technicals NAVSHIPS 91490		
1	Set Maintenance Parts Kit	12-3/4 x 16-1/2 x 25	95

COMPUTER SET, STORED PROGRAM, GENERAL PURPOSE AN/USQ-20

FUNCTIONAL DESCRIPTION

The AN/USQ-20 is a high speed digital real time, stored program, data processing and computing device. It operates with single address instructions, and is self-modifying. It employs solid state components throughout and has a large capacity ferrite core memory. No special air conditioning is required when operated in a normal office environment. This computer was developed for use with the Naval Tactical System, but is designed to function as a general purpose data processor.

No field changes in effect at time of preparation (21 December 1960).

RELATION TO OTHER EQUIPMENT

The AN/USQ-20 is designed to be used with, but not part of Naval Tactical Data System.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF MEMORY: Magnetic ferrite core type.
BASIC CLOCK RATE: 2 megacycle.
INSTRUCTION TIME (AVERAGE): 20 microseconds.
TYPE OF EMMISION: Digital.
TYPE OF INSTRUCTION: Single address instructions, self-modifying.
MAIN MEMORY
CAPACITY: 32,000 words.
CYCLE TIME: 0.8 microseconds.
INPUT AND OUTPUT MEDIUMS: Punched paper tape and electric typewriter.
MODE OF OPERATION: Buffer mode of operation.
TYPE OF FUNCTION: Interrupt.
OPERATING POWER RQMT: 115 v ac, 400 cps, 3 ph, 6.35 amps; 115 v ac, 60 cps, single ph, 6.5 amps.

MANUFACTURER'S OR CONTRACTOR'S DATA

Remington Rand Univac, St. Paul, Minn.
Contract NObsr-63010, dated February 1957.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Computer Set, Stored Program, General Purpose AN/USQ-20.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE BUSHIPS SER 835-036
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Computer Set, Stored Program, General Purpose AN/USQ-20	30 x 37-1/8 x 64	2925

COMPUTER SET, STORED PROGRAM, GENERAL PURPOSE AN/USQ-21

FUNCTIONAL DESCRIPTION

The AN/USQ-21 is a general purpose digital (serial) computer, suited for both processing and scientific applications. It features double precision arithmetic mode and microprogramming. The basic clock rate is 50 kilocycles and the average instruction time is 54 millisecond.

No field changes in effect at time of preparation (20 December 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF MEMORY: Magnetic-drum type.
BASIC CLOCK RATE: 50 kc.
INSTRUCTION TIME (AVERAGE): 0.54 millisecond.
INPUT AND OUTPUT MEDIUMS: Punched paper tape and electric typewriter.
MAIN MEMORY
CAPACITY: 2160 (30-bit) words.
ACCESS TIME: 14.5 milliseconds average.
FAST ACCESS MEMORY
CAPACITY: 16 (30-bit) words.
ACCESS TIME: 0.54 milliseconds average.
TYPE OF PROGRAMMING: Double precision arithmetic and microprogramming.
TYPE OF EMISSION: Digital.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph, 3.8 kva.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bendix Computer Division of Bendix Aviation Corporation, Los Angeles, Calif.
Model No. G15D.
Contract NObsr-75644, dated 30 December 1958.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

REFERENCE DATA AND LITERATURE

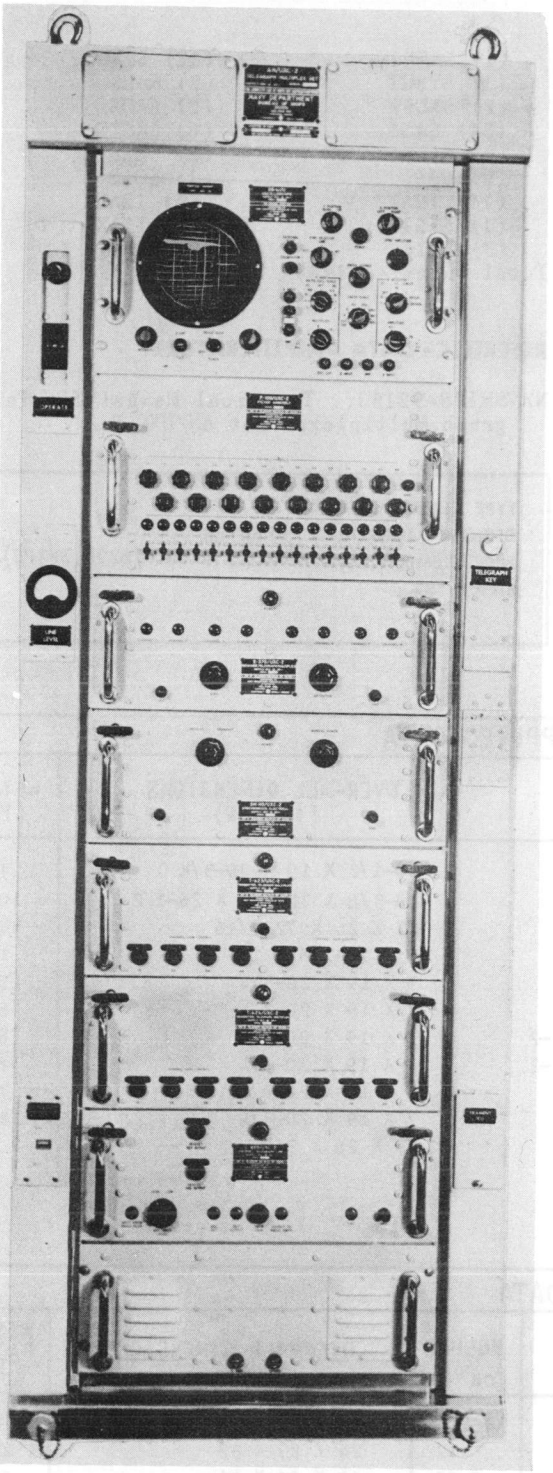
NAVSHIPS 93400: Preliminary Data Form for Computer Set, Stored Program, General Purpose AN/USQ-21.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE BENDIX G-15D
STOCK NO.
R.D.B. IDENT. NO.

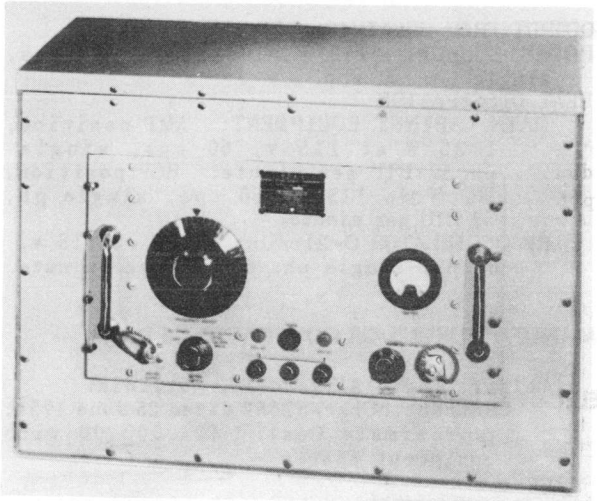
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Computer Set, Stored Program General Purpose AN/USQ-21	27 x 32 x 61	850

TELEGRAPH MULTIPLEX SET AN/UXC-2



Telegraph Multiplex Set AN/UXC-2



FUNCTIONAL DESCRIPTION

The AN/UXC-2 is a single channel time and frequency division multiplex system that will combat the effects of propagational disturbances during radio transmission. It is used as terminal equipment at each end of a radio circuit to handle mark-space information that can withstand being sampled at 1 millisecond intervals without resulting in an objectionable loss of information. Fading and multipath propagational distrubances are effectively eliminated. Special features include a telegraph key for manual CW type transmission. The equipment is intended to be installed in a fixed location.

Data on this sheet reflects the following field changes: F/C-3 (24 May 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Connecting cables and plugs for interconnecting the major components of the equipment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY: 875, 1125, 1375, 1625, 1875, 2125, 2375, 2625, 2875, 3125, 3375, 3625, 3875, 4125, 4375, 4625 cps.
BANDWIDTH: 125 cycles for each channel.
TYPE OF MODULATION: 125 cycles lower side band.
IMPEDANCE
INPUT TO TRANSMITTER: 75 ohms.
OUTPUT FROM TRANSMITTER: 600 ohms.
INPUT TO RECEIVER: 600 ohms.

TELEGRAPH MULTIPLEX SET

OUTPUT FROM RECEIVER: 75 ohms.
POWER SOURCE: 115 v ±10%, 50 to 60 cps, single ph, 20 amp.
HEAT DISSIPATION
MAIN CABINET EQUIPMENT: XMT position, 1035 W at 115 v, 60 cps, single ph, 59 BTU per minute: RCV position, 920 W at 115 v, 60 cps, single ph, 52 BTU per minute.
RF OSCILLATOR O-216/U: 115 W at 115 v, 60 cps, single ph, 6.6 BTU per minute.

MANUFACTURER'S OR CONTRACTOR'S DATA

Melpar, Inc., Alexandria, Virginia.
Contract NObsr-52652 dated 25 June 1951.
Approximate Cost: $21,000.00 with equipment spares.

TUBE COMPLEMENT

(6) OA2
(7) OB2
(11) 2D21W
(4) OA3
(2) 1X2A
(1) 3-14
(1) 5ADP1
(1) 5Y3GT
(2) 6AL5W
(34) 6AS6
(8) 6AU6
(2) 6J6
(14) 12AT7
(1) 5751
(3) 5814
(11) 5R4WGY
(2) 6AL5
(2) 6AQ5
(6) 6AS7G
(2) 6BE6
(1) 6Q5G
(49) 12AU7
(22) 12AX7
(2) 5963
Total Tubes: (194)

REFERENCE DATA AND LITERATURE

NAVSHIPS-92153: Technical Manual for Telegraph Multiplexer Set AN/UXC-2.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-T-16295(SHIPS)
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVER-ALL DIMENSIONS (inches)	WEIGHT (lbs)
1	Oscilloscope OS-41/U	10-1/2 X 19 X 20-3/4	48
1	R-F Oscillator O-216/U	18-3/8 X 21-3/4 X 26-1/2	107
1	Cabinet (Less Blower) CY-859/UXC-2	22 X 26 X 72-7/16	440
1	Blower Assembly	7 X 10-1/6 X 19	16
1	Telegraph Line Control C-1120/UXC-2	7 X 19 X 20-3/4	58
1	Telegraph Multiplex Receiver R-370/UXC-2	7 X 19 X 20-3/4	53
1	Telegraph Multiplex Transmitter T-423/UXC-2	7 X 19 X 20-3/4	67
1	Telegraph Multiplex Transmitter T-424/UXC-2	7 X 19 X 20-3/4	67
1	Filter Assembly F-100/UXC-2	7 X 19 X 20-3/4	79
1	Electrical Synchronizer SN-110/UXC-2	7 X 19 X 20-3/4	48
1	Set Equipment Spares	17 X 26 X 31	
2	Technical Manual		

SHIPPING DATA

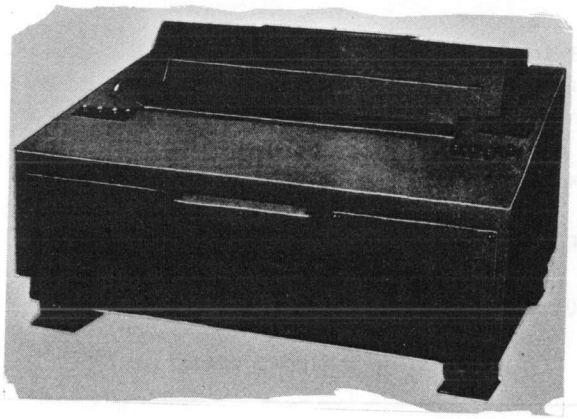
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (cu ft)	OVER-ALL DIMENSIONS (inches)	WEIGHT PACKED (lbs)
1	Telegraph Multiplex Set AN/UXC-2	48.28	32 X 33 X 79	1220
1	Radio Frequency Oscillator O-216/U	12	24 X 27 X 32	206
1	Equipment Spares	7.92	17 X 26 X 31	206

3 April 1962

Cog Service:	FSN:	FACSIMILE RECORDER SET AN/UXH-2(XN-3) Functional Class:
USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Times Facsimile Corp.



Facsimile Recorder Set AN/UXH-2(XN-3)

FUNCTIONAL DESCRIPTION:

Facsimile Recorder Set AN/UXH-2(XN-3) is a continuous page facsimile recorder designed to make a succession of direct recordings of weather maps, tactical graphic information, sketches, typewritten, printed or handwritten data, transmitted over land lines or radio.

When receiving from a transmitter which sends the proper control signals, the AN/UXH-2(XN-3) will operate automatically. The unit will automatically phase, start recording at the beginning of a transmission, stop when the transmission is complete, and compensate for changes in signal level during the recording, thus permitting long periods of unattended operation. The unit can be operated manually when receiving from any transmitter having characteristics compatible with the recorder.

No field changes in effect at time of preparation (28 October 1960).

AN/UXH-2(XN-3) FACSIMILE RECORDER SET

TECHNICAL CHARACTERISTICS:

TYPE OF EQUIPMENT: Continuous web recorder.
TYPE OF RECORDING: Direct stylus recording.
TYPE OF RECORDING PAPER: Dry, electrosensitive recording paper on 19-1/8 in. w. roll.
RECORDING WIDTH: 18.85 in.
INDEX OF COOPERATION: 576 (International): 1810 (I.R.E.).
RESOLUTION: 96 lines per in.
SCANNING SPEED: 30, 90 or 120 scans per min.
RECORDING TIME: 19.2 min at 60 scans per min.
TYPE OF MODULATION: AM
INPUT FREQUENCY: 450 to 2700 cps.
CONTROL SIGNAL: 1800 cps carrier modulated by 300 cps to start, 450 cps to stop.
SIGNAL LEVEL: P4 to M36 dbm.
INPUT SIGNAL CONTRAST: 8 to 16 db.
INPUT IMPEDANCE: 600 ohms.
BLACK RECORDING: Max density on max signal level.
POWER REQUIREMENTS: 115 or 230 v, 45 to 65 cps, single ph.
POWER CONSUMPTION: 270 W at 115 or 230 v.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Facsimile Recorder Set AN/UXH-2(XN-3)		16 x 21-3/4 x 30	180

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92735: Technical Manual for Facsimile Recorder Set AN/UXH-2(XN-3).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 6L6WGB (1) 5U4GA (4) 5670 (2) 5687WA (1) 5727/2D21W (1) 5726
(1) 0B2WA (2) 5965

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N200 (7) 1N218

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1.5 AN/UXH-2(XN-3): 2		

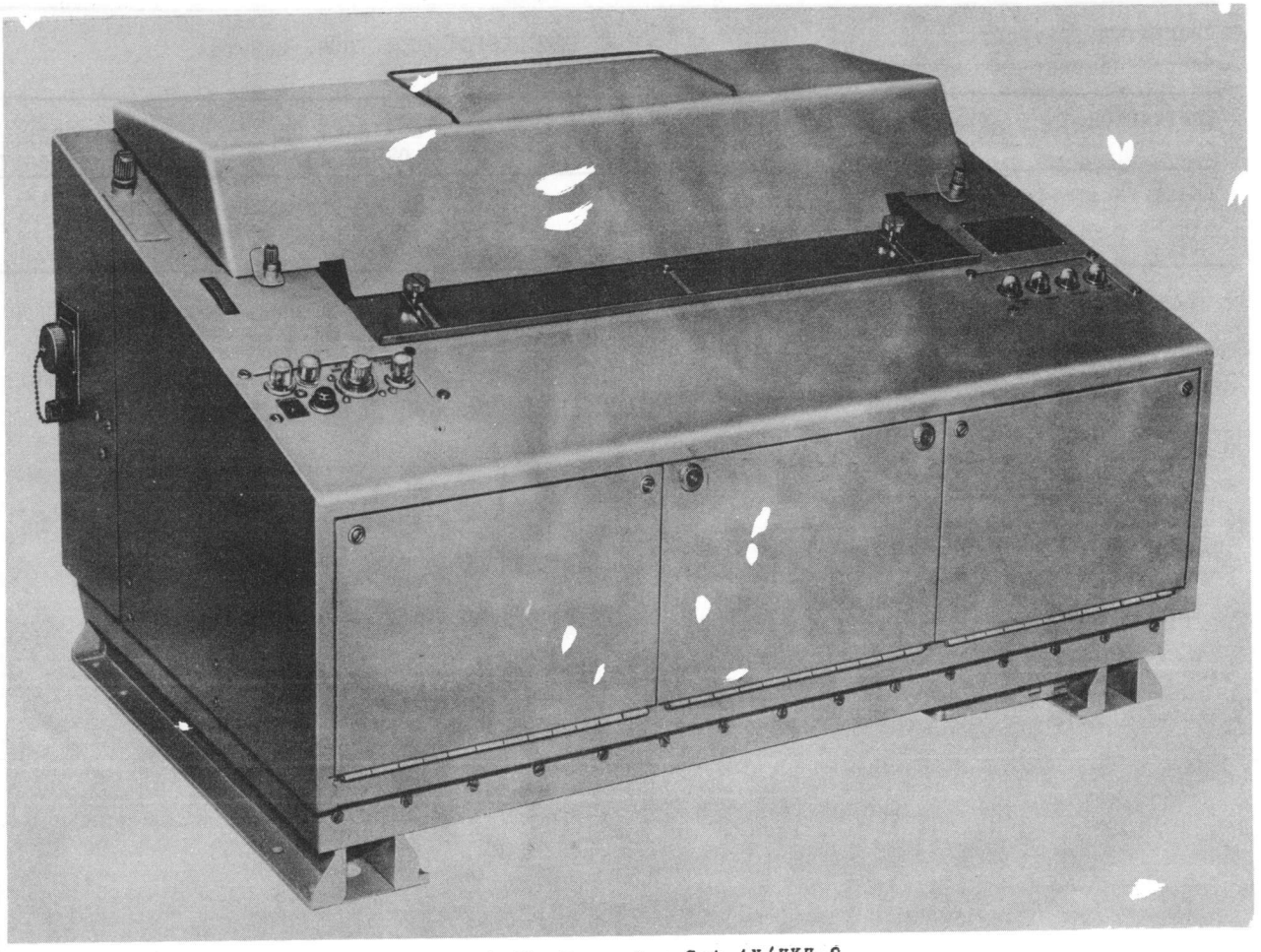
PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG: MIL-F-19480(SHIPS)

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Times Facsimile Corp.	New York, N. Y.	NObsr-57278, 1 April 1952	

FACSIMILE RECORDER SET AN/UXH-2



Facsimile Recorder Set AN/UXH-2

FUNCTIONAL DESCRIPTION

Facsimile Recorder Set AN/UXH-2 is a continuous page facsimile recorder designed to make a succession of direct recordings of weather maps, tactical graphic information, sketches, typewritten, printed or handwritten data, transmitted over land lines or radio.

When receiving from a transmitter which sends the proper control signals, the AN/UXH-2 will operate automatically. The unit will automatically phase, start recording at the beginning of a transmission, stop when the transmission is complete, and compensate for changes in signal level during the recording, thus permitting long periods of unattended operation. The unit can be operated manually when receiving from any transmitter having characteristics compatible with the recorder.

No field changes in effect at time of preparation (28 October 1960).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Technical Manual for CV-172A/U(NAVSHIPS 91628), (1) Technical Manual for RBD or RBC.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EQUIPMENT: Continuous web recorder.
TYPE OF RECORDING: Direct stylus recording.

Radio-Communication Terminal Equipment

AN/UXH-2 FACSIMILE RECORDER SET

TYPE OF RECORDING PAPER: Dry, electrosensitive recording paper or duplicating paper such as Timefax A or N on 19-1/8 in. w roll.
RECORDING UNIT: 18.75 in.
INDEX OF COOPERATION: 576 (International); 1810 (I.R.E.).
RESOLUTION: 96 lines per in.
SCANNING SPEED: 60, 90 or 120 scans per min.
RECORDING TIME: 19.2 min. for 12 by 18-1/2 in. copy at 60 scans per min.
TYPE OF MODULATION: AM
INPUT FREQUENCY: 600 to 4200 cps.
CONTROL SIGNAL: 1800 to 3600 cps carrier modulated by 300 cps to start, 60 cps to start record, 450 cps to stop.
SIGNAL LEVEL: P4 to M36 dbm.
INPUT SIGNAL CONTRAST: 8 to 16 db.
INPUT IMPEDANCE: 600 ohms.
BLACK RECORDING: Max density on max signal level.
POWER REQUIREMENTS: 115 or 230 v, 45 to 65 cps, single ph.
POWER CONSUMPTION: 275 W at 115 or 230 v.

MANUFACTURER'S OR CONTRACTOR'S DATA

Times Facsimile Corp., New York, N.Y.
Part/dwg no. 180-00-00-00.
Contract NObsr-71661.
Contract NObsr-75939.
Westrex Corp., New York, N.Y.
Contract NObsr-81259.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 6L6WGB
(2) 12AT7WA
(1) 5654
(2) 5687WA
(1) 6386
(1) 6829
(6) 5670
(1) 5727/2D21W
(1) 6627/OB2WA

Total Tubes: (19)

SEMI-CONDUCTORS

(1) 1N204
(7) 1N1095
(11) 1N218

Total Semi-Conductors: (19)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93158(A): Technical Manual for RECORDER SET, FACSIMILE AN/UXH-2.
NAVSHIPS 93158.32: Performance Operation sheets.
NAVSHIPS 93158.42: Maintenance Standards Book.
NAVSHIPS 91828(A): Handbook of Test Methods and Practices.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-F-19480 (SHIPS) and
STOCK NO.
R.D.B. IDENT. NO. AMEND 2

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Recorder Set, Facsimile including: Amplifier, Electrical Control AM-1845/UXH-2 Recorder, Facsimile RO-76/UXH-2 Power Supply PP-1901/UXH-2	17.4	26-1/2 x 28-1/4 x 40	325
1	Timefax Recording Paper NDA	7.2	13-3/4 x 22-1/2 x 40-1/2	205
1	Maintenance Parts	1.2	10-1/4 x 11-1/4 x 17	15

FACSIMILE RECORDER SET AN/UXH-2

EQUIPMENT SUPPLIED DATA

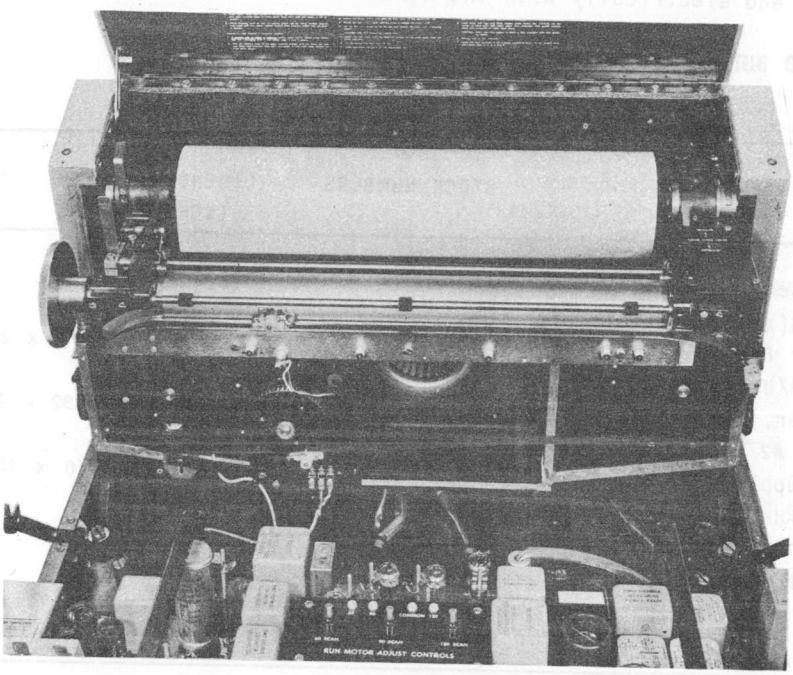
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Facsimile Recorder Set AN/UXH-2 including:	16 x 21-3/4 x 30	214
7	Spare Fuses		
1	Stylus Needle Alignment Fixture		
1	Stylus Holder Alignment Fixture		
3	Retainer Ring Pliers		
5	Hex Nut Keys		
1/2 lb	Activated Carbon		
1	Exhaust Hose	120	
1	Plate Ass'y Adapter for 10 ft Hose		
2	Technical Manual		
1	Amplifier, Electrical Control AM-1845/UXH-2	7 x 9-9/32 x 29-5/8	
1	Recorder, Facsimile RO-76/UXH-2	10-1/8 x 14-3/4 x 27-3/4	
1	Power Supply PP-1901/UXH-2	6-1/2 x 8-7/8 x 21	

16 August 1962
Cog Service: USN FSN:

RECORDING SET, FACSIMILE AN/UXH-5(XN-1)
Functional Class:

	USA	USN	USAF
TYPE CLASS:	Pln/Std	Pln/Std	

MANUFACTURER'S NAME/CODE NUMBER: Westrex Corp., (00335).



Recording Set, Facsimile AN/UXH-5(XN-1)

FUNCTIONAL DESCRIPTION:

The Recording Set, Facsimile AN/UXH-5(XN-1) is a continuous page facsimile recorder designed to make a succession of direct recordings of maps, sketches, typewritten or printed information sent from a distant transmitter. The facsimile signals may be recorded directly from wire circuits, or from radio circuits if the proper auxiliary equipment is used. The recorder is designed for recording black and white copy. The recorder will automatically phase, adjust for optimum printing level, start, and stop if proper control signals are transmitted from the distant transmitter.

No field changes in effect at time of preparation (24 May 1962).

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 600 to 4200 cps.
CONTROL SIGNAL: 1800 to 3600 cps carrier modulated by 300 cps to start, 60 cps to start

recorder, 450 cps to stop recorder.
SIGNAL LEVEL: P4 to M36 dbm.
INPUT IMPEDANCE: 600 ohms.
OPERATING POWER RQMT: 115/230 v ac, 45 to 60 cps, single ph, 275 W.

RELATION TO OTHER EQUIPMENT:

The AN/UXH-5(XN-1) is a modified and improved version of the AN/UXH-2. It is interchangeable mechanically and electrically with the AN/UXH-2.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Recording Set, Facsimile AN/UXH-5(XN-1) consists of:			
1	Recorder Facsimile Unit #1 of AN/UXH-5(XN-1)		10-1/8 x 14-3/4 x 27-3/4	
1	Amplifier, Electronic Control Unit #2 of AN/UXH-5(XN-1)		7-5/16 x 9-9/32 x 29-5/8	
1	Power Supply Unit #3 of AN/UXH-5(XN-1)		6-1/16 x 8-7/8 x 20-7/8	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94358: Technical Manual for Recording Set, Facsimile AN/UXH-5(XN-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) OB2WA (2) 12AT7WB (1) 5654/6AK5W (7) 5670 (2) 5687WA (1) 5727/2D21W
(4) 6L6WGB (1) 6386 (1) 6829

CRYSTALS: None used.

SEMI-CONDUCTORS: (7) 1N1095 (1) 1N204 (8) 1N218

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	6.0	214

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-R-2636

1.5 AN/UXH-5(XN-1): 2

RECORDING SET, FACSIMILE AN/UXH-5(XN-1)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Westrex Corp.	New York, N. Y.	NObsr-72749, 23 January 1958	

Radio-Communication Terminal Equipment

COMPUTER SET, STORED PROGRAM, GENERAL PURPOSE AN/UYK-1

FUNCTIONAL DESCRIPTION

The AN/UYK-1 is a general-purpose machine of moderate capabilities designed for lowest practicable cost. It computes and manipulates digital data at electronic speeds and it stores digital information in its core memory. It is capable of controlling, or being controlled by a variety of peripheral devices such as teletype machines, paper-tape punches and readers, magnetic-tape transports, punched-card readers, high-speed printers, magnetic drums, and all components of the Navy Tactical Data System. It does not communicate at useful data rates with anything (or anyone) else without the use of these devices. Only semiconductors and passive elements are used; (no vacuum tubes), and 8192, 15-bit words may be stored in the magnetic core.

The AN/UYK-1 is designed for shipboard environmental conditions. The variable instruction list is for 30-bit fixed point operations with index registers; to add or subtract requires 200 microseconds; and to multiply requires 1,200 microseconds. The device has a six-microsecond memory cycle and a three-microsecond clock. The magnetic core memory of 8192, 15-bit words, may be expanded to 32,768 words.

No field changes in effect at time of preparation (20 December 1960).

RELATION TO OTHER EQUIPMENT

The AN/UYK-1 is designed to be used with, but is not part of, the Navy Tactical Data System.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING POWER RQMT: 115 v ac, 60 cps, single ph, 1500 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Remo-Woolridge a Division of Thompson-Remo-Woolridge, Canoga Park, Calif. Contract NObsr-81349.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Form for Computer Set, Stored Program, General Purpose AN/UYK-1.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE MIL-E-16400C
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Computer Set, Stored Program General Purpose AN/UYK-1	12 x 22 x 52	

UNCLASSIFIED

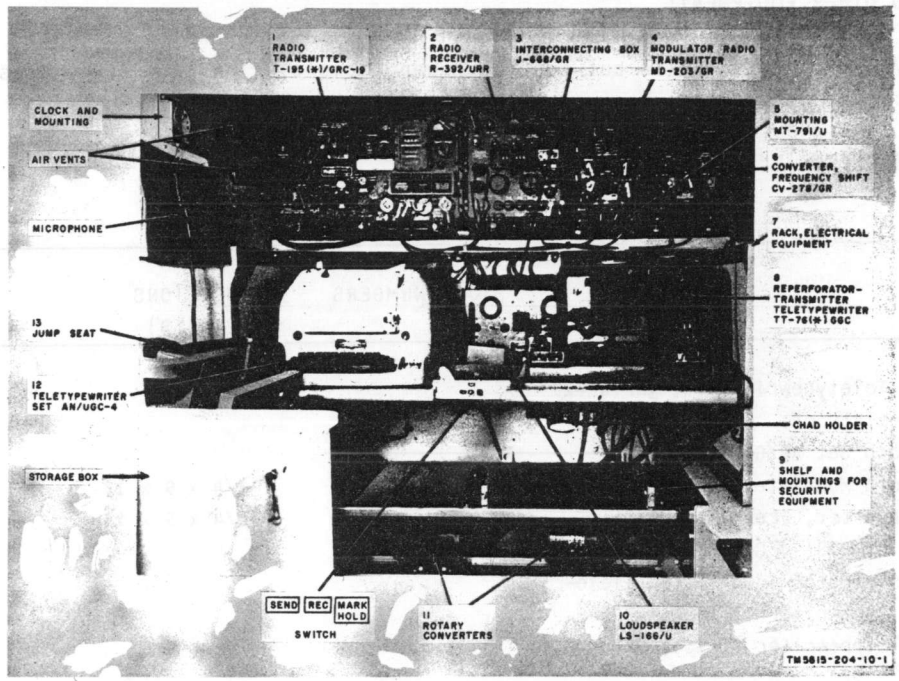
30 July 1962 RADIO TELETYPEWRITER SET AN/VRC-29

Cog Service: TASSA FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Stewart Warner Electronics, (98738).



Radio Teletypewriter Set AN/VRC-29

FUNCTIONAL DESCRIPTION:

The Radio Teletypewriter Set AN/VRC-29 is a portable radio teletypewriter terminal and is mounted in an armored vehicle. It provides facilities for amplitude modulated (AM) voice, continuous wave (CW) and frequency-shift-keyed (FSK) radio teletypewriter signals. Teletypewriter operation may be one-way reversible (half-duplex without break-in) or full-duplex. Full-duplex operation requires the use of an additional antenna.

No field changes in effect at time of preparation (28 December 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Vehicular (tanks, armored cars etc.).
TYPE OF EMISSION: A1, A3 and A9 type and F1.
FREQUENCY RANGE DATA
TRANSMITTER: 1.5 to 20 mc.

RECEIVER: 0.5 to 32 mc.
NUMBER OF BANDS: 10.
NUMBER OF CHANNELS: 8.
RELIABLE RECEPTIVE RANGE: 0 to 50 miles.
METHOD OF TUNING: Manual or automatic, 7 pre-set channels.
INPUT POWER: 2.5 kw at 28.5 v dc.
OUTPUT POWER: 13 to 100 W, depending on frequency of transmission and type of antenna used.

RELATION TO OTHER EQUIPMENT:

The AN/VRC-29 is similar to but not interchangeable with AN/GRC-46( ). Does not include shelter racks, seats, clocks, set of interconnecting cables, etc.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Teletypewriter Set AN/VRC-29 consists of:			
1	Radio Set AN/GRC-19( )			
1	Radio Modulator MD-203( )/GR		7-1/4 x 9 x 13	
1	Converter, Frequency Shift CV-278( )/GR		7-1/4 x 9 x 13	
1	Distributor-Transmitter, Teletypewriter TT-153( )/FG			
1	Teletypewriter TT-154( )/FG			

REFERENCE DATA AND LITERATURE:

TM11-5815-204-10: Technical Manual for Radio Teletypewriter Sets AN/GRC-46 and AN/VRC-29.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

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

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Stewart Warner Electronics Pt. no. 01X200110	Chicago, Illinois	911-PH-57-93	

INTERCOMMUNICATION SYSTEM AN/WIC-1 (V)

FUNCTIONAL DESCRIPTION

The AN/WIC-1(V) is designed to provide all requirements for amplified voice communication and alarm signals aboard naval surface ships and submarines. Stations are in number and type as required for the ship in which installed.

The three (3) systems are designed for installation on board SSG(N)598, SSG(N)599, and SSG(N)600.

No field changes in effect at time of preparation (14 December 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF INSTALLATION: Installed on board SSG(N)598, SSG(N)599, and SSG(N)600.
RECEIVING STATION INPUT IMPEDANCE: 27,000 ohms.
LINE IMPEDANCE: 150 ohms.
AVERAGE DISTRIBUTION LINE LEVEL (ALARM SIGNALS): 1 Watt.
LOCAL STATION AMPLIFIER POWER OUTPUT (NOMINAL): 1 Watt.
AUDIO FREQUENCY RESPONSE: 100 to 8000 cps at 5% distortion.
RECTIFIER INPUT VOLTAGE: 35 v ac.
POWER SUPPLY OUTPUT VOLTAGE: 28 v dc.
INPUT POWER RQMT: 115 v ac, 60 cps, single ph.
STANDBY WATTAGE: 65 W.
READY WATTAGE: 160 W.
FULL OUTPUT WATTAGE: 450.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, Camden, N.J. Contract NObs-74311, dated 26 February 1958.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) S320G
Total Tubes: (3)

SEMI-CONDUCTORS

(6) 1N1200	(1) 1N1302
(1) 1N1351	(26) 1N457

Total Semi-Conductors: (34)

TRANSISTORS

(2) 2N158	(5) 2N167
(2) 2N174A	(4) 2N297A
(2) 2N343	(10) 2N404
(11) 2N43A	(5) 2N489

Total Transistors: (41)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-2618: Technical Manual for Intercommunication System AN/WIC-1(V).

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-I-2948A
STOCK NO.
T.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Intercommunication System AN/WIC-1(V) consists of:		
	Control Cabinet CY-2618/WIC-1	14 x 20.62 x 69	480
	Periscope/Bridge Control Box C-2823/WIC	9.43 x 9.50 x 15.10	41
	A.F. Amplifier (Dual 20-watt) AM-2115/WIC	4.34 x 11.12 x 15.38	22

Radio-Communication Terminal Equipment

AN/WIC-1 (V) INTERCOMMUNICATION SYSTEM

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	Control Box, 15 Station, w/Radio C-2820/WIC	7.58 x 8.25 x 9.25	19
	Control Box 9 Station C-2817/WIC	5.58 x 8.25 x 9.25	13.5
	Control Box, 15 Station for Launcher C-2819/WIC	7.58 x 8.25 x 9.25	19
	Control Box 15 Station C-2818/WIC	7.58 x 8.25 x 9.25	19
	Control Box, Sonar Break-In C-2822/WIC	7 x 8.25 x 9.25	21
	Control Box, 31 MC C-2821/WIC	8.08 x 9.25 x 10.25	25
	Auxiliary Battery & Box, 31 MC CY-2588/WIC	6.68 x 7.68 x 14.25	17
	Amplifier Control-A C-2815/WIC	7 x 8.25 x 9.25	21
	Amplifier Control-B C-2816/WIC	7 x 8.25 x 9.25	21
	Loudspeaker, Low Power AM-2116/WIC	4.44 x 6.10 x 8.55	9.0
	Loudspeaker, High Power AM-2117/WIC	7 x 8.75 x 10.25	16.5
	Loudspeaker, High Power Dual Unit AM-2159/WIC	7 x 10.25 x 13.81	20.5
	Switch, Emergency Reports SA-647/WIC	3.78 x 5.36 x 5.36	2.4
	Control Box, Sonar Operator A J-1070/WIC	3.42 x 5.84 x 5.90	3.4
	Control Box, Sonar Operator B J-1071/WIC	3.42 x 5.84 x 5.90	3.4
	Receptacle Box Headset J-1073/WIC	3.32 x 5.36 x 5.36	3.8
	Receptacle Box Microphone J-1072/WIC	4.50 x 6.50 x 6.50	3.8
	Alarm Power Supply Failure BZ-55/WIC	3.42 x 5.84 x 5.90	3.1
	Loudspeaker, Portable C-2884/WIC	6.94 x 10.75 x 13.50	14.5
	Junction Box, Type I J-1066/WIC	4 x 10 x 14	18.5
	Junction Box, Type II J-1067/WIC	4 x 10 x 14	18.5
	Junction Box, Type III J-1068/WIC	4 x 12 x 14	21.5
	Junction Box, Type IV J-1069/WIC	4 x 12 x 14	21.5
	Headset/Boom Microphone H-178/U		
	Extension Cable for Headset Microphone CX-4691/WIC	144 lg	
	Handset H-177/U		
	Microphone, Handheld M-98/U	1.95 x 2.00 x 4.25	
	Microphone (PP Plug for Bridge) M-97/U	1.95 x 2 x 4.25	
	Headset Microphone Sonar H-179/U		
	Extension Cable for Headset Microphone Sonar CX-4692/WIC	72 lg	

18 September 1962 | MULTIPLEX COMMUNICATION SYSTEM AN/WRC-2( )

Cog Service: | FSN: | Functional Class:

USA | USN | USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Company.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The AN/WRC-2( ) is a Very Low Frequency (VLF) 1-way multi-channel time division, broadcast communication system. The modulator group is used with any Very Low Frequency (VLF) shore transmitting station. The radio receiving set is installed aboard ship. The over-all system will provide 4, 2, or 1 channel of teletype communication at data rates of 60, 30, 15, 7-1/2 and 1-7/8 Words Per Minute (WPM), depending upon mode selection.

No field changes in effect at time of preparation (9 January 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF COMMUNICATION SYSTEM: VLF 1-way multi-channel time division, broadcast communication system.
TYPE OF TRANSMITTING STATION USED: VLF shore transmitting station.
TYPE OF RECEIVING INSTALLATION: Receiving Set is shipboard installed.
NUMBER OF CHANNELS: 4, 2 or 1 channel of teletype communication.
DATA RATES: 60, 30, 15 7-1/2 & 1-7/8 words per minute.
OPERATING POWER RQMT: 115 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multiplex Communication System AN/WRC-2( ) consists of:			
1	Modulator Group AN/FRA-45( )			
1	Receiving Set, Radio AN/WRR-4( )			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93400: Preliminary Data Form for Multiplex Communication System AN/WRC-2( ).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

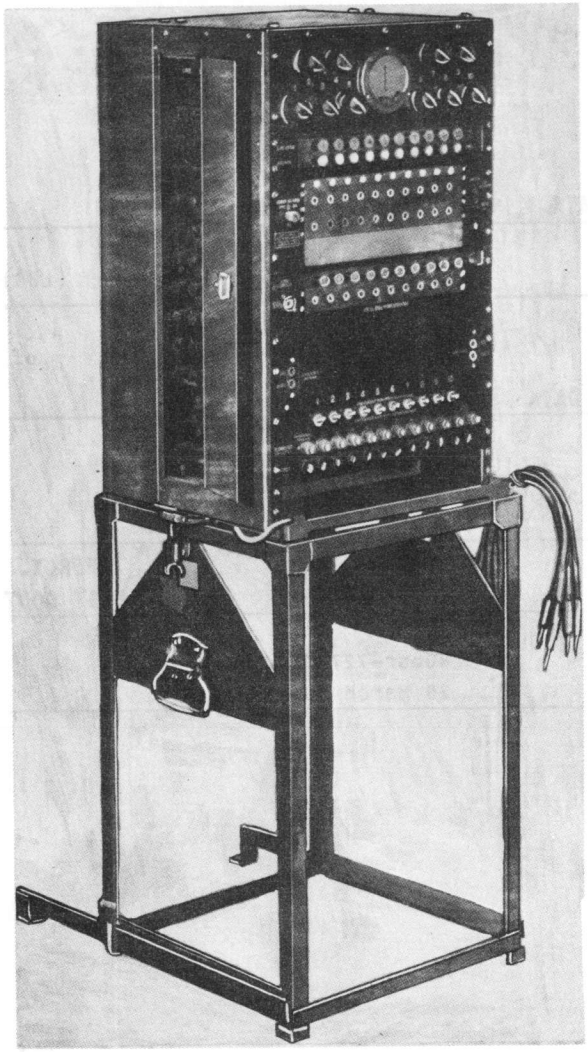
PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Company	Burbank, California	NObsr-72760, 20 March 1958	

SWITCHBOARD BD-100



Switchboard BD-100

FUNCTIONAL DESCRIPTION

The BD-100 is the principal component of the TC-3 system and provides switching for 10 circuits. The switchboard is designed to furnish switching for teletypewriter equipment operating on neutral lines.

No field changes in effect at time of preparation (8 May 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER SOURCE REQUIRED: 100 to 125 or 200 to 250 v, 50 to 60 cycs, 1 ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

North Electric Corp; Galian, Ohio.
P.O. 2775-Chi(DP-42)-T-12.
Approximate Cost: $1200.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals Used.

REFERENCE DATA AND LITERATURE

TM 11-358: Technical Manual for Telegraph Central Office Set TC-3 and Switchboard BD-100.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	

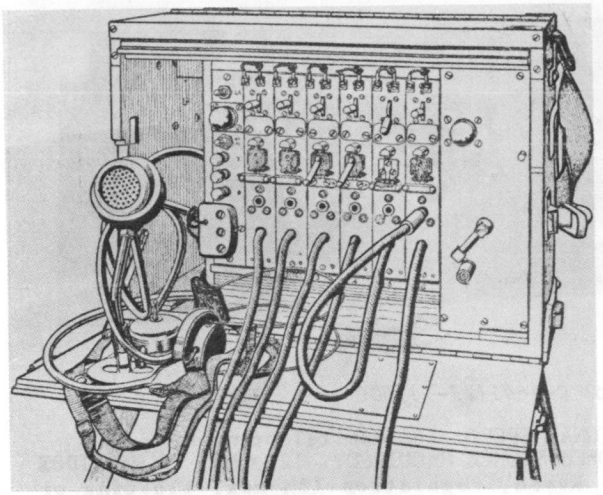
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Switchboard BD-100	6.3	19 X 19 X 30	205
1	Chest CH-70 and Spares Parts	2	10 X 15 X 23	53

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Switchboard BD-100 (with spares)	16 X 16 X 26	180
1	Chest CH-70 (with spares)	7 X 12-1/2 X 21-1/2	45

SWITCHBOARD BD-71



Switchboard BD-71

FUNCTIONAL DESCRIPTION

The BD-71 is a protable, monocord, magneto-telephone switchboard for use in field wire systems. The switchboard contains all the necessary equipment for terminating and switching field telephone circuits.

No field changes in effect at time of preparation (7 May 1958).

RELATION TO OTHER EQUIPMENT

Except for the difference in line equipment the BD-71 and Switchboard BD-72 are identical. BD-71 has a capacity of 6 lines, BD-72 has 12 lines.

Equipment Required but not Supplied: 12 Batteries BA-30.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

MAXIMUM RANGE: 14 to 22 mi, with two switchboards connected.
TRANSMITTER
FREQUENCY: 600 to 3000 cps.
CURRENT: 0.1 amp.
AVERAGE POWER OUTPUT: 3 mw.
RECEIVER
DC RESISTANCE: 55 ohms approx.
AVERAGE IMPEDANCE: 256 ohms at 600 to 16 cps.
GENERATOR
GEAR RATIO: 1 to 5 (crank to armature).
OUTPUT FREQUENCY: 16 cps at 1000 rpm of armature (200 rpm of crank).
OPEN CIRCUIT VOLTAGE: 100 v.
POWER REQUIREMENTS: 3 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stromberg-Carlson Telephone Mfg Co, Rochester, N.Y.
Approximate Cost: $250.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals Used.

REFERENCE DATA AND LITERATURE

TM11-330: Technical Manual for Switchboards BD-71, BD-72, BD-72-A and BD-72-B.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	

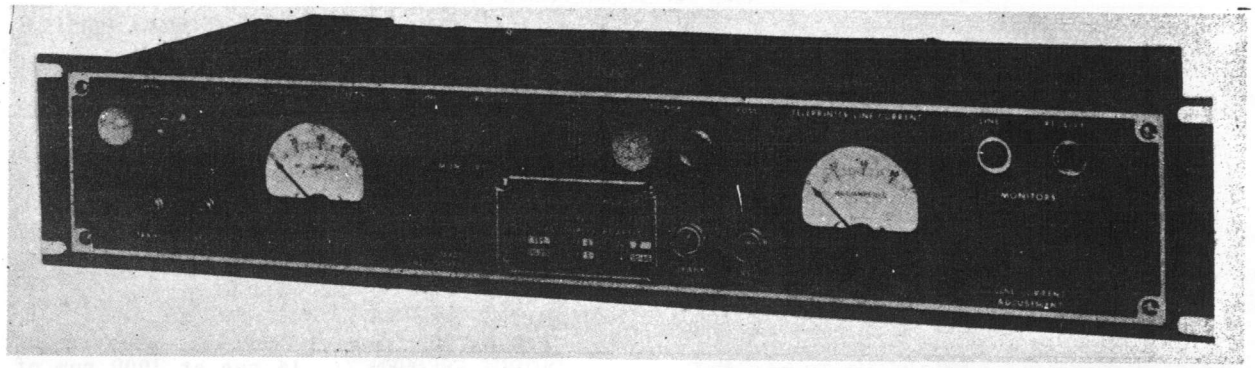
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Switchboard BD-71	10-1/4 X 15 X 18-1/2	58

October 1957

Radio-Communications Terminal Equipment

TELEGRAPH LINE CONTROL C-1671(XN-1)/UGC



Telegraph Line Control C-1671(XN-1)/UGC

FUNCTIONAL DESCRIPTION

The C-1671(XN-1)/UGC consists of two completely independent adapter units mounted on one panel. They are intended to be used with multichannel tone equipment such as the Northern Radio Company Type 153 Model 1 Dual Tone Keyers and the Type 152 Model 1 Dual Tone Converters.

The purpose of the Telegraph Line Control is to couple a "four-wire" receive-transmit tone telegraph system to a half duplex two wire DC teleprinter loop. This allows for an economical two-way communication system between any number of stations which are linked by tone lines (or UHF) and for a maximum of six teleprinters at each station which are linked by a standard two wire DC loop.

Where more than two half duplex channels are required the Telegraph Line Control are assembled in a rack mounted Half Duplex System, Northern Radio Company Type 184 Model 8, which provides up to eighteen Half Duplex Channels, and includes a terminal Connection Panel and an AC Power Control Panel.

No field changes in effect at time of preparation (4 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

REQUIRED SIGNAL CIRCUITS: Neutral 70 ma (converter) receive line, 2000 ohms, positive grounded or floating; 100 K, 10 v min, or 240 ohms, 60 ma Keyer; two wire DC loop, 60 ma, 1500 ohms max, positive ground or floating.

SIGNAL SPEED: 61 wpm teleprinter.

POWER SOURCE REQUIRED: 120 v DC, 75 ma, 100% Keyed, regulation 10% max, floating or positive ground; 110/220 v, 50/60 cps approximately 6 va.

CONTROLS: Teleprinter line current adjustment, transmit test switch.

MONITORING: Receive monitor jack, line monitor.

METERING: Front panel teleprinter line meter.

MOUNTING: Standard 19 inch rack.

MANUFACTURER'S OR CONTRACTOR'S DATA

Northern Radio Company, Inc., New York, N.Y.
Contract NObsr-64181.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 12AU7 (1) 5687

Total Tubes: (2)

Crystals: Not Available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92447: Technical Manual for Telegraph Line Control C-1671(XN-1)/UGC.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

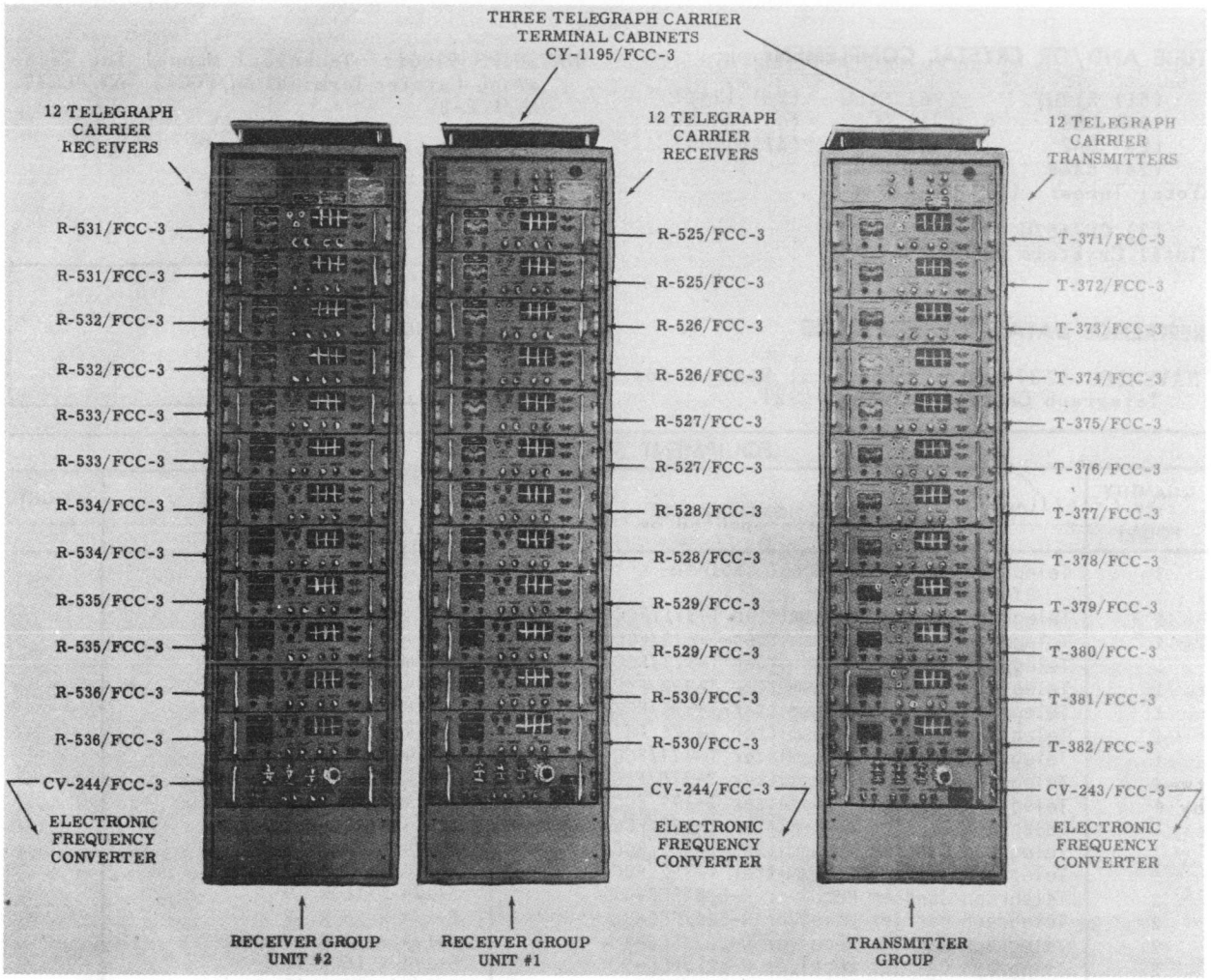
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph Line Control C-1671(XN-1)/UGC	3-1/2 X 8 X 19	15

December 1956

TELEGRAPH CARRIER TERMINAL

C-2T



Telegraph Carrier Terminal C-2T

FUNCTIONAL DESCRIPTION

The Model C-2T transmits Mark and Space frequency shift modulated telegraph communication signals on a single side band carrier and receives telegraph signals under "space diversity" operation. The equipment provides 12 single carrier transmitter channels and 12 pairs of receiving channels having the same mid-band frequencies for diversity reception. It is designed for fixed station installation to operate telegraph printers and other telegraph end equipment.

No field changes in effect at time of preparation (9 July 1956).

RELATION TO OTHER EQUIPMENT

This equipment is a modified version of the AN/FCC-3 which permits space diversity operation.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 300 to 3400 cps; 12 audio telegraph carrier channels.
SENSITIVITY: -40 dbm to +6 dbm on a single channel.
POWER OUTPUT: 6 dbm max output into 600 ohms.
POWER SOURCE: 115 to 230 v, 50 to 60 cps.
POWER CONSUMPTION
RECEIVER GROUP: 1645 W.
TRANSMITTER GROUP: 1125 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Frequency Laboratories, Inc. Boonton, New Jersey.
Part No-HC-6279
Contract NObsr 64168 dated 26 April 1956.
Approximate Cost: $3750.00 with equipment spares.

C-2T TELEGRAPH CARRIER TERMINAL

TUBE AND/OR CRYSTAL COMPLEMENT

(51) 5Y3GT	(96) 6Y6G	(29) 12AX7
(90) OB2	(24) 6C4	(60) 6AL5W
(24) OA2	(48) 6J6	(47) 12AU7
(24) 6X4W	(24) 6AU6	

Total Tubes: (517)

(3) CR-16/U
Total Crystals (3)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92370(A): Technical Manual for Telegraph Carrier Terminal-C-2T.

NAVSHIPS 91901: Technical Manual for Telegraph Carrier Terminal AN/FCC-3, AN/FCC-7, AN/FCC-8.

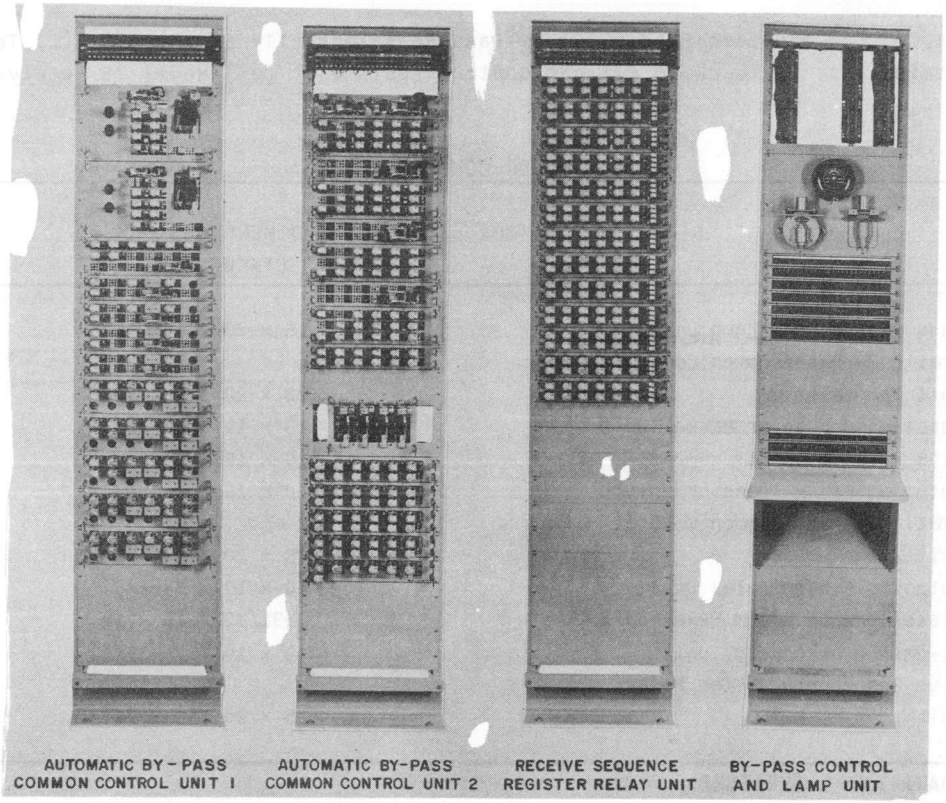
TYPE CLASSIFICATION BUSHIPS
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
3	Telegraph Carrier Terminal Cabinet-CY-1195/FCC-3	24 x 24 x 93	
1	Telegraph Carrier Transmitter T-371/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter-T-372/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-373/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-374/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-375/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-376/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-377/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-378/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-379/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-380/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter-T-381/FCC-3	5-1/4 x 16 x 19	
1	Telegraph Carrier Transmitter T-382/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-525/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-526/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-527/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-528/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-529/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-530/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-531/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-532/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-533/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-534/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-535/FCC-3	5-1/4 x 16 x 19	
2	Telegraph Carrier Receiver R-536/FCC-3	5-1/4 x 16 x 19	
1	Electronic Frequency Converter CV-243/FCC-3	5-1/4 x 16 x 19	
2	Electronic Frequency Converter CV-244/FCC-3	5-1/4 x 16 x 19	
	Accessories		
39	Cable Assy, Special Purpose Electrical-CX-2124/FCC-3	56	
39	Cable Assy, Power, Electrical CX-2125/U	52	
1	Wiring Harness (Transmitter Group Cabinet) CX-2448/FCC-3	67	
1	Wiring Harness (Receiver Group Cabinet Unit #1) 1H	67	
1	Wiring Harness Receiver Group Cabinet Unit #2) 2H	67	
1	Maintenance Parts Kit	12 x 15 x 24	
2	Complementary Instruction Book-NAVSHIPS-92370(A)	3/16 x 8-1/2 x 11	

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Automatic Electric Sales Corp.



By-Pass Unit 25 Line Capacity CAU-884195-1

FUNCTIONAL DESCRIPTION:

By-Pass Unit 25 Line Capacity CAU-884195-1 is designed to detect incoming critical messages and to route them automatically to outgoing lines, thereby bypassing the manual (torn-tape) portion of the office with which it is used.

No field changes in effect at time of preparation (12 June 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF RECEPTION AND/OR TRANSMISSION: Model 28TTY equipment.
FREQUENCY RANGE: 45 BAUD and 75 BAUD.
OUTPUT SIGNAL: Teletype Polar Signaling.
RANGES AS RATED: 45 BAUD and 75 BAUD.
POWER SOURCE REQUIRED: 48 v dc; P60 v dc; M60 v dc.

CAU-884195-1 BY-PASS UNIT 25 LINE CAPACITY

HEAT DISSIPATION: 150 W.
PERTINENT ELECTRICAL AND MECHANICAL CHARACTERISTICS: Telephone relays and rotary switches.
NUMBER OF OPERATORS REQUIRED: None.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Line Control and Lamp Panel; (4) By-Pass Repeaters (TTY Equipment); (2) Teletype-writer Distributors; (1) Lockout Flasher Control Equipment; (25) Model 28 Receive only Page Printers.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	By-Pass Control and Lamp Unit		15 x 20-3/8 x 96	267
1	Automatic By-Pass Common Control			
	Unit 1 includes:		15 x 20-3/8 x 96	297
	Parallel Character Marker Unit		10 x 19 x 20-15/16	
	Line Allotter Unit		10 x 19 x 19-3/32	
	Outgoing Trunk Transfer Unit		10 x 19 x 26-3/32	
1	AUtomatic By-Pass Common Control			
	Unit 2 includes:		15 x 20-3/8 x 96	332
	Outgoing Finder Relay Unit		10 x 19 x 34-7/8	
	Miscellaneous Alarm Relay Unit		6-31/32 x 10 x 19	
	By-Pass Line Control Unit		10 x 19 x 26-13/64	
1	Receive Sequence Register Relay Unit		15 x 20-3/8 x 96	317

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93875: Technical Manual for D.O.D. Interim Criticom 25 Line By-Pass System Model No. 884195-1.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	40.1	490

1.5 CAU-884195-1: 2

BY-PASS UNIT 25 LINE CAPACITY CAU-884195-1

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	40.1	520
1	40.1	555
1	40.1	540

PROCUREMENT DATA

PROCURING SERVICE:

DESIGN COG: Commercial

SPEC &/OR DWG:

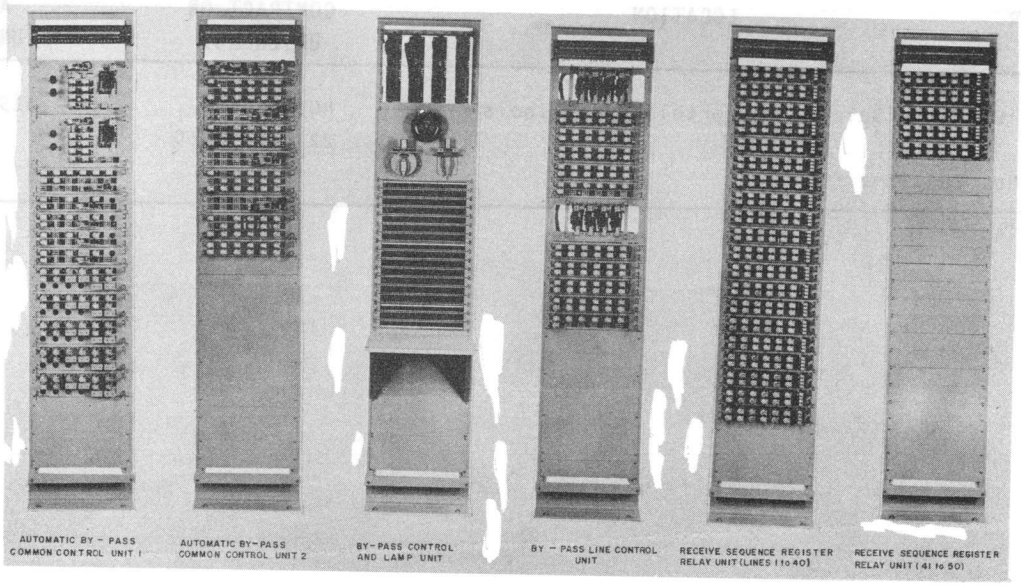
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Automatic Electric Sales Corp. Model No. 884195-1	Northlake, Illinois	NObsr-81537, 22 June 1960	$13,450.66

16 January 1962
Cog Service: FSN: BY-PASS UNIT 50 LINE CAPACITY CAU-884195-2
Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Automatic Electric Sales Corp.



By-Pass Unit 50 Line Capacity CAU-884195-2

FUNCTIONAL DESCRIPTION:

By-Pass Unit 50 Line Capacity CAU-884195-2 is designed to detect incoming critical messages and to route them automatically to outgoing lines, thereby bypassing the manual (torn-tape) portion of the office with which it is used.

No field changes in effect at time of preparation (12 June 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF RECEPTION AND/OR TRANSMISSION: Model 28TTY equipment.
FREQUENCY RANGE: 45 BAUD and 75 BAUD.
OUTPUT SIGNAL: Teletype Polar Signaling.
RANGES AS RATED: 45 BAUD and 75 BAUD.
POWER SOURCE REQUIRED: 48 v dc; P60 v dc; M60 v dc.

CAU-884195-2 BY-PASS UNIT 50 LINE CAPACITY

HEAT DISSIPATION: 150 W.
PERTINENT ELECTRICAL AND MECHANICAL CHARACTERISTICS: Telephone relays and rotary switches.
NUMBER OF OPERATORS REQUIRED: None.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Line Control and Lamp Panel, (4) By-Pass Repeaters (TTY Equipment), (2) Teletypewriter Distributors, (1) Lockout Flasher Control Equipment, (50) Model 28 Receive only Page Printers.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	By-Pass Control and Lamp Panel Unit		15 x 20-3/8 x 96	292
1	By-Pass Line Control Unit		15 x 20-3/8 x 96	325
1	Automatic By-Pass Common Control Unit 1 includes:		15 x 20-3/8 x 96	299
	Parallel Character Marker Unit		10 x 19 x 20-15/16	
	Line Allotter Unit		10 x 19 x 19-3/32	
	Outgoing Trunk Transfer Unit		10 x 19 x 26-3/32	
1	Automatic By-Pass Common Control Unit 2 includes:		15 x 20-3/8 x 96	239
	Outgoing Finder Relay Unit		10 x 19 x 34-7/8	
	Miscellaneous Alarm Relay Unit		6-31/32 x 10 x 19	
1	Receive Sequence Register Relay Unit (Lines 1 to 40)		15 x 20-3/8 x 96	407
1	Receive Sequence Register Relay Unit (Lines 41 to 50)		15 x 20-3/8 x 96	245

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93875: Technical Manual for D.O.D. Interim Criticom 50 Line By-Pass System Model No. 884195-2.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	40.1	515
1	40.1	548
1	40.1	522
1	40.1	455
1	40.1	630
1	40.1	468

PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG:

DESIGN COG: Commercial

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Automatic Electric Sales Corp. Model no. 884195-2	Northlake, Ill.	NObsr-81537, 22 June 1960	$18,000.00

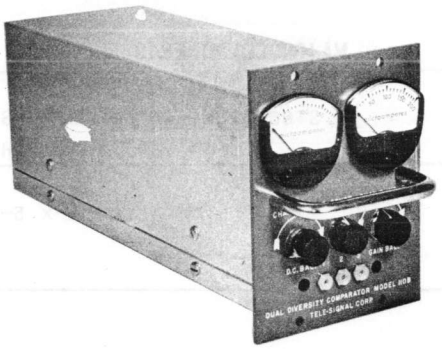
10 August 1962 — SIGNAL, COMPARATOR CM-185/UGC

Cog Service: USN | FSN: | Functional Class:

	USA	USN	USAF
TYPE CLASS:	Std	Std	

MANUFACTURER'S NAME/CODE NUMBER: Tele-Signal Corp., (10241).





Signal, Comparator CM-185/UGC

FUNCTIONAL DESCRIPTION:

The Signal, Comparator CM-185/UGC is used in a dual diversity system, Telegraph Terminal AN/FGC-60(V). It compares the signal outputs of two (2) frequency shift converters and then returns the signal which exhibits the better signal-to-noise ratio to one (1) of the frequency shift converters for final shaping to drive the output load.

The CM-185/UGC is intended for use on frequency shift circuits where the additional reliability of receiver diversity is required, such as long distance HF circuits and scatter communication links.

The CM-185/UGC may be used with any of the conventional diversity methods such as frequency, space or polarization diversity. The two (2) diversity channels may operate on the same or at different frequencies.

No field changes in effect at time of preparation (6 June 1962).

CM-185/UGC SIGNAL, COMPARATOR

TECHNICAL CHARACTERISTICS:

TYPE OF EQUIPMENT FUNCTION: Dual diversity system.
TYPE OF MODULATION: FSK (Frequency Shift Keying).
IMPEDANCE DATA
INPUT: 600 ohms.
OUTPUT: 10,000 ohms.
INPUT LEVEL: 0 dbm to M30 dbm.
KEYING SPEED: 0 to 100 dots per second.
FREQUENCY RANGE: 400 cps to 10 kc carrier.
OPERATING POWER RQMT: 8 v dc.

RELATION TO OTHER EQUIPMENT:

The CM-185/UGC is designed as part of the Terminal, Telegraph Set AN/FGC-60(V).
The CM-185/UGC is designed to be used with, but not part of Army, Ft. Monmouth, NJ-MON-4230B-60.
The CM-185/UGC is the same as Tele-Signal Corp's. Model 110B (commerical).

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Signal, Comparator CM-185/UGC		4 x 5-1/4 x 10-1/2	4

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93841: Technical Manual for Terminal, Telegraph Set AN/FGC-60(V) of which Signal, Comparator CM-185/UGC is a part of.
NAVSHIPS 93849: Technical Manual for Signal, Comparator CM-185/UGC.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (15) 1N67A

TRANSISTORS: (6) 2N217

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

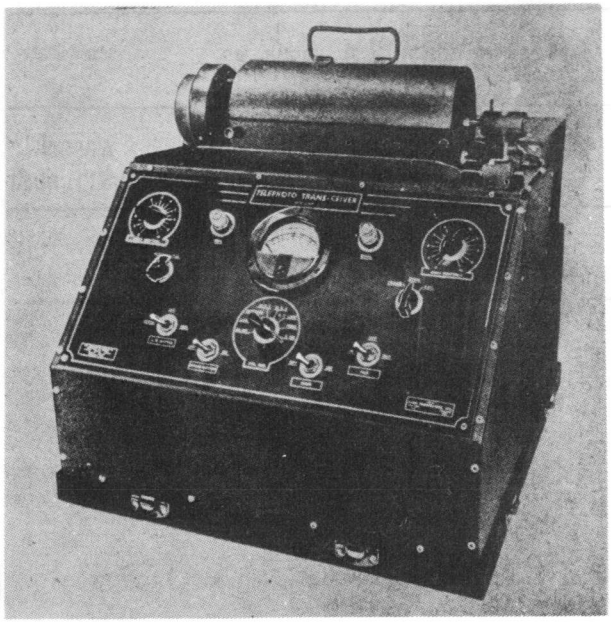
PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tele-Signal Corp. Model 110B	Hicksville, N. Y.	NObsr-81467	

TRANSCEIVER CNP



Transceiver CNP

No field changes in effect at time of preparation (6 February 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Acme Model MFM Converter and Inverter.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

COPY SIZE: 7 by 9 in max.
DRUM SPEED: 100 rpm.
SCANNING DATA
LINES: 100 per in.
LATERAL RATE: 1 in. per minute.
CARRIER FREQUENCY: 1920 cps.
TRANSMISSION SPEED: 7 minutes for 7 by 9 in. copy.
POWER REQUIREMENTS: 100 to 125 v, 60 cps, single ph, 2.3 amps nom, 265 W.

FUNCTIONAL DESCRIPTION

The Acme Model CNP is a facsimile equipment which is designed to transmit or receive photographs, printed material, drawings, etc., by means of electrical communication. It is a revolving drum type set designed to receive from or transmit to other machines of the same type, or equipment which employs an index of cooperation of 290.6, a drum speed of 100 revolutions per minute, and an amplitude modulated carrier frequency of 1500 to 2500 cycles per second. It is designed to communicate by means of AM facsimile signals, so special accessory equipment is required to translate this AM signal to narrow band FM for the transmission by radio and to translate the received radio FM signal back to AM. FM transmissions can also be made by using the DC component of the modulation envelope of the facsimile signal to swing to RF carrier with suitable means for detecting this swing at the receiver.

MANUFACTURER'S OR CONTRACTOR'S DATA

Acme Newspictures, Inc. Cleveland, Ohio.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5V4G	(2) VR/150-30	(2) 6F6
(1) 6SN7GT	(5) 6N7	(1) 6H6
(1) 5Z4	(3) 6SL7GT	(2) CE36C

Total Tubes: (18)

REFERENCE DATA AND LITERATURE

TM11-2645: Technical Manual for Acme Transceiver Model CNP.

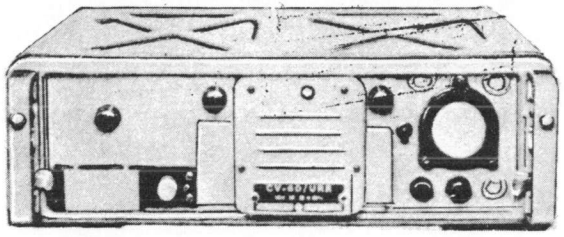
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	COMMERCIAL
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Transceiver Acme Model CNP	17-1/4 x 17-1/2 x 18	

Radio-Communication Terminal Equipment

FREQUENCY SHIFT CONVERTER CV-60/URR



Frequency Shift Converter CV-60/URR

FUNCTIONAL DESCRIPTION

The CV-60/URR is designed to operate on frequency shift keyed radio telegraph signals as derived from the audio-frequency outputs of communications receiving equipments, to provide keying facilities for the operation of teletype printers, or other similar automatic recording devices. Its purpose is to provide an "off the air" monitor of FSK transmission when used in conjunction with the RCH receiver and a TTY monitor machine.

No field changes in effect at time of preparation (11 May 1960).

RELATION TO OTHER EQUIPMENT

The CV-60/URR is designed as part of the AN/URA-8 and AN/FRQ-3.

The CV-60/URR is designed to be used with Navy Models RBA, RBB, RBC or similar receivers.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING POWER RQMT: 105, 115 v or 125 v ac, 50 to 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, Camden, N.J.
Contract NObsr-39421.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA	(1) 1Z2	(5) 12AU7
(2) 12AX7	(1) 2BP1	(2) 5726-6AL5W
(1) 6AU6WA	(1) 6C4WA	(1) 6X4WA
(2) 6005-6AQ5W		

Total Tubes: (17)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92228: Technical Manual for Transmitter Control-Monitor Model AN/FRQ-3.
Nomenclature Card for Frequency Shift Converter CV-60/URR.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE CS-723(NAVY)
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Converter CV-60/URR		

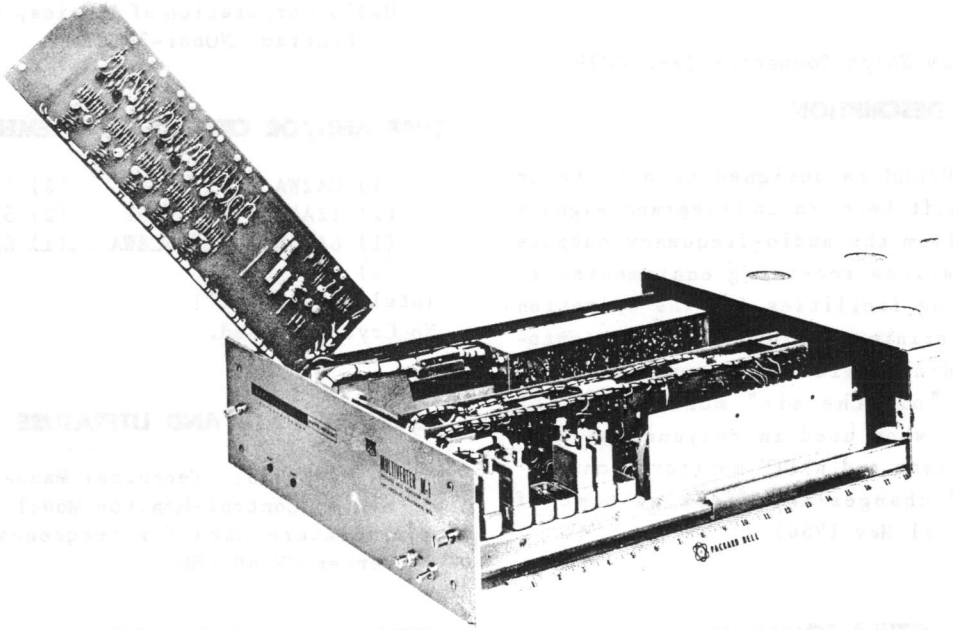
30 August 1962 CONVERTER, ANALOG TO DIGITAL, DIGITAL TO ANALOG CV-710/U

Cog Service: FSN: Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Packard-Bell Electronics Co.



Converter, Analog To Digital, Digital To Analog CV-710/U

FUNCTIONAL DESCRIPTION:

The Converter, Analog To Digital, Digital To Analog CV-710/U receives an analog voltage input and generates a proportional digital number as output. The output digital number can be in binary, binary coded decimal, or other number representation. In an alternate mode of operation, the device receives a digital number as input and generates a proportional analog voltage as output. This device is used with, but not part of data processing and handling systems.

No field changes in effect at time of preparation (8 May 1961).

TECHNICAL CHARACTERISTICS:

INPUT DATA: Porm 25 v full scale.
OUTPUT DATA: Porm 10 v, analog or digital (digital may be serial or parallel).
IMPEDANCE

CV-710/U CONVERTER, ANALOG TO DIGITAL, DIGITAL TO ANALOG

ANALOG: 2440 ohms.
DIGITAL: 20000 ohms.
RELATIVE ACCURACY: 0.005%.
RESOLUTION: 2^{14} or 1 part in 16384 consistency.
INCREMENTAL CONVERSION SPEED:
ANALOG TO DIGITAL: 5 microseconds bit of 14 whole bit at 25 kc minimum.
DIGITAL TO ANALOG: 5 microseconds, reference.
OPERATING POWER RQMT: 117 v ac, 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The CV-710/U is designed to be used with, but not part of Data Processing & Handling Systems.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Converter, Analog To Digital, Digital To Analog CV-710/U		5-7/32 x 19 x 22	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93293: Technical Manual for Converter, Analog To Digital, Digital To Analog CV-710/U.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 1N90 (1) HR10211 (1) 1N540 (1) DR404 (1) DR459 (1) 1N91 (1) 606C
(1) 650C3 (1) 652C0 (1) 653C9 (1) 650C0 (1) 6977

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

TRANSISTORS: (1) 2N156 (1) 2N158 (1) 2N169A (1) 2N188A (1) 2N274 (1) 2N277
(1) 2N393 (1) 2N404 (1) 2N417 (1) 2N426 (1) 2N439 (1) 2N440
(1) 4JD1A73 (1) 1A700

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

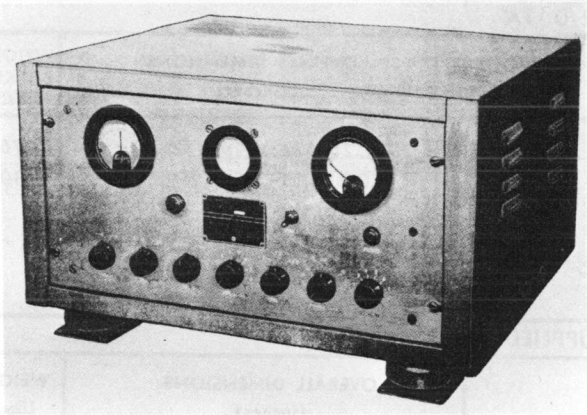
PROCURING SERVICE: DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Packard-Bell Electronics Co. Model M-2(Mod)	Los, Angeles, Calif.	NObsr-72763, 5 March 1958	$33,000.00

Radio-Communication Terminal Equipment

April 1958

FREQUENCY SHIFT CONVERTER CV-97/UX



Frequency Shift Converter CV-97/UX

FUNCTIONAL DESCRIPTION

The CV-97/UX is designed for use in conjunction with Navy model RBB/5, RBC/5, RBB/6, RBC/6 Radio Receiving Equipments and Navy Model RD-92/UX or similar Facsimile Recorders for the reception of facsimile photographs of line drawings transmitted by the frequency shift system. The 400 kc intermediate frequency supplied by the receiving equipment is converted to a 1000, 2000, or 3000 cycle sub-carrier voltage which is amplitude modulated in proportion to the frequency deviation of transmitted signal and is suitable for direct connection to the facsimile recorder. Controls are provided for calibrating the unit and for adjusting the output level and percent modulation. A jack is provided for head phone monitoring of the incoming signal.

No field changes in effect at time of preparation (6 February 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Facsimile Recorder RD-92A/UX, (1) Radio Receiving Equipment RBC5 or 6; RBC- thru 4 w/ type-10334 kit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT CENTER FREQ: 400 ±2 kc.
DEVIATION: 900 cycles.
INPUT SIGNAL FOR FULL LIMITING: 2800 uv.
REJECTION RADIO (SIG OF SAME FREQ): 2 db.
INPUT IMPEDANCE: 51 ohms.
FREQ SHIFT VERSUS BLACK LEVEL: Positive or neg.
OUTPUT IMPEDANCE: 600 ohms.
KEYING FREQ LOW-PASS FILTERS: 250, 450, or 700 cycles.
OUTPUT SUB-CARRIER FREQ: 1, 2 or 3 kc.
OUTPUT MODULATION DEPTH: 6 to 25 db.
OUTPUT VOLTAGE LEVEL: 0 to 2 v, 0 to 7 v w/addition of a jumper.
POWER SOURCE REQUIRED: 115 or 230 v, 60 cps, single ph, 150 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

MacLeod and Hanopol Inc, Charlestown, Mass.
Contract NObsr-49149 dated 30 May 1950.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AU6WA	(1) 1B3GT
(1) 884	(1) 2BP1
(3) 12AT7WA	(1) 6080WA
(4) 6SN7WGTA	(1) 5726
(1) OC3W	(1) 6SL7WGT
(1) 5R4WGB	(1) 5693
(1) 6V6GTY	

Total Tubes: (20)

(1) 1N73

Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92503, Technical Manual for Frequency Shift Converter Navy Model CV-97/UX.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE CS-1200
STOCK NO.

Radio-Communication Terminal Equipment

CV-97/UX FREQUENCY SHIFT CONVERTER

April 1958

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Converter CV-97/UX	8.8	20 x 26-1/2 x 29-1/2	176
1	Set of Equipment Spares	0.62	7 x 10 x 15-1/2	30

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Converter CV-97/UX	14-3/4 x 21 x 23-1/2	110
2	Technical Manual NAVSHIPS 92503		
1	Power Cable		
1	Input Cable		
1	Set of Equipment Spares		

28 August 1962
Cog Service: USN FSN:

CONVERTER, FREQUENCY SHIFT CV-972(P)/UGC
Functional Class:

	USA	USN	USAF
TYPE CLASS:	Std	Std	

MANUFACTURER'S NAME/CODE NUMBER: Tele-Signal Corp., (10241).



Converter, Frequency Shift CV-972(P)/UGC

FUNCTIONAL DESCRIPTION:

The Converter, Frequency Shift CV-972(P)/UGC is designed for use on communication circuits such as tone telegraph systems, telemetering circuits, single side band radio links etc. In these applications, it provides the receiving terminal which demodulates with great precision frequency shifted signals in the audio.

The CV-972(P)/UGC can be paralleled with other such converters on the same audio, circuit, resulting in a multi-channel frequency shift tone system.

The Converter is a completely transistorized unit, including a self contained power supply and monitoring facilities. It has provisions for operation in conjunction with a dual diversity comparator.

No field changes in effect at time of preparation (11 June 1962).

CV-972(P)/UGC CONVERTER, FREQUENCY SHIFT

TECHNICAL CHARACTERISTICS:

INPUT LEVEL: M45 dbm to P5 dbm.
IMPEDANCE DATA
INPUT: 600 ohms balanced.
OUTPUT: Less than 200 ohms.
HEAT DISSIPATION: 1 W.
NUMBER OF CHANNELS: 16.
FREQUENCY RANGE: 425 to 2,975 cps.
OPERATING POWER RQMT: 115 v ac, 50 to 60 cps, single ph; (can be strapped for 230 v ac).

RELATION TO OTHER EQUIPMENT:

The CV-972(P)/UGC is designed as part of the AN/UGC-60(V).
The CV-972(P)/UGC is the same as Tele-Signal Corporation's Commercial Model 102A.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Converter, Frequency Shift CV-972(P)/UGC		4 x 5-1/4 x 11	11

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93847: Technical Manual for Converter, Frequency Shift CV-972(P)/UGC.
NAVSHIPS 93841: Technical Manual for Telegraph, Terminal Set AN/FGC-60(V) of which Converter, Frequency Shift CV-972(P)/UGC is a part of.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (4) 1N1625A (2) 1N67A (1) 1N91

TRANSISTORS: (1) 2N156 (4) 2N217 (3) 2N414

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

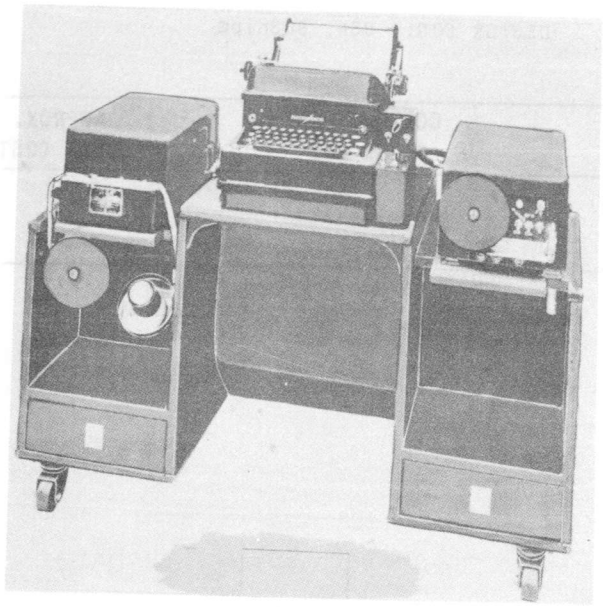
PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tele-Signal Corp. Model 102A	Hicksville, N. Y.	NObsr-81467	

TAPE OPERATED EQUIPMENT CXCO



Model CXCO Tape Operated Equipment

FUNCTIONAL DESCRIPTION

The Navy Model CXCO consists of a Regeneration Typewriter, a Tape Reader, and a Tape Punch. It can be used, without auxiliary equipment, to translate the coded characters in a tape into a typewritten copy, while reproducing a duplicate tape on the punch at the same time. It can be used to regenerate tape, adding or omitting certain characters on the regenerated tapes. The Regeneration Typewriter operated manually can make a new tape on the punch. It is possible to adapt these machines to many other applications.

No field changes in effect at time of preparation (15 August 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

REGENERATION TYPEWRITER
- KEYBOARD: 42 characters and 6 functional keys.
- POWER REQUIREMENTS: 115 v. 60 cps, single ph.

TAPE READER
- TAPE WIDTH: 11/16 or 7/8 in.
- POWER REQUIREMENTS: 115 v, 60 cps, single ph, 1.2 amps.

TAPE PUNCH
- TAPE DATA
  - WIDTH
    - WIDE: 0.875 in.
    - NARROW: 0.687 in.
  - SIZE HOLES
    - CODE: 0.070 in. dia.
    - FEED: 0.046 in. dia.
  - SPACE BETWEEN HOLES: 0.1 in.
  - EDGE OF TAPE TO HOLES: 0.087 in.
- POWER REQUIREMENTS: 115 v, 60 cps, single ph, 1.2 amps.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electromatic Typewriters, Inc., Rochester, New York.
- Contract NXs-7893, dated 23 September 1942.
- Contract NXsr-76156, dated 20 September 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

Technical Manual for Model CXCO Tape Operated Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

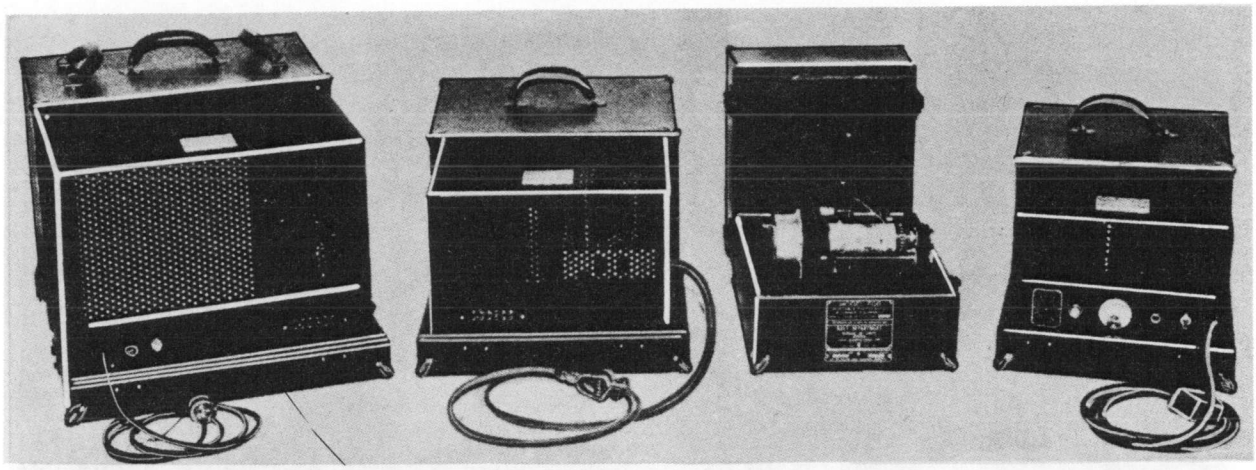
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tape Reader NT-10ABX	7 X 9-3/4 X 16	43
1	Tape Punch NT-10ACA	7-1/2 X 9-3/4 X 16-1/4	45
1	Regeneration Typewriter NT-10ABY		

April 1959

Radio-Communication Terminal Equipment

PHOTO RADIO SCANNER FQB



Portable Photo Radio Scanner Navy Model FQB

FUNCTIONAL DESCRIPTION

The Navy Model FQB Portable Photo Radio Scanner is designed to transmit photographs, printed material, drawings, etc., by electrical means of communication to other machines, or to equipment which employs an index of co-operation of 290.6 (plus or minus two per cent), and a drum speed of 100 revolutions per minute. It consists of four separate units, with each contained in its individual carrying case.

No field changes in effect at time of preparation (11 September 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TRANSMITTED SUBJECT SIZE: 4 x 5 in. max.
TRANSMITTED SUBJECT MATERIAL: Paper or material equally pliable.
CYLINDER SPEED: 100 rpm.
CYLINDER SPEED CONTROL: Synchronous motor controlled by 60 cps tuning fork amplifier.
SCANNING RATE: 180 lines per in.
PRIMARY POWER REQUIREMENTS: 100 to 125 v 60 cps, or a 6 v DC source.

MANUFACTURER'S OR CONTRACTOR'S DATA

Acme Newspictures, 1200 West 3rd St.
Cleveland, Ohio.
Contract NXsa-85015.

TUBE AND OR CRYSTAL COMPLEMENT

(1) 5Z4	(2) 0Z4	(2) VR-150-30
(1) 6SF5	(4) 6N7	(1) 6SL7

Total Tubes: (11)
No Crystals Utilized.

REFERENCE DATA AND LITERATURE

Technical Manual for Navy Model FQB, Portable Photo Radio Scanner.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Transmitter		35
1	Tuning Fork Amplifier		25
1	AC Power Supply		100
1	6 v Battery Power Supply		50

FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT

FRA



Frequency Shift Receiver Converter Equipment Navy Model FRA

FUNCTIONAL DESCRIPTION

The Navy Model FRA is designed to permit the reception of frequency shift telegraph signals on receivers such as the Navy Model RBB or RBC or other similar types. It is capable of converting the signals received by the receivers into polar or neutral direct current signals suitable for the direct operation of teleprinters or other suitable recording devices, or indirectly by a keyed tone over a voice frequency telegraph system.

No field changes in effect at time of preparation (4 April 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

IF: 400 kc.
FREQUENCY SHIFT RANGE: 100 to 1000 cps.

SIGNAL DATA
TYPES: DC polar or DC neutral.
CURRENT OUTPUT
POLAR: 25 ma.
NEUTRAL: 60 ma.
LOAD IMPEDANCE (DC): 130 to 1800 ohms.
TONE OUTPUT: 24 mw at 1000 cps.
OUTPUT IMPEDANCE (TONE): 600 ohms.
SQUELCH CIRCUIT CHARACTERISTICS: Output shall revert to mark output when no carrier is applied for 200 milliseconds.
POWER REQUIREMENTS: 110, 115, or 120 v, 60 cps, single ph, 135 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, RCA Victor Div, Camden, N.J.
Contract N5sr-7266, dated 12 June 1945.

Radio-Communication Terminal Equipment

FRA FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA3
(4) OD3W
(3) 5Y3WGTB
(1) 6AB7
(1) 6J5
(2) 6L6WGB
(1) 6H6
(1) 6SA7Y
(1) 6SG7Y
(6) 6SJ7

Total Tubes: (21)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 900613: Technical Manual for Frequency Shift Receiver Converter Equipment Navy Model FRA.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE 16C30
STOCK NO.

SHIPPING DATA

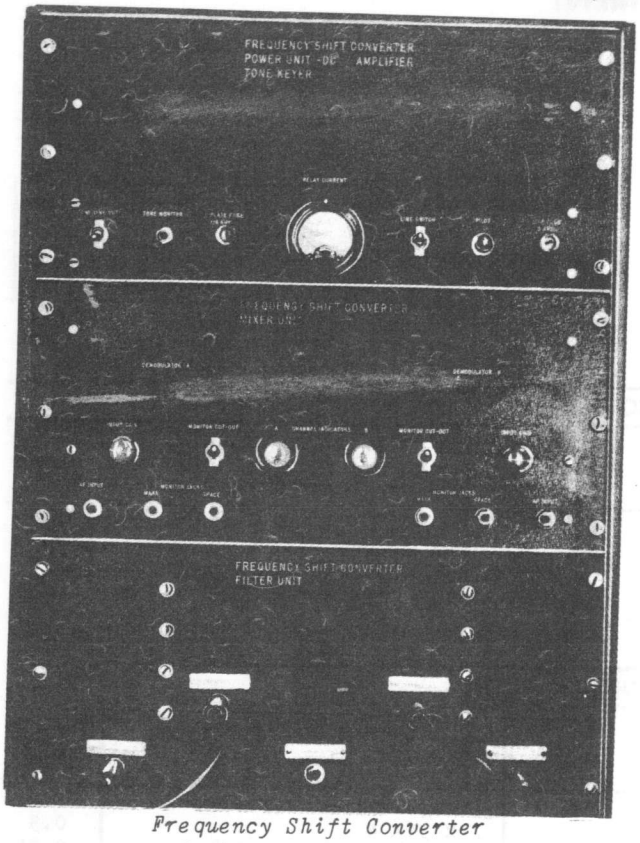
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Receiver Converter Navy Model FRA	7	18-1/2 x 24-3/4 x 26-1/2	155
1	Set of Equipment Spares	10	22-1/2 x 25 x 31	180

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Converter NT-35122	11-3/4 x 18-1/4 x 19-3/4	98.0
1	Coupling Kit NT-10563	2 x 3 x 4	0.3
1	Power Plug NT-49125	1-3/4 x 1-3/4 x 3-1/4	0.35
1	Outlet Plug AN3106-14S-5P	1 x 1 x 2-1/4	0.15
1	Set of Equipment Spares		

FREQUENCY SHIFT CONVERTER EQUIPMENTS

FRC, FRC-1



Frequency Shift Converter Equipment FRC, FRC-1

FUNCTIONAL DESCRIPTION

The FRC and FRC-1 are used to demodulate frequency-shift-Keyed radio teletype signals. It functions at audio frequencies and is used with any two stable communication receivers equipped with a beat-frequency-oscillator. "Polar Keyeing" is used. The unit provides dual channel diversity reception, and is used at shore stations.

The FRC and FRC-1 are identical except that the FRC-1 uses Navy components.

No field changes in effect at time of preparation (13 September 1956).

RELATION TO OTHER EQUIPMENT

The FRC replaces nomenclature for the identical FSC.

Equipment Required but not Supplied: (2) Spaced diversity antennas, (2) communication receivers.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY
MARK: 2975 cps.
SPACE: 2125 cps.
KEYING SPEED: 70 dot cps on relay output. Several hundred wpm on tone output.
INPUT IMPEDANCE: 50 ohms.
INPUT LEVEL: 6 milliwatts min.
LIMITED RANGE: 0.5 to 30 v RMS input.
LIMITED OUTPUT: 4 v RMS.
LIMITED OUTPUT IMPEDANCE: 500 ohms.
ATTENUATOR LOSS: 12 db.
MARK AND SPACE FILTER INPUT AND OUTPUT IMPEDANCES: 500 ohms.
SPACE FILTER BANDPASS: 1600 to 2600 cps.
MARK FILTER BANDPASS: 2400 to 3600 cps.
REJECTION RATIO (SPACE CHANNEL): 26 db down.
OUTPUT MIXER UNIT: 10 v polar DC (4 v min). 15 ma.
OUTPUT TONE KEYER: 1000 cps AF tone.
POWER SOURCE: 115 v, 50 to 60 cps, single ph.
MOUNTING: Table or standard relay rack.

MANUFACTURER'S OR CONTRACTOR'S DATA

Washington Navy Yard, Washington, D.C.
Halstead Traffic Communications Corp., New York, N.Y.
Contract NXsr 96359.
Approximate Cost: $2500.00 with equipment spares. (FRC).

TUBE AND/OR CRYSTAL COMPLEMENT

(2) VR150
(1) 5Z3
(1) 6AF6G
(2) 6H6
(1) 6N7
(2) 6SJ7GT
(2) 6SL7GT
(3) 6SN7GT

Total Tubes: (14)

REFERENCE DATA AND LITERATURE

NAVSHIPS 900,078: Technical Manual for Frequency Shift Converter Model FRC.
NAVSHIPS 900,718: Technical Manual for Frequency Shift Converter Equipment Model FRC-1.

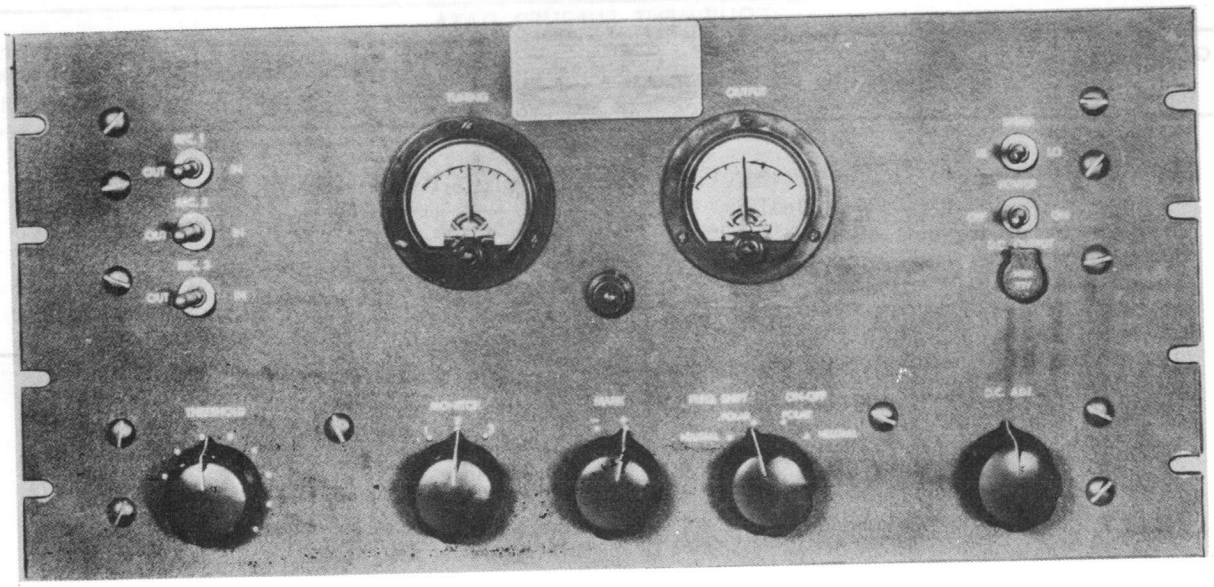
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

FREQUENCY SHIFT CONVERTER EQUIPMENTS

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	FRC		
1	Frequency Shift Converter Model FRC consisting of	15 x 21 x 28	150
1	Cabinet RW-10420 including	15 x 21 x 28	150
1	Mixer Unit RW-50212		
1	Power and Keyer Unit BVV-20345		
1	Filter Panel RVV-53215		
	FRC-1		
1	Frequency Shift Converter Model FRC-1 consisting of:	15 x 21-1/2 x 28	150
1	Cabinet NT-10420 including:	15 x 21-1/2 x 28	150
1	Mixer Unit NT-50212-A		
1	Power and Keyer Unit NT-20345-A		
1	Filter Panel NT-53215-A		

FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT



Frequency Shift Receiver Converting Equipment Model FRE

FUNCTIONAL DESCRIPTION

The Navy Model FRE is designed to adopt the Navy Model RDM Diversity Radio Receiver for the reception of frequency shift keying signals having any shift from mark to space frequency of 200 to 850 cycles. It is designed to be directly connected into an existing RDM system, and functions to combine any one, two, or three receivers of the Navy Model RDM Diversity Receiver.

It is designed to convert frequency shift signals received on the RDM Receiver to polar or neutral direct current outputs suitable for operating teleprinters, black and white facsimile, and others. Provision is also made to obtain tone output from Tone Keyer Navy Type 35049, which is part of the RDM equipment, and switching is provided for the simultaneous reception of amplitude modulated signals when frequency shift signals are being received from the converter.

It is designed for mounting in a standard 19-inch rack.

No field changes in effect at time of preparation (4 April 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 535 to 32000 kc when used with RDM Receiver.

IF: 455 kc.

FREQUENCY SHIFT RANGE: 200 to 850 cps.

SIGNAL DATA

TYPE: DC polar or DC neutral.

CURRENT OUTPUT

POLAR: 25 ma.

NEUTRAL: 60 ma.

LOAD IMPEDANCE (DC): 130 to 1800 ohms.

UNDISTORTED TONE OUTPUT: 12 mw.

OUTPUT IMPEDANCE: 600 ohms from Tone Keyers.

POWER REQUIREMENTS: 100 to 165 v or 190 to 260 v, 50 to 60 cps, single ph, 175 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corporation of America, RCA Victor Div, Camden, N. J.

Contract N5sr-5968, dated 31 May 1945.

Contract NXsr-93147.

Approximate Cost: $975.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5Y3WGTB	(5) 6H6	(2) 6L6
(6) 6SH7	(3) 6SJ7	

Total Tubes: (19)

No Crystals Used.

FRE FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT

REFERENCE DATA AND LITERATURE

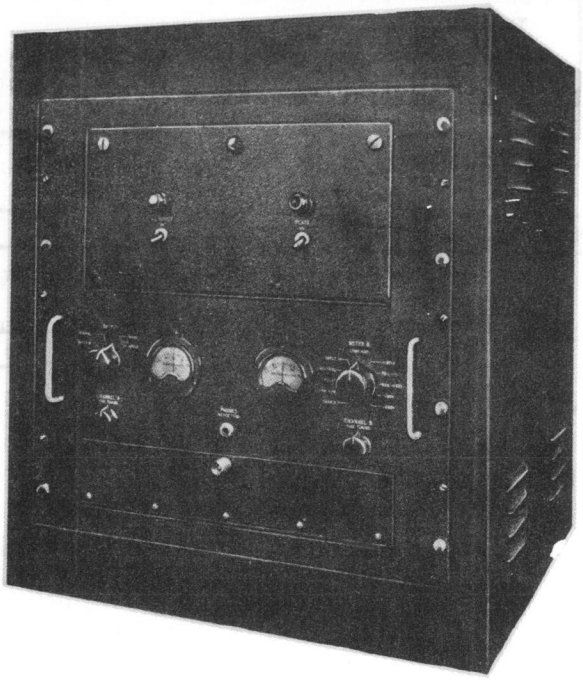
NAVSHIPS 95100: Technical Manual for Frequency Shift Receiver Converting Equipment Navy Model FRE.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE CS-5
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Receiver Converter Equipment Navy Model FRE	8-1/4 X 16 X 19	55

FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT FRF



Model FRF Converter in Cabinet

FUNCTIONAL DESCRIPTION

The Navy Model FRF is designed to be used principally in a long distance frequency-shift radio telegraph system operating in the high-frequency range with dual diversity reception. The IF outputs of two receivers are converted to lower frequencies, which are demodulated and then combined to produce DC telegraph signals corresponding to the original mark and space signals transmitted from the keyer at a distant radio station. The DC output telegraph signals operate teletypewriter directly on polar or neutral DC signals, or indirectly by a keyed tone over a voice frequency telegraph system.

It is designed for mounting in a standard 19-inch rack or in a separate cabinet suitable for mounting on a table.

Data on this sheet reflects the following field changes: FC-1 (3 April 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Diversity Radio Receiving Equipment RDM Series and Receiving Equipments RBB Series or RBC Series, Interconnecting Cables as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT FREQUENCY: 400 to 470 kc.
INPUT DATA
- TYPE SIGNALS: Superimposed telegraph.
- FREQUENCY MODULATION: 100 to 1000 cps.
- IMPEDANCE: Approx 300 ohms.
- VOLTAGE: 500 uv min.

CONVERTED FREQUENCIES
- CHANNEL A
  - NARROW: 50 kc ±375 cps.
  - WIDE: 50 kc ±750 cps.
- CHANNEL B
  - NARROW: 29.3 kc ±375 cps.
  - WIDE: 29.3 kc ±750 cps.

DC SIGNAL OUTPUT
- TYPE: Polar and neutral.
- LOAD CURRENT
  - POLAR: 25 ma.
  - NEUTRAL: 60 ma.
- SPEED: 200 dots per sec or 500 wpm max.

TONE OSCILLATOR
- FREQUENCIES
  - INTERNAL: 595, 765, 935, 1105, 1275, 1445, 1615, or 1785 cps.
  - EXTERNAL: As required.
- OUTPUT: Approx 12 mw (+11 dbm) max.
- EXTERNAL INPUT: Approx -6 dbm min.

POWER REQUIREMENTS: 105 to 125 v, 50 or 60 cps, single ph, 175 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Company, Inc, New York, N.Y.
- Contract NXsr-86305, dated 8 December 1944.
- Contract N5sr-5971, dated 6 June 1945.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3W	(8) 6SJ7
(1) 5R4WGB	(4) 6SL7WGT
(2) 5Y3WGTB	(1) 6SQ7
(4) 6H6	(3) 6V6GTY
(2) 6SA7Y	(1) 6Y6G

Total Tubes: (27)

No Crystals used.

Radio-Communication Terminal Equipment

FRF FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT

REFERENCE DATA AND LITERATURE

NAVSHIPS 900208: Technical Manual for Model FRF Frequency Shift Receiver Converter Equipment.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE 16A6(RE)
STOCK NO.

SHIPPING DATA

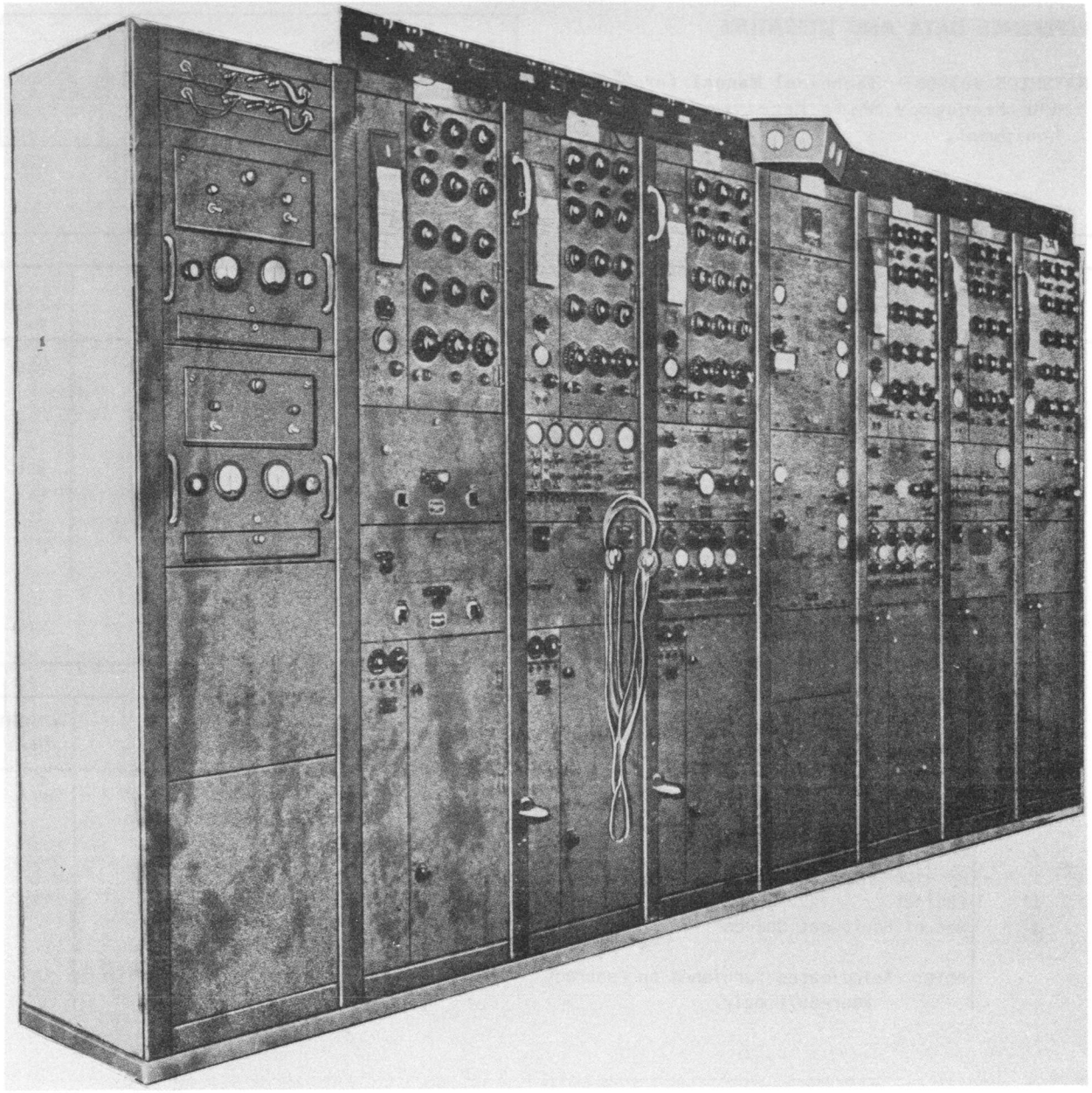
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Receiver Converter Equipment Navy Model FRF less Cabinet	9.8	25 x 26 x 26	240
	or			
	Frequency Shift Receiver Converter Equipment Navy Model FRF including Cabinet	12.5	25 x 27 x 32	450
1	Set of Equipment Spares			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Receiver Converter Equipment Navy Model FRF	17-3/4 x 19 x 20	180
2	Cable Assembly	120 lg	
1	Receiver Modification Kit		
1*	Cabinet	20 x 21-1/2 x 24-1/2	65
1	Set of Equipment Spares		

NOTE: *-Indicates furnished on Contract N5sr-5971 only.

FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT FRH



Radio Receivers Model FRH Converter with Navy Model RBP

FUNCTIONAL DESCRIPTION

The Navy Model FRH is designed to be used principally in a long distance frequency-shift radio telegraph system operating in the high-frequency range with dual space diversity reception. The 50 kilocycle output of the final intermediate frequency of one of the radio receivers is amplified, while the 50 kilocycle output of the other receiver is converted to a lower frequency. The two signals are demodulated and then combined to produce DC telegraph signals corresponding to the original mark and space signals transmitted from the keyer at the distant radio station. The DC output telegraph signals are used to operate a teletypewriter directly on polar or neutral DC signals, or indirectly by a keyed tone over a voice frequency telegraph system.

FRH FREQUENCY SHIFT RECEIVER CONVERTER EQUIPMENT

No field changes in effect at time of preparation (2 April 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Receivers Navy Model RBP or RCP.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT FREQUENCY: 50 kc.
INPUT DATA
TYPE SIGNALS: Super-imposed telegraph.
SIGNAL MODULATION: 100 to 1000 cps.
IMPEDANCE: 1000 ohms.
VOLTAGE: 5000 uv min.
BASIC UNIT INPUT STAGES
CHANNEL A
NARROW: 50 kc ±375 cps.
WIDE: 50 kc ±750 cps.
CHANNEL B
NARROW: 29.3 kc ±375 cps.
WIDE: 29.3 kc ±750 cps.
DC SIGNAL OUTPUT
TYPES: Polar and neutral.
LOAD CURRENT
POLAR: 25 ma.
NEUTRAL: 60 ma.
SPEED: 200 dots per sec or 500 wpm max.
TONE OSCILLATOR UNIT
FREQUENCIES
INTERNAL: 595, 765, 935, 1105, 1275, 1445, 1615, or 1785 cps.
EXTERNAL: As required.
TONE OUTPUT: Approx 12 mw (+11 dbm) max.
EXTERNAL TONE: Approx −6 dbm min.
POWER REQUIREMENTS: 105 to 125 v, 50 or 60 cps, single ph, 175 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Company, Inc, New York, N. Y.
Contract N5sr-5971, dated 6 June 1945.
Contract NObsr-39199, dated 20 May 1947.
Approximate Cost: $6285.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3W	(1) 5R4WGB	(2) 5Y3WGTB
(4) 6H6	(2) 6SA7Y	(8) 6SJ7WGT
(4) 6SL7WGT	(1) 6SQ7	(3) 6V6GTY
(1) 6V6Y		

Total Tubes: (27)
No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 900358: Technical Manual for Model FRH Frequency Shift Receiver Converter Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	16A6(RE)
STOCK NO.	

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Frequency Shift Receiver Converter Equipment Navy Model FRH including: Set of Accessories	9.8	25 X 26 X 26	240
1	Cabinet			
1	Set of Equipment Spares			

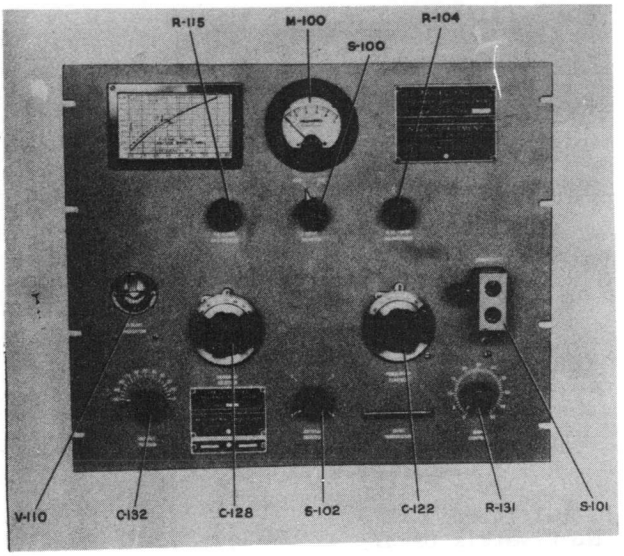
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Receiver Converter Equipment Navy Model FRH	19 X 20 X 20	180
1	Cabinet	22 X 22 X 83	
2	Cable Assembly	120 lg	
4	Connector and Cable Clamp		
1	Receiver Modification Kit		
1	Set of Equipment Spares		

December 1956

FREQUENCY SHIFT EQUIPMENT

FSD



Radio Communication Term.

INPUT LEVEL: 0 to - 20 db.
POWER OUTPUT: 1-1/2 W (variable).
POWER SOURCE REQUIRED: 100 to 260 v AC, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Press Wireless, Inc., Chicago, Illinois
Contract: NXsr-83400 dated 27 November 1944

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6SL7GT	(1(6J5GT	(1) VR105-30
(2) 6SN7GT	(1) 6N7	(1) 6SJ7GT
(1) 6V6GT	(2) 6L7	(2) 6B4G
(1) 6X5GT	(1) 6U5	(1) 83V
		(1) 807

Total Tubes: (16)

FUNCTIONAL DESCRIPTION

The FSD provides a means by which certain types of audio voltages may be employed to convey intelligence on a radio-frequency carrier from any continuous wave radio transmitter. The frequency shift method of impressing intelligence on an radio-frequency carrier, minimizes the difficulties of selective fading, interference, and static disturbances. This method therefore assures high fidelity of transmitted copy.

No field changes in effect at time of preparation (30 July 1956).

REFERENCE DATA AND LITERATURE

Technical Manual for Frequency Shift Equipment FSD.

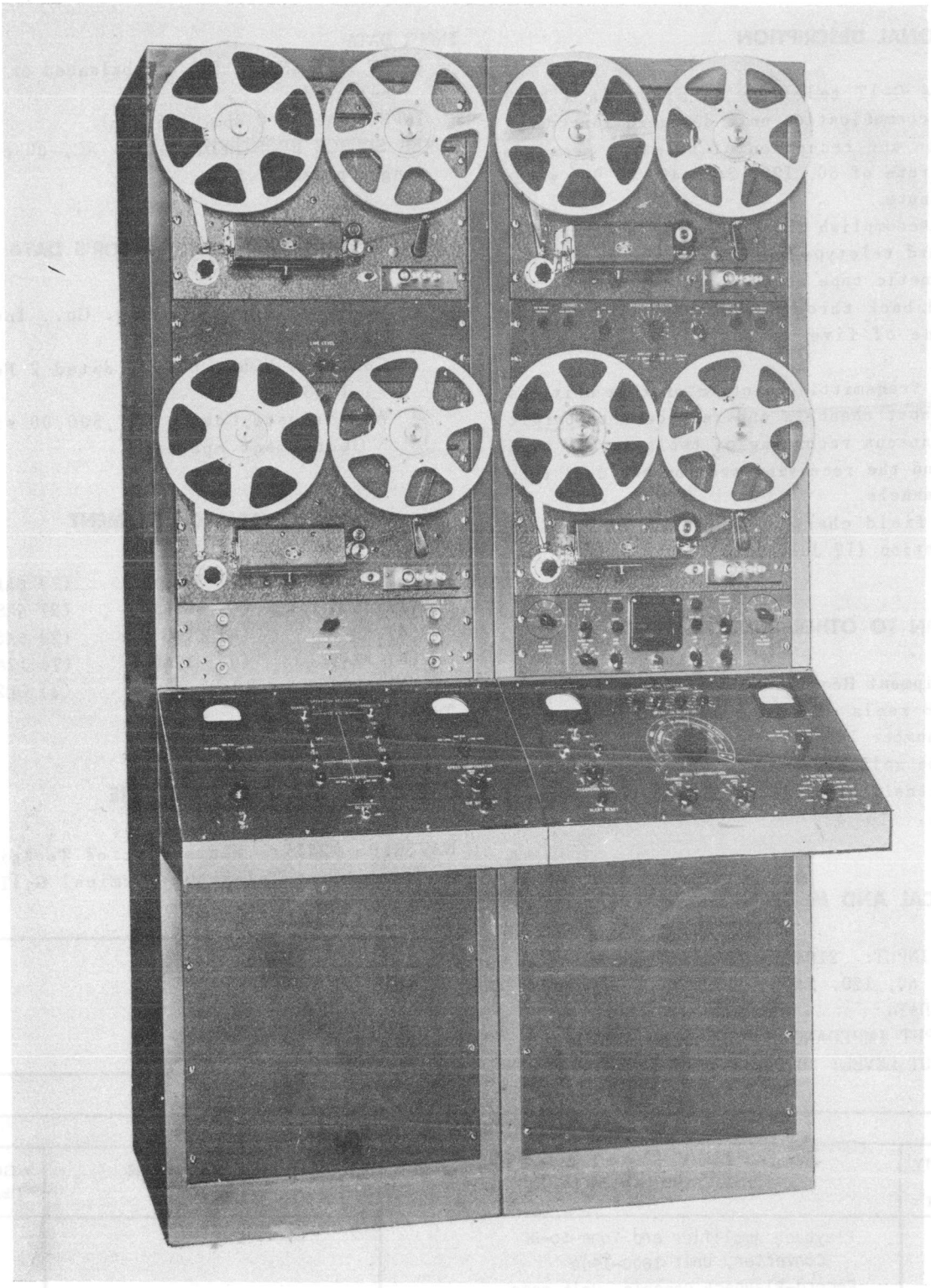
TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2 to 5 mc.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Keyer CYV-35065	12-1/2 x 15-3/4 x 19	65
	Consisting of:		
1	Audio-Frequency chassis		
1	Oscillator Oven Chassis		
1	Radio Frequency Chassis		
1	Rectifier Power Unit CYV-20349	8-3/4 x 12 x 19	30



Telegraph Terminal G-1T

G-1T TELEGRAPH TERMINAL

December 1956

FUNCTIONAL DESCRIPTION

The G-1T teletype terminal is a high speed communication unit designed for transmission and reception of teletype messages at the rate of 60, 120, 240, 480 or 960 words per minute.

To accomplish this, teletype signals from standard teletype transmitters are recorded on magnetic tape at 60 words per minute, and played back through the output channel at any one of five speeds within the speed range.

The transmitting section of this unit has dual input channels and recorders to permit simultaneous recording of two separate signals and the receiving section has dual output channels.

No field changes in effect at time of preparation (17 July 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: At least 8 reels of scotch brand telemetering tape, number 109A.

(1) tape splicer.

permacell electrical splicing tape, number 252.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

KEYING INPUT: 2184 cps tone.

SPEED: 60, 120, 240, 480 or 960 wpm.

OUTPUT DATA

OUTPUT IMPEDANCE: 500 ohm, unbalaned.

OUTPUT LEVEL: 0 dbm, (±6 dbm).

INPUT DATA

INPUT IMPEDANCE: 500 ohm balanced or unbalanced.

INPUT LEVEL: 0 dbm, (±6 dbm).

POWER SOURCE REQUIRED: 115 v AC, 60 cps, single phase, 1.5 kw.

MANUFACTURER'S OR CONTRACTOR'S DATA

Transmitter Equipment Mfg. Co., Inc., Brooklyn, N.Y.

Contract NObsr 63197, dated 2 Feb. 1953.

Approximate Cost: $17,500,00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 3AP1	(2) 5R4GY	(7) 6AL5
(1) 6AQ5	(8) 6AW6	(2) 6AS6
(4) 6BC7	(4) 6Y6G	(2) 6X5GT
(6) 12AT7	(67) 12AW7	(7) 12AX7
(3) 5879	(12) OA2	(3) OB2

Total Tubes: (129)

REFERENCE DATA AND LITERATURE

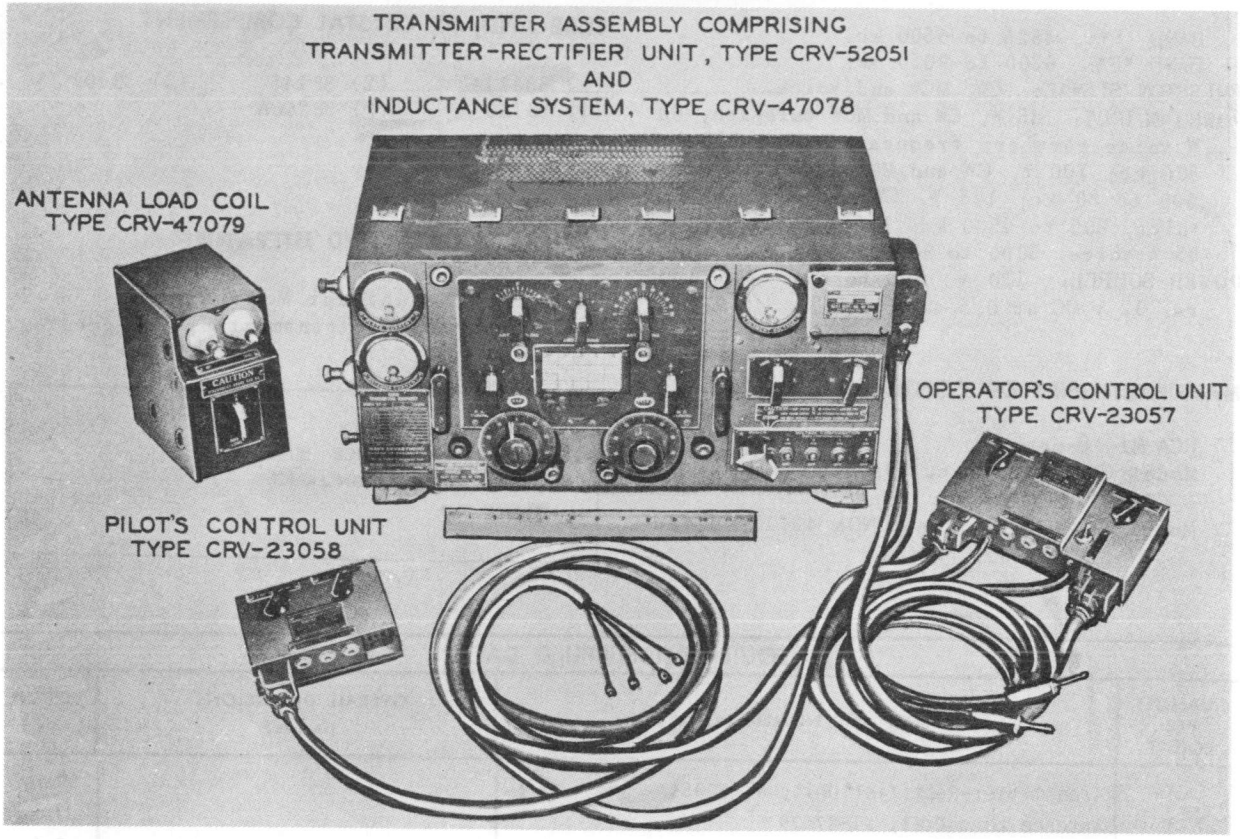
NAVSHIPS 92312: Manuscript of Technical Manual for Telegraph Terminal G-1T.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Playback Amplifier and Tone-to-DC Converter, Unit 1800-1900		
1	Record-Playback Chassis, Unit 2000		
1	Set of Spare Parts		

AIRCRAFT RADIO TRANSMITTING EQUIPMENT



Aircraft Radio Transmitting Equipment GP,GP-2

FUNCTIONAL DESCRIPTION

The Models GP and GP-2 are high-power radio-transmitting equipments for aircraft service featuring compactness, light weight and unusual flexibility of installation and usage. Both equipments are fundamentally identical, differing only in that certain accessories required for an operative installation and furnished with Model GP are omitted in GP-2.

The equipment is intended primarily for use in observation and scouting airplanes but can be employed in any aircraft equipped with proper power supplies and radiating systems.

No field changes in effect at time of preparation (25 October 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) NEA-1, NEA-1A or NEA-2 alternator complete w/regulator, (1) 12-volt storage battery, (2) 600 ohm headsets, (1) Antenna installation, (1) low-loss switch, (1) Model RU-2 or RU-3 receiving equipment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 350 to 9050 kc.

BAND DATA

BAND "A":	350 to 800 kc.
BAND "B":	800 to 1500 kc.
BAND "C":	1500 to 3000 kc.
BAND "D":	3000 to 4525 kc.

Radio-Transmitters

GP,GP-2 AIRCRAFT RADIO TRANSMITTING EQUIPMENT

BAND "E": 4525 to 6500 kc.
BAND "F": 6200 to 9050 kc.
EMISSION SIGNAL: CW, MCW and voice.
POWER OUTPUT: 85 W, CW and MCW emission, 60 W voice carrier, frequency range 350 to 500 kc; 100 W, CW and MCW, 75 W, voice, 500 to 80 kc; 125 W, CW and MCW, 85 W, voice, 800 to 1500 kc; 125 W, CW and MCW, 85 W voice, 3000 to 9050.
POWER SOURCE: 120 v, 600 to 800 cps, 850 ra, 12 v DC at 0.5 amps.

MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Mfg Company
Model GP on Contract NOs 35625, dated 14 April 1934.
Model GP-2 on Contract NOs 42717, dated 17 June 1935.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 38111A (2) 38145 (1) 38101
(1) 38180 (2) 38266A

Total Tubes: (8)

REFERENCE DATA AND LITERATURE

Technical Manual for Models GP and GP-2 Aircraft Radio Transmitting Equipments.

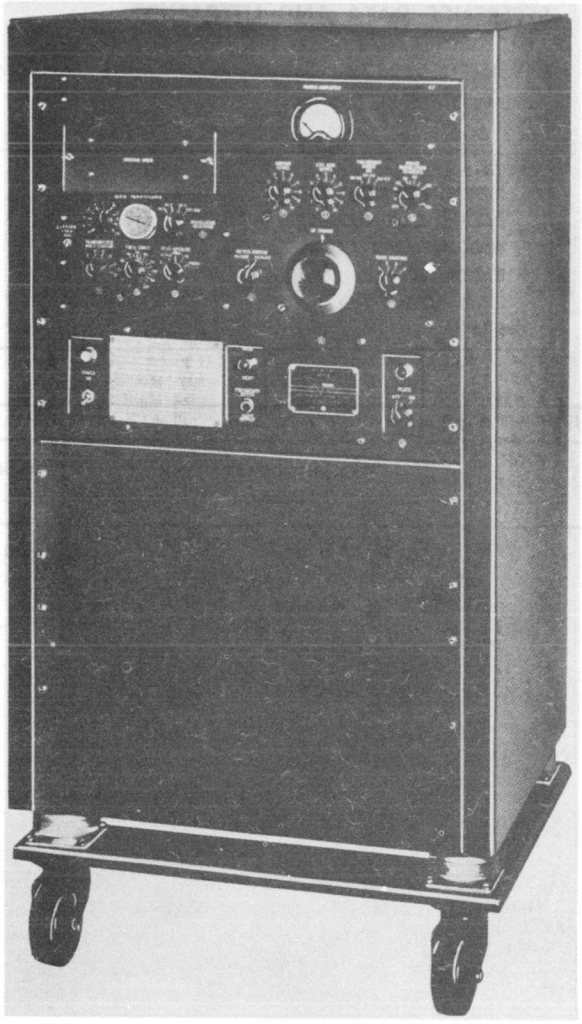
TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Transmitter-Rectifier Unit, NT-52051		52
1	Antenna Load Coil, NT-47079		3
1	Operators Control Unit, NT-23057		3.1
1	Pilots Control Unit, NT-23058		1.3
1	Power Input Cable		1.2
1	*Antenna Reel, NT-71006		3.4
1	*Fairlead NT-61083		1.1
1	*Antenna Wire 500 ft, Model J		4.2
1	*Antenna Weight, NT-71003		4.2
2	*Telegraph Key w/Plug and Cable NT-26003A		0.9
2	*Microphone, w/Plug and Cable		0.49
*	Included w/model GP but omitted in Model GP-2		

Radio-Communication Terminal Equipment

KEYER KY-30/GRT



Keyer KY-30/GRT

FUNCTIONAL DESCRIPTION

The KY-30/GRT is a frequency shift-keyer used in a radio telegraph system to cause the transmitter to emit one frequency for a "mark" signal and another frequency for a "space" signal. This two frequency method provides better signal/noise ratio, resulting in better signal reception.

The KY-30/GRT is used with long distance radio telegraph communication systems. It can be connected to various types of radio transmitters.

No field changes in effect at time of preparation (30 April 1958).

RELATION TO OTHER EQUIPMENT

The KY-30/GRT is similar to the Collins Radio Co Type 709B-1.

Equipment Required but not Supplied: Suitable transmitter equipped with a Connector Panel NT-62254, or equivalent.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RF OUTPUT

FREQUENCY RANGE: 1000 to 6700 kc in three bands.

EMISSION: F1 and F4.

POWER OUTPUT: Adjustable, Max of 6 W or more to a level 20 db below 6 W.

OUTPUT IMPEDANCE: 75 ohms resistive load.

FREQUENCY SHIFT

FREQUENCY RANGE: 0 to ±1000 cps.

PHASE MODULATION: 1 radian at 200 cps.

200 KC OSCILLATOR ACCURACY: ±5 cps.

TELEGRAPH SIGNALS INPUT

TYPE OF KEYING: DC polar or DC neutral.

KEYING SPEED: 240 dot cps.

KEYING VOLTAGE: Min, 40 v; Max 120 v.

INPUT IMPEDANCE: 600 ohms.

PHOTO INPUT

KEYING SPEED: 2000 dot cps.

KEYING VOLTAGE: Min. 18 v; Max 20 v, 30 db range.

INPUT IMPEDANCE: 600 ohms.

MODULATION: 8 to 65 mc.

FREQUENCY MULTIPLICATION: 8 values of frequency shift of proper value to allow for transmitter multiplication factors of 1, 2, 3, 4, 6, 8, 9, and 12.

POWER SOURCE REQUIRED: 115/230 v, 50 to 60 cps, 1 ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Collins Radio Co, Cedar Rapids, Iowa.

Contract NObsr-39324, dated 25 June 1947.

Approximate Cost: $1200.00 with equipment spares.

Radio-Communication Terminal Equipment

KY-30/GRT KEYER

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3/VR150
(2) 12AU7
(1) 5R4GYW
(2) 6AL5
(2) 6AKW
(2) 6BA6
Total Tubes: (19)
(3) CR-27/U
Total Crystals: (3)

(2) 6C4
(1) 6J6
(2) 6BE6
(3) 6X4
(1) 807

REFERENCE DATA AND LITERATURE

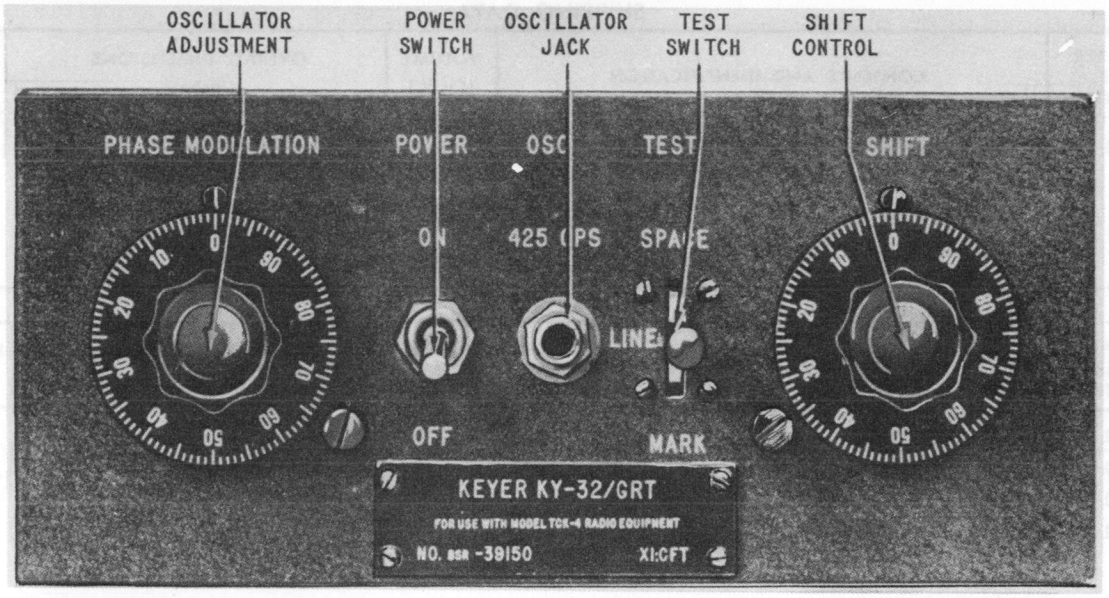
NAVSHIPS 91232: Technical Manual for Keyer KY-30/GRT.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT.	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer KY-30/GRT	21 x 22 x 41	200
1	Set of Accessories		
1	Set of Equipment Spares		

KEYER KY-32/GRT



Keyer KY-32/GRT

FUNCTIONAL DESCRIPTION

The KY-32/GRT is an electronic unit supplied to adapt Navy Model TCK Series Transmitter to frequency-shift emission as an alternate to its regular A1 type emission. The KY-32/GRT Keyer may be used on any equipments in the TCK series without overloading the Transmitter Power Supply.

No field changes in effect at time of preparation (1 May 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCIES
- COMPARISON: 425 cps.
- PHASE MODULATION: 200 cps nom.
- FREQUENCY SHIFT DURING KEYING: 850 cps.

OUTPUT IMPEDANCE: 600 ohms.

KEYING INPUT
- NEUTRAL KEYING
  - MARK: +30 to 120 v.
  - SPACE: Open circuit.
- POLAR KEYING
  - MARK: +30 to 120 v.
  - SPACE: −15 to −120 v.

KEYING OUTPUT: Reactance tube circuit to master oscillator tank.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio Corporation, Clifton, N.J.
Contract NObsr-39150, dated 13 June 1947.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3/VR150 (2) 6SJ7 (1) 6SN7/GT
Total Tubes: (4)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91109: Technical Manual for Keyer KY-32/GRT.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

KY-32/GRT KEYER

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Keyer KY-32/GRT w/accessories	2.45		46

EQUIPMENT SUPPLIED DATA

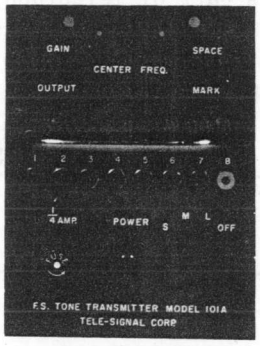
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer KY-32/GRT	5-7/8 X 12-3/4 X 16-1/4	6
1	Equipment Spares	7 X 11-1/8 X 13-5/8	14
1	Operating Tubes	3-5/8 X 5-7/8 X 8-1/2	1
1	Installation Materials	3-5/8 X 5-7/8 X 8-1/2	1

17 August 1962
Cog Service: USN FSN:

KEYER, FREQUENCY SHIFT KY-346(P)/UGC
Functional Class:

	USA	USN	USAF
TYPE CLASS:	Std	Std	

MANUFACTURER'S NAME/CODE NUMBER: Tele-Signal Corp., (10241).





Keyer, Frequency Shift KY-346(P)/UGC

FUNCTIONAL DESCRIPTION:

The Keyer, Frequency Shift KY-346(P)/UGC is designed to be used in communication circuits such as telegraph systems, telemetering circuits, and single side band radio links. In these applications, it provides the transmitting terminal with frequency shifted signals in the audio spectrum.

The KY-346(P)/UGC operates by accepting a digital code from an external source (teletype) and coverting it into two (2) tone frequencies. One (1) frequency will indicate mark bits while the other will indicate space bits.

No field changes in effect at time of preparation (12 June 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF EMISSION: FSK.
POWER OUTPUT: P3 dbm.
FREQUENCY DEVIATION: Porm 42.5 cycles.
FREQUENCY RANGE: 425 to 2975 cps.

KY-346(P)/UGC KEYER, FREQUENCY SHIFT

NUMBERS OF CHANNELS: 16.
HEAT DISSIPATION: 1 W.
OUTPUT IMPEDANCE: 600 ohms.
HARMONIC CONTENT: 50 db below standard output level.

STORAGE TEMPERATURE: M15 deg C to 65 deg C.
OPERATING TEMPERATURE: 0 deg C to P55 deg C.
OPERATING POWER RQMT: 115 or 230 v ac, 50 to 60 cps, single ph, 1 W.

RELATION TO OTHER EQUIPMENT:

The KY-346(P)/UGC is designed as part of Telegraph, Terminal Set AN/FGC-60(V).
The KY-346(P)/UGC is the same as Tele-Signal Corp's Commerical Model no. 101A.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Keyer, Frequency Shift KY-346(P)/UGC		4 x 5-1/4 x 11	5-1/2

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93846: Technical Manual for Keyer, Frequency Shift KY-346(P)/UGC.
NAVSHIPS 93841: Technical Manual for Telegraph, Terminal Set AN/FGC-60(V) of which Keyer, Frequency Shift KY-346(P)/UGC is a part of.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 2N156 (5) 2N217 (4) 1N91

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

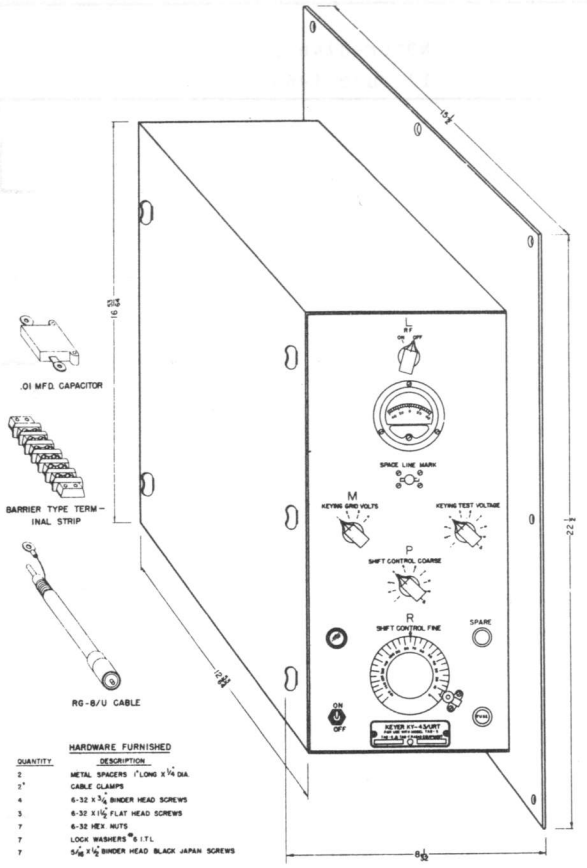
PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tele-Signal Corp. Model no. 101A	Hicksville, N. Y.	NObsr-81467, 17 June 1960	

KEYER KY-43/URT



Keyer KY-43/URT

FUNCTIONAL DESCRIPTION

Keyer KY-43/URT is designed for use with appropriate transmitters to adapt them for frequency-shift operation. It is a reactance modulated amplifier used to shift the frequency of the transmitter master oscillator in accordance with direct current signals from a polar keyer which is, in turn, actuated by a standard teletypewriter.

This equipment is designed primarily for use with, Transmitting Equipment TAB-5, TAB-6, or TAB-7. Provision is made for mounting of the keyer on the TAB series transmitter.

No field changes in effect at time of preparation (13 September 1960).

RELATION TO OTHER EQUIPMENT

This equipment is basically identical with Keyer KY-43A/URT except for minor changes in circuitry

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Radio Transmitting Equipment TAB-5, -6, -7.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 100 to 555 kc.
FREQUENCY SHIFT RANGE: 170 cyc.
RF SOURCE: TAB-5, -6, -7 master oscillator.
OUTPUT: To TAB-5, -6, -7 master oscillator through coaxial cable.
KEYING VOLTAGE: Polar keyer output of 40 to 120 v.
MOUNTING DATA: Left hand side of TAB-5, -6, -7 exciter.
POWER REQUIREMENTS: 110 W, 220 v, 60 cyc, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Munston Mfg and Service Inc, New York, N.Y.
Part/dwg No. 180-100.
Contract NObsr-42175, dated 19 March 1948.
Approximate Cost $300.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5R4GY	(1) 6L6G
(1) 6SA7	(1) 6X5GT/G
(1) OC3/VR105	(1) OD3/VR150

Total Tubes: (6)

No Crystals used.

KY-43/URT KEYER

REFERENCE DATA AND LITERATURE

NAVSHIPS 91138: Technical Manual for KEYER KY-43/URT.

TYPE CLASSIFICATION (STD)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

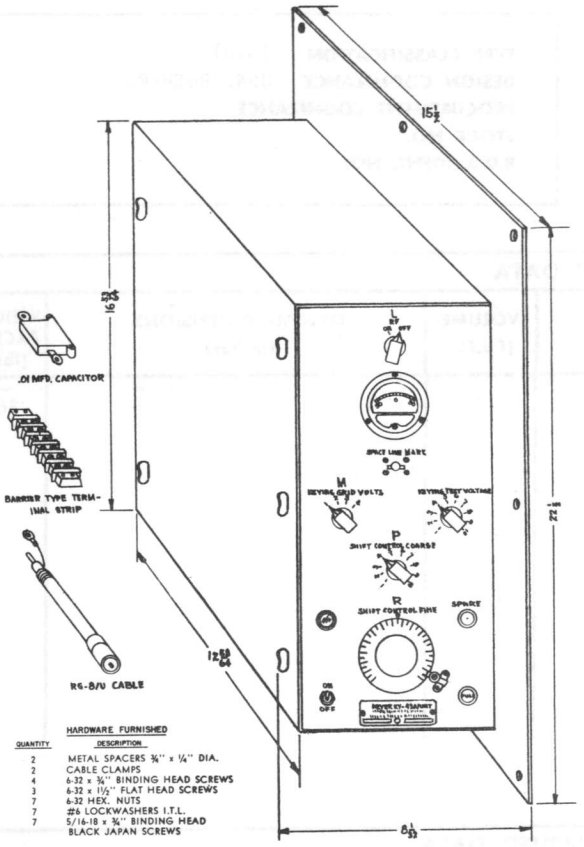
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Keyer KY-43/URT (1) Cable RG-8/U (1) Terminal Strip (1) Capacitor 0.01 mtd (2) Metal Spacers (2) Cable Clamp (4) 6-32 x 3/4 Binder Head Screws (3) 6-32 x 1-1/2 Flat Head Screws (7) 6-32 Hex Nuts (7) Lock Washers #6 I.T.L. (7) 5/16-18 x 1/2 Binder Head Screws	1.6		36

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer KY-43/URT	8.0 x 15.5 x 22.5	34
1 set	Accessories		
1 set	Equipment Spares	12-1/4 x 12-1/4 x 12-3/8	

KEYER

KY-43A/URT and KY-43B/URT



Keyer KY-43A/URT and Keyer KY-43B/URT

FUNCTIONAL DESCRIPTION

The KY-43A/URT and KT-43B/URT is designed to be installed in two (2) kilowatt Transmitting Equipment TAB-5, TAB-6 and TAB-7 in order to adapt them for frequency-shift operation. It permits the impression of intelligence on a Radio Frequency Carrier by the frequency-shift method in order to minimize the effects of fading, noise interference and static disturbances on the receiving equipment.

The KY-43A/URT and KY-43B/URT is a reactance-modulated amplifier used to shift the frequency of the transmitter master oscillator in accordance with the Direct Current (DC) polar MARK and SPACE impulses from a teletype keyer. It employs a reactance tube circuit to convert the polar Direct Current (DC) signals into an Radio Frequency (RF) Carrier shift that is symmetrical with respect to the assigned frequency.

It consists of a rectangular chassis and front panel mounted on a plate for mounting of the unit on the side of the master oscillator section of the TAB series transmitters. All controls for the keyer are located on the front panel.

No field changes in effect at time of preparation (20 March 1959).

RELATION TO OTHER EQUIPMENT

The KY-43A/URT and KY-43B/URT are electrically and mechanically interchangeable. The difference between the two equipments lies in their input circuitry. The KY-43A/URT is designed for polar keying only. The KY-43B/URT is designed to operate with neutral as well as polar keying.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Transmitting Radio Equipment TAB-5, TAB-6 or TAB-7.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY SHIFT RANGE: 170 cycles nominal.
POWER CONSUMPTION: 110 watts.
RADIO FREQUENCY SOURCE: TAB-5, 6, 7 master oscillator.
OUTPUT: To TAB-5, 6, 7 master oscillator through coaxial cable.
KEYING MAXIMUM SPEED: At least 60 W.P.M.
KEYING INPUT IMPEDANCE: 3800 ohms.
KEYING VOLTAGE: D.C. polar ±40 to ±120 volts.
FREQUENCY RANGE: 100 to 555 kc.
POWER SUPPLY CHARACTERISTICS
- FILTERED DIRECT CURRENT TEST VOLTAGE: 155 v.
- FILTERED DIRECT CURRENT PLATE SUPPLY: 240 v.
- REGULATED FILTERED DIRECT CURRENT SCREEN SUPPLY: 250 v or 105 v.
- ALTERNATING CURRENT FOR RECTIFIER FILAMENT: 5 v.
- VOLTAGE FOR HEATER SUPPLY: 6.3 v.

OPERATING POWER REQUIREMENTS: 220 v AC ±10%, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Fidelity Amplifier Co., Chicago, Illinois.
Contract NObsr-52676, dated 22 June 1951.
Virginia Electronics Co., Inc., Washington, D.C.
Contract NObsr-71384.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5R4GY (1) 6L6 (1) 6SA7
(1) 6X5GT (1) OC3/VR105 (1) OD3/VR150
Total Tubes: (6)
No Crystals used.

KY-43A/URT and KY-43B/URT

KEYER

REFERENCE DATA AND LITERATURE

NAVSHIPS 91645: Technical Manual for Keyer KY-43A/URT and Keyer KY-43B/URT.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

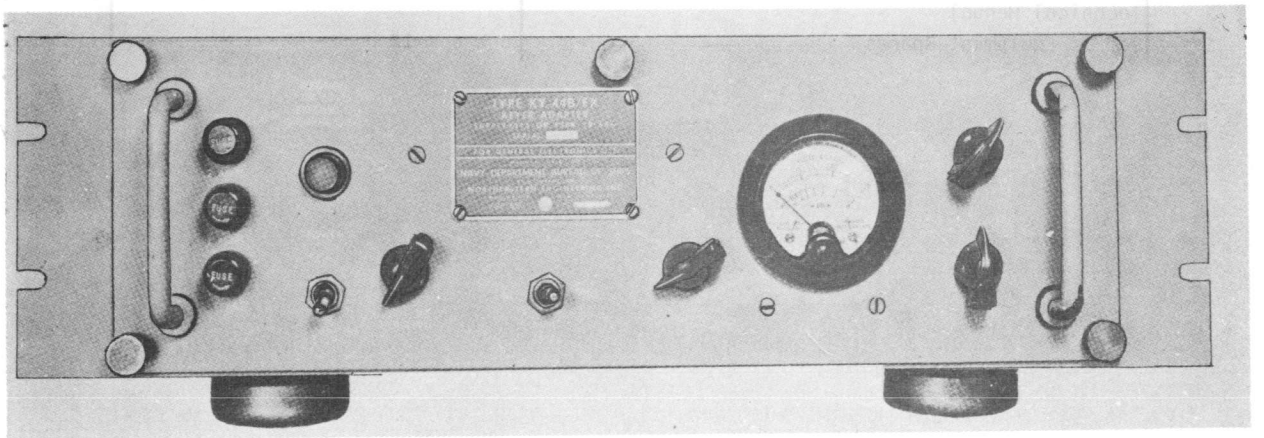
NUMBER OF BOXES		CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
KY-43/URT					
A	B				
1		Keyer	1.6	8 X 15.5 X 22.5	
	1	Keyer	1.6	8 X 15.5 X 22.5	
1	1	Cable RG-8/U			
1	1	Terminal Strip (Barrier Type)			
1	1	Capacitor 0.01 mfd			
2	2	Metal Spacers			
2	2	Cable Clamp			
4	4	Binding Head Screws (6-32 X 3/4)			
3	3	Flat Head Screws (6-32 X 1-1/2)			
7	7	Hex Nuts (6-32)			
7	7	Lock Washers No. 6 I.T.L.			
7	7	Binding Head Black Japan Screws (5/16 X 18 X 3/4)			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Keyer KY-43A/URT or KY-43B/URT	8 X 15.5 X 22.5	34
2	Technical Manual		
1	Set of Equipment Spares	6 X 6 X 12	14



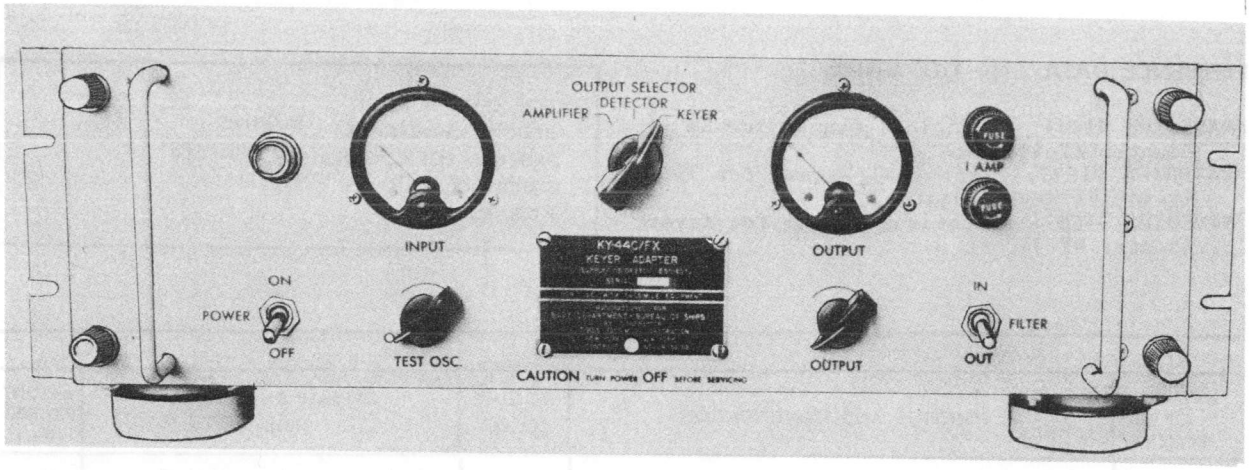
Keyer Adapter KY-44A/FX



Adapter Keyer KY-44B/FX

KY-44/FX,A/FX,B/FX,C/FX ADAPTER KEYER

December 1956



Keyer Adapter KY-44C/FX

Adapter Keyer KY-44/FX, A/FX, B/FX, C/FX

FUNCTIONAL DESCRIPTION

The KY-44/FX, KY-44A/FX, KY-44B/FX and KY-44C/FX are primarily used to convert facsimile signals to direct current. They simplify and rectify AM facsimile signals to provide a variable DC voltage for the control of frequency-shift exciter units in radio transmitter equipment. They can also be used as unfiltered detectors of AM filters or as line amplifiers.

Meters are provided to monitor the input and output signals. Controls are available for adjusting the output level and selecting the type of output signal.

The KY-44/FX, KY-44A/FX, KY-44B/FX and KY-44C/FX are similar and inter-changeable with each other except for changes in design and component parts.

No field changes in effect at time of preparation (19 July 1956).

RELATION TO OTHER EQUIPMENT

These equipments are used in conjunction with KY-58/GRT, FSA, KY-30/GRT, KY-75/SRT, AN/URT-2, -3, and -4 and similar types of frequency-shift keyers.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT SIGNAL
FREQUENCY: 100 to 7000 cps.
TYPE: AM facsimile.
LEVEL: -20 to +6 dbm.
OUTPUT SIGNAL
TYPE: Keying signals, DC; detected signals, unfiltered; amplified signals
LEVEL: Linear within ±5% to 20 v DC/AC.
IMPEDANCE: 600 ohms, balanced or unbalanced.
POWER SOURCE REQUIRED: 115 or 230 v, 60 cps single ph, 40 w.
MOUNTING DATA: Table or 19 inch relay rack.

MANUFACTURER'S OR CONTRACTOR'S DATA

KY-44, 44A, 44C Times Facsimile Corporation, New York, N.Y.
KY-44-Mod-CK-1, KY-44A/Mod-CFD-1, KY-44C-Mod-CFD-2.
Contract KY-44-Nobsr 43340, dated 15 March 1950.
Contract KY-44A NObsr 52102, dated 27 November 1950.
Contract KY-44C NObsr 43340, dated 15 March 1950.
KY-44B/FX Northeastern Engineering, Inc., Manchester, N.H.
Dwg No. NE-634-2810 and NE-P08-002;
Contract NObsr 52137, dated 15 Dec. 1950,
Contract NObsr 49167, dated 31 May 1950.
Approximate Cost: $436.00 (KY-44A/FX) with equipment spares.
Approximate Cost: $279.00 (KY-44B/FX) with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6X4 (2) 6AQ5 (3) 12AU7
Total Tubes (6)

December 1956

ADAPTER KEYER KY-44/FX,A/FX,B/FX,C/FX

REFERENCE DATA AND LITERATURE

NAVSHIPS 91441: Technical Manual for Keyer Adapter KY-44A/FX.
NAVSHIPS 91877: Technical Manual for Type KY-44B/FX Keyer Adapter.
NAVSHIPS 91627: Technical Manual for Keyer Adapter KY-44C/FX.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE BUSHIPS
STOCK NO.
R.D.B. IDENT. NO.

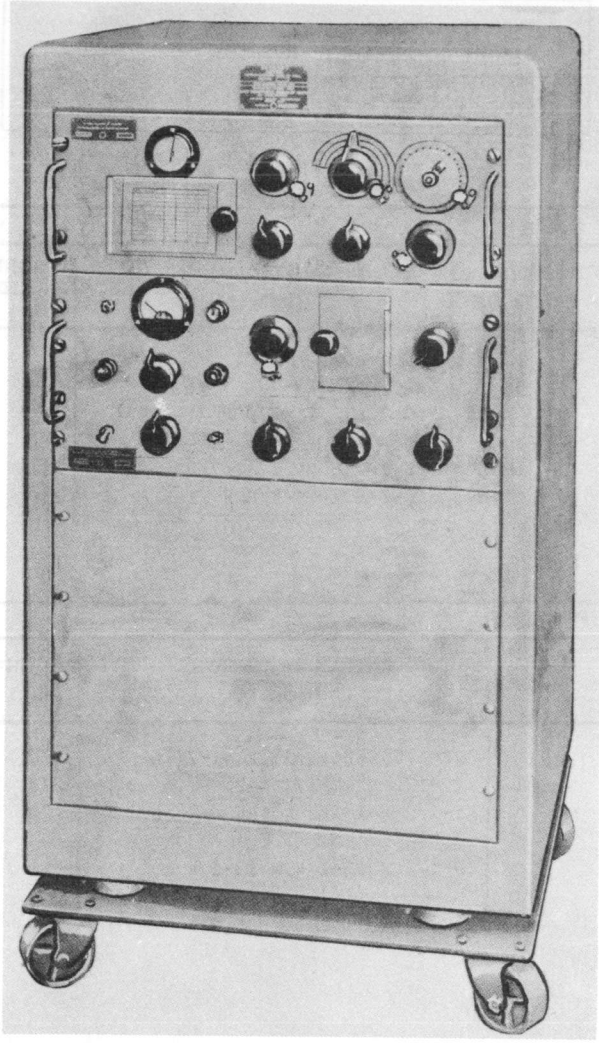
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Keyer Adapter KY-44/FX or	2.591	9-3/4 X 24-1/2 X 118-3/4	69
1	Keyer Adapter KY-44A/FX or	2.591	9-3/4 X 24-1/2 X 118-3/4	69
1	Keyer Adapter KY-44B/FX or	2.591	9-3/4 X 24-1/2 X 118-3/4	69
1	Keyer Adapter KY-44C/FX	2.591	9-3/4 X 24-1/2 X 118-3/4	69
1	Equipment Spares	1.210	8-1/4 X 12 X 22-1/4	42

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer Adapter KY-44/FX or	6-1/2 X 15 X 19-3/4	40
1	Keyer Adapter KY-44A/FX	6-1/2 X 15 X 19-3/4	40
1	Keyer Adapter KY-44B/FX	6-1/2 X 15 X 19-3/4	40
1	Keyer Adapter KY-44C/FX	6-1/2 X 15 X 19-3/4	40
1	Spare Parts, set of	6-1/2 X 10-1/2 X 19-1/2	31
2	Instruction Books NAVSHIPS 91877		
	Power Cable		

KEYER KY-58/GRT,KY-75/SRT



Keyer KY-58/GRT, KY-75/SRT

FUNCTIONAL DESCRIPTION

The KY-58/GRT and KY-75/SRT are frequency shift keyers used in long distance radio telegraph systems to cause the transmitter to emit one frequency for a "mark" signal and one frequency for a "space" signal. This two frequency method of operation provides better signal-to-noise ratio, resulting in better signal reception. These keyers may be used with any A1 transmitter capable of operating from a 2 to 20 v excitation source.

The KY-58/GRT and KY-75/SRT are identical electrically and mechanically except that the KY-58/GRT is mounted in a mobile cabinet whereas the KY-75/SRT is for table or bench mounting. The KY-58/GRT is for shore use and the KY-75/SRT is used aboard ship.

Data on this sheet reflects the following field changes: F/C No. 1 for KY-58/GRT and KY-75/SRT.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY: 1 to 6.7 mc.
STABILITY: 0.01% at 1 mc, 0.003% at 6.7 mc.
EMISSION: F1, F4.
PEAK POWER OUTPUT: 6 W.
FREQUENCY SHIFT
  F1: 0 to 1000 cps.
  F4: 0 to 2000 cps.
PHASE MODULATION: 200 cps ±5%.
KEYING SPEED: 0-240 dot cps.
KEYING VOLTAGE
  DC POLAR: ±40 to ±150 v.
  DC NEUTRAL +40 to +150 v.
PHOTO INPUT VOLTAGE: 0-20 v.
INPUT IMPEDANCE
  F1: 100,000 ohms.
  F4: 600 ohms.
OUTPUT IMPEDANCE: 75 ohms.
POWER REQUIREMENTS: 115 or 230 v, 50-60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

National Co Inc, Malden, Mass.
  Contract NObsr-42513, dated 30 June 1948.
  Contract NObsr-52052, dated 30 October 1950.
  Contract NObsr-57530, dated 16 June 1952.
  Approximate Cost: $1,160.00 with e-equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6H6	(2) 6SA7
(2) 6SN7WGT	(1) 807
(1) 6J5	(2) OD3W
(1) 6AC7W	(1) 5U4G
(3) 6SJ7W	(1) OA3

Total Tubes: (16)

(3) CR-27/U
Total Crystals: (3)

Radio-Communication Terminal Equipment

April 1958

KY-58/GRT,KY-75/SRT KEYER

REFERENCE DATA AND LITERATURE

NAVSHIPS 91543: Technical Manual for Keyers KY-58/GRT and KY-75/SRT.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
	KY-58/GRT			
1	Keyer KY-58/GRT including Cables	19	25-1/8 x 27-1/4 x 48	404
1	Set of Repair Parts	1.89	10-7/8 x 13-7/8 x 21-5/8	65
	KY-75/SRT			
1	Keyer KY-58/SRT including Cable	13.5	25-1/4 x 29 x 31-7/8	346
1	Set of Repair Parts	1.89	10-7/8 x 13-7/8 x 21-5/8	65

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Keyer KY-58/GRT or	22-1/8 x 26-9/16 x 41-7/16	270
1	Frequency Shift Keyer KY-75/SRT	22-1/8 x 24-1/2 x 26-9/16	220
1	Set of Cables for KY-58/GRT or	1-1/2 x 1-1/2 x 144	20
1	Service Cable for KY-75/SRT	75 lg	
1	Set of Equipment Spares	9-1/8 x 12-1/4 x 18-1/4	52

October 1957

Radio-Communication Terminal Equipment

TONE KEYER KY-79/UR

FUNCTIONAL DESCRIPTION

The KY-79/UR is used in communication systems for remote Keying of a radio transmitter or teleprinter machine. The intelligence pulses amplitude modulate any one of six audio tones. The amplitude modulated tones are then impressed on a telephone line, through a fixed attenuator.

The Tone Keyer makes use of a high stability RF oscillator with an adjustment for setting any of the desired frequencies to the exact value of 425, 765, 1105, 1445, 1785 or 2125 cycles per second. The oscillator drives a balance modulated amplifier which modulated by a special "mark" and "space" limiter. This Keyer is complete with power supply. An external tone may be introduced instead of the local audio oscillator.

No field changes in effect at time of preparation (5 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT SIGNALS: (1) polar relay contacts shorting to ground, (2) amplitude modulated (Keyed) audio tone 300 to 10,000 cps, (3) DC pulses positive or negative with respect to ground.

INPUT LEVEL
- AUDIO: 0 db.
- DC: ±10 v.
- DC CURRENT PULSES: ±30 ma, polar.

INPUT IMPEDANCE
- TONE: 600 ohms.
- DC VOLTAGE: 100,000 ohms, one side grounded.
- DC CURRENT: 1800 ohms external load, (one side grounded).

OUTPUT FREQUENCIES: 425, 765, 1105, 1445, 1785 or 2125 cps.

OUTPUT LEVEL: Mark and space, 0 db (6mw).

OUTPUT IMPEDANCE: 600 ohms balance "H" pad.

KEYING SPEED: 0 to 400 dot cycles per second.

CONTROLS: Primary power switch, output tone selector, output level control and Keying wave selector switch.

METERING: 2-1/2 in. AC voltmeter across output.

POWER SOURCE REQUIRED: 110 or 220 v, 50 to 60 cps, 75 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Northern Radio Co., Inc., New York, N.Y.
Contract NObsr.63418
Approximate Cost: $360.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6V6GT	(1) 6SJ7
(1) 6SN7	(1) 6SL7
(1) 5Y3GT	(1) 6B6

Total Tubes: (7)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92288: Technical Manual for KY-79/UR.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

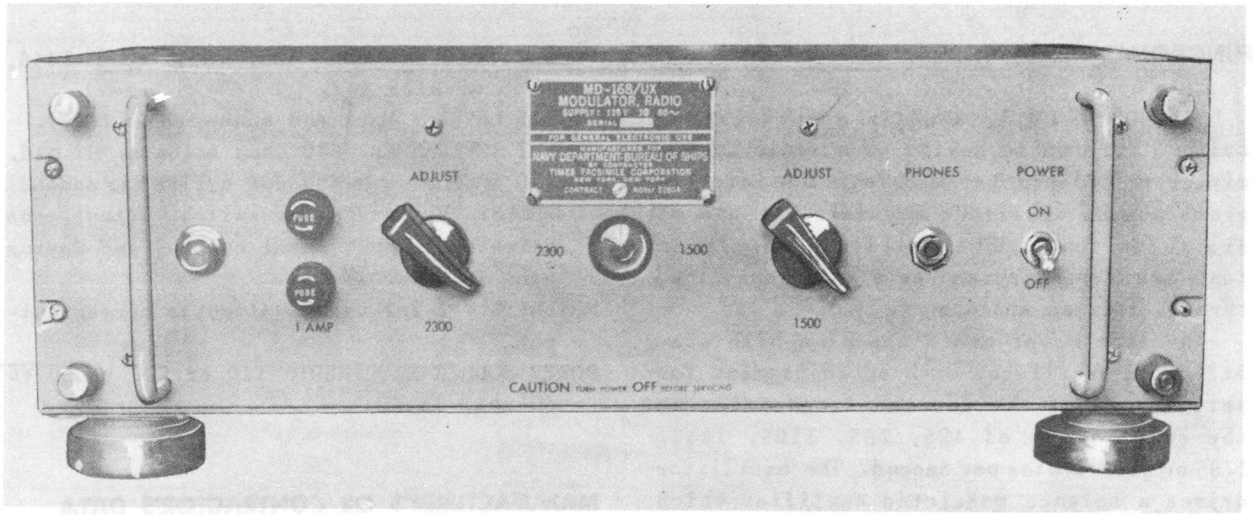
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tone Keyer KY-79/UR		

April 1958

Radio-Communication Terminal Equipment

RADIO MODULATOR MD-168/UX



Radio Modulator MD-168/UX

FUNCTIONAL DESCRIPTION

The MD-168/UX is designed for cabinet or Standard Navy relay rack mounting to convert amplitude modulated facsimile signals received from a facsimile transmitter or wire line to audio frequency-shift facsimile signals of 1500 to 2300 cycles-per-second. It is used at the transmitting terminal of a radio facsimile circuit which requires audio frequency shift signals of constant amplitude, which are used to amplitude modulate a voice radio transmitter. It may be used in the transmission of facsimile signals representing photographic or black and white copy. Provision is made for audio monitoring and for visual indication of the correct shift frequencies.

No field changes in effect at time of preparation (14 November 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT DATA
- CARRIER FREQUENCY: 1.5 to 10.0 kc.
- MODULATION FREQUENCY: 0 to 900 cps.
- TYPE MODULATION: AM.
- MAX TO MIN SIGNAL RANGE(CONTRAST): 10 to 20 db.
- MAX SIGNAL LEVEL: 0 to -35 dbm.
- IMPEDANCE: 500 ohms, balanced.

OUTPUT DATA
- FREQUENCY RANGE: 1500 to 2300 cps.
- TYPE MODULATION: AFS.
- LEVEL: Approx 0.7 v AC across 500 ohm load.
- IMPEDANCE: 500 ohms, balanced.

OUTPUT VS INPUT: Output frequency linear with input voltage.

POWER REQUIREMENTS: 115 v, 60 cps, single ph, 55 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Times Facsimile Corp., New York, N.Y. Contract NObsr-52604, dated 15 June 1951.
Approximate Cost: $830.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6AF6G
(1) 6SJ7WGT
Total Tubes: (8)
(2) 1N34A
Total Crystals: (2)
(4) 6SN7WGTA
(1) 6626/OA2WA
(1) 6SL7WGT

REFERENCE DATA AND LITERATURE

NAVSHIPS 91629: Technical Manual for Modulator, Radio MD-168/UX.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

Radio-Communication Terminal Equipment

MD-168/UX RADIO MODULATOR

April 1958

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Modulator MD-168/UX	0.75	6 x 12 x 18	90
1	Set of Equipment Spares			40

EQUIPMENT SUPPLIED DATA

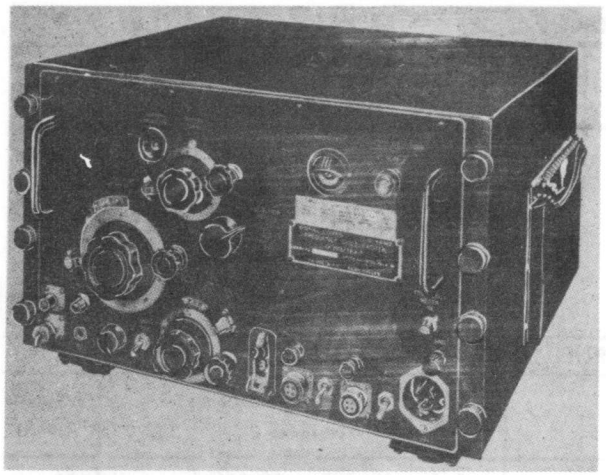
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Modulator MD-168/UX	5-5/8 x 14-3/4 x 19-1/8	56
1	Set of Equipment Spares		
2	Technical Manual NAVSHIPS 91629	1/2 x 8-1/2 x 11	

January 1958

Radio-Communication Terminal Equipment

FREQUENCY SHIFT EXCITERS

O-39, -39A, -39B, -39C/TRA-7



Frequency Shift Exciter O-39B/TRA-7

FUNCTIONAL DESCRIPTION

The O-39,-39A-39B,-39C/TRA-7 is designed to generate low power radio frequency signals, to frequency-shift Key the signals in accordance with the intelligence of a radio teletypewriter code and to supply the signals to a continuous wave transmitter. The exciter is essentially a variable-frequency oscillator which incorporates provisions for frequency-shift keying.

The O-39/TRA-7, O-39A/TRA-7, O-39B/TRA-7 and O-39C/TRA-7 are substantially the same except for minor electrical and mechanical differences.

No field changes in effect at time of preparation (15 April 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but Not Supplied: (1) Cord CX-962/TRA-7, (2) Cords CX-961/TRA-7, (1) Headset HS-30/U w/Cord CD-605, (1) Cord CG-389/U, (1) Cord CG-390/U.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT SIGNALS: DC, Mark +0.020 ampere and space −0.025 amp.

OUTPUT FREQUENCY: 2 to 6 mc.

FREQUENCY SHIFT: 212.5 to 850 cycles depending on the frequency multiplication to be supplied in the frequency shift exciter. The transmitted mark signals are higher in frequency than the transmitted space signals.

POWER SOURCE REQUIRED: 115 v, 50 to 60 cps.

POWER CONSUMPTION: 185 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6SJ7Y	(1) 5R4GY	(1) 6V6GT/G
(1) 6SA7GT	(2) OC3	or
(1) 6E5	(1) 6AL5	(1) 6AG7

Total Tubes: (11)

REFERENCE DATA AND LITERATURE

TM-11-257, TO16-35039-15, Technical Manual for Frequency Shift Exciters O-39/TRA-7, OA-39A/TRA-7, O-39B/TRA-7, O-39C/TRA-7.

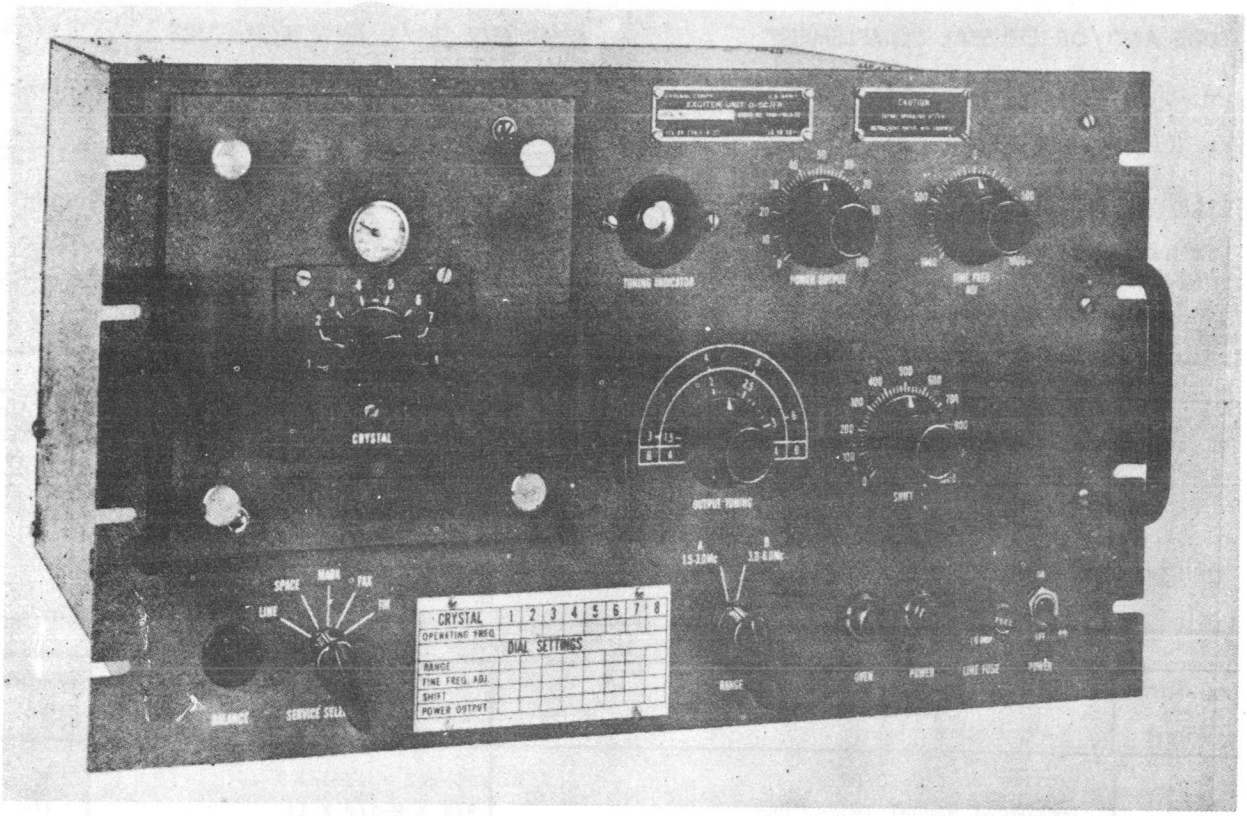
TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Frequency Shift Exciter O-39/TRA-7 or O-39A/TRA-7 or O-39B/TRA-7 or O-39C/TRA-7		

Radio-Communication Terminal Equipment

EXCITER UNIT O-5C/FR



Exciter Unit O-5C/FR

FUNCTIONAL DESCRIPTION

The O-5C/FR is a crystal-controlled radio-frequency generator designed for use as the oscillator section of a transmitter. Teletypewriter, facsimile or audio signals may be applied to the exciter unit. The exciter unit in turn, shifts or modulates the transmitter carrier frequency in accordance with the intelligence being conveyed. The exciter unit covers a frequency range from 1.5 to 6 mc. It is used as permanent station equipment and may be connected and adjusted for any of the above services upon installation.

No field changes in effect at time of preparation (17 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 1.5 to 6 mc.
NUMBER OF BANDS: 2
BAND VS FREQUENCY DATA:
BAND A: 1.2 to 3 mc.
BAND B: 3 to 6 mc.
INPUT SIGNALS.
TELEGRAPH: 30 ma polar, 60 ma neutral or 20 ma neutral.
FACSIMILE: Plus 1 to plus 10 volts dc across internal 600 ohms.
VOICE-FREQUENCY, FM: 0 volume units (vu).
FREQUENCY SHIFT
TELEGRAPH: 850 cps, adjustable from 0 to to 1000 cps.
FACSIMILE: 800 cps, adjustable from 0 to 942 cps.
FREQUENCY DEVIATION
FM: 0 to p/m 3500 cps deviation over an audio range of 300 to 3500 cps.
OUTPUT
IMPEDANCE: 75 ohms.
POWER: 0 to 5 W.
TELEGRAPH KEYING SPEED: Speeds greater than 125 dot cycles may be used.
CRYSTAL CONTROL: 8 (frequency range from 1.7 to 6.2 mc).
POWER SOURCE REQUIRED: 115 or 230 v, 50 to 60 cps, single ph., 125 W.

O-5C/FR

EXCITER UNIT

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 12AT7
(1) 6AG5
(1) 5763
(1) OA2
(1) 5814A
(1) 6AU6
(1) 6U5
(1) 5Y3GT

Total Tubes: (10)

Not Available (type)
Total Crystals: (8).

REFERENCE DATA AND LITERATURE

TM-11-2205B, Technical Manual for Exciter Unit O-5C/FR.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

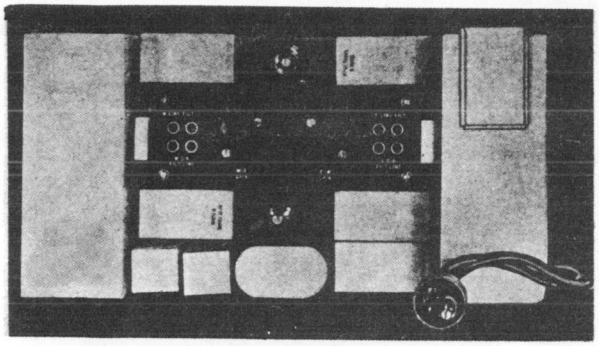
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Exciter Unit O-5C/FR	6.99	18 X 24 X 28	61

EQUIPMENT SUPPLIED DATA

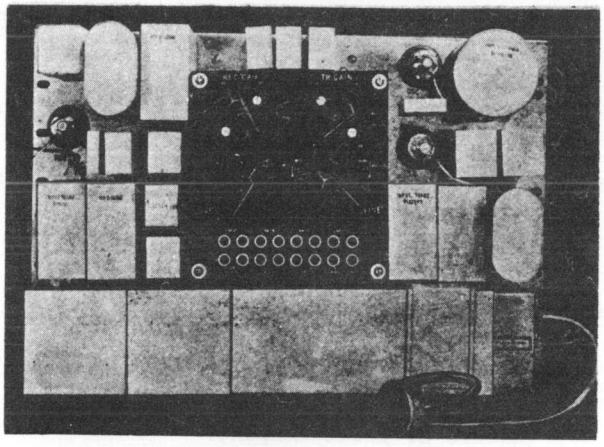
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Exciter Unit O-5C/FR	10-1/2 X 13-1/2 X 19	52
2	Technical Manual TM11-2205B	3/4 X 8-1/2 X 11	3/4

CARRIER REPEATER AND CARRIER TERMINAL

OA-10/FC,13/FC



Carrier Repeater OA-10/FC



Carrier Terminal OA-13/FC

FUNCTIONAL DESCRIPTION

The OA-10/FC and OA-13/FC in conjunction with Carrier Filter F-36/FC are used to form a carrier system which is generally known as type H.

The OA-10/FC panel contains equipment for amplifying the signals in both directions of transmission. The strength of signals is controlled by the W-E GAIN and E-W GAIN switches, which in turn control the amplifier gain pads and provide up to 50 db loss in 2 db steps.

The OA-13/FC panel contains equipment for changing voice-frequency signals to carrier frequency signals in the transmitting direction, for reconverting carrier-frequency signals to voice-frequency signals in the receiving direction and for amplification of the signals to the desired strength in both directions of transmission.

No field changes in effect at time of preparation (15 April 1957).

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

TM11-2025, Technical Manual for Carrier Terminal OA-13/FC, Carrier Repeater OA-10/FC and Carrier Filter F-36/FC

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	

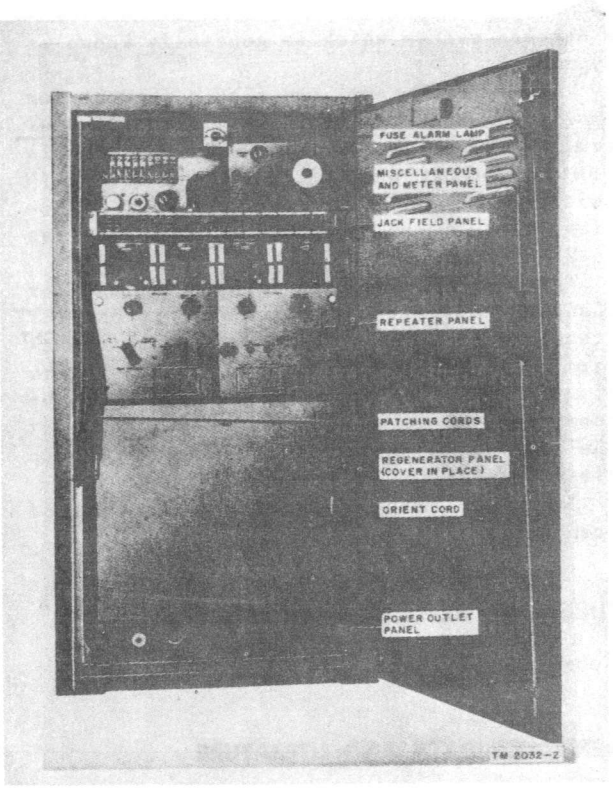
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Carrier Terminal OA-13/FC	6.0	18 x 20 x 25	125
1	Carrier Repeater OA-10/FC	4.5	14 x 18 x 24	70

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Carrier Terminal OA-13/FC	12-1/4 x 19	50
1	Carrier Repeater OA-10/FC	8-3/4 x 19	35

REGENERATIVE REPEATER OA-3/FC



Regenerative Repeater OA-3/FC

FUNCTIONAL DESCRIPTION

The OA-3/FC is a cabinet inclosed, packaged unit consisting, basically, of two complete DC regenerative telegraph repeaters designated REPEATER 1 and REPEATER 2. Each of the two repeaters is used to reform, retime, and retransmit start-stop, five unit teletypewriter code signals at a speed of 60 wpm (368 operations) or 66 wpm (404 operations) and to provide for tandem operation of several line sections in order to increase the effective over-all length of a telegraph line circuit.

It also serves as a single-line repeater to permit the addition of a branch circuit at repeater stations (three-way operation).

No field changes in effect at time of preparation (15 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATION
- METHOD: Electromechanical.
- TYPE: Half-duplex and full duplex; neutral only.
- CIRCUIT: DC only.
- CODE: 5 unit, start-stop, teletypewriter signals.
- SPEED: 60 wpm (368 opm); 66 wpm (4040 opm).

OPERATING RANGES (TELETYPEWRITER STATION)
- NEUTRAL TO POSITIVE: Field wire, 20 mi.
  BATTERY: Open wire, 30 mi.
- NEUTRAL TO NEGATIVE: Field wire, 20 mi.
  BATTERY: open wire, 30 mi.
- NEUTRAL THREE-WAY: Field wire, 5 mi; open wire, 10 mi.

POWER REQUIREMENTS
- MOTOR CIRCUIT: 105 to 125 v, 50 to 60 cps at 150 W or 180 va.
- TRANSMISSION: 130 v DC, positive and negative.
- ALARM CIRCUIT: 6.6 v AC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Company.
Approximate Cost: $2750.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

TM11-2032: Technical Manual for REGENERATIVE REPEATER OA-3/FC.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	

OA-3/FC REGENERATIVE REPEATER

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Regenerative Repeater OA-3/FC	23.8	22 X 27 X 68	510

EQUIPMENT SUPPLIED DATA

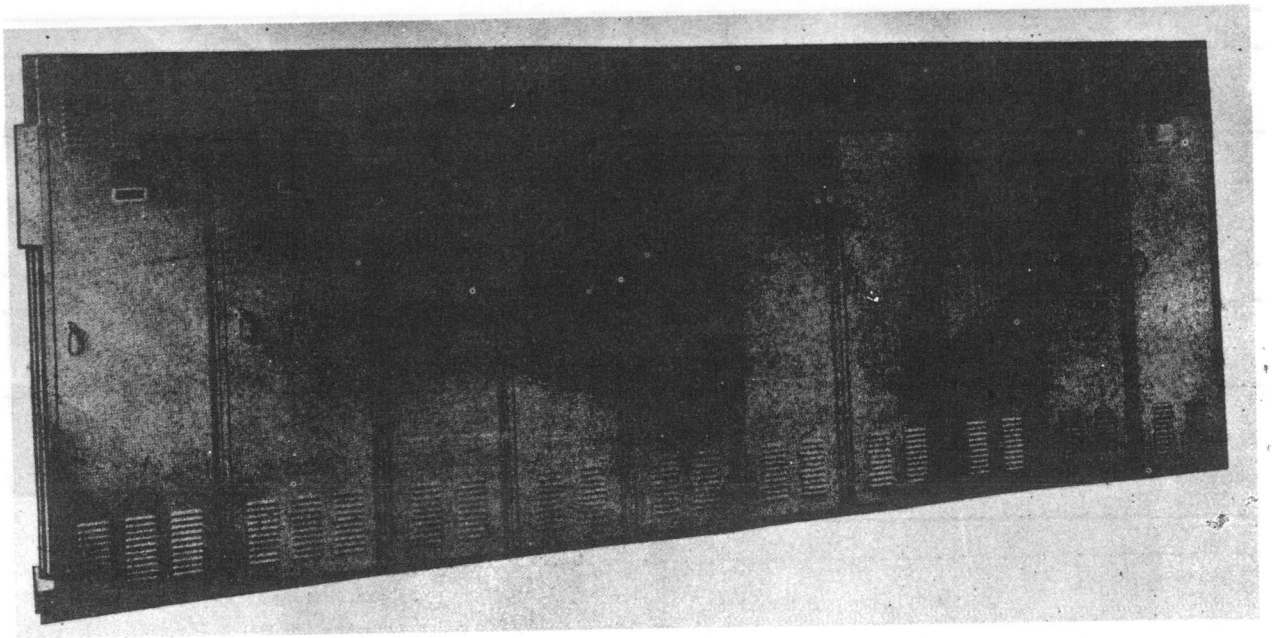
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Regenerative Repeater OA-3/FC	17 X 22-1/4 X 42	315

October 1957

Radio-Communication Terminal Equipment

CARRIER TERMINALS

OA-63/FRC-10, OA-64/FRC-10



Carrier Terminals OA-63/FRC-10, OA-64/FRC-10

FUNCTIONAL DESCRIPTION

The OA-63/FRC-10 and OA-64/FRC-10 generate the audio tones used to modulate a single sideband transmitter in a single sideband multichannel radioteletype and telephone system. The pulse length of these audio tones is controlled by the sending teletypewriter mark and space impulses. The carrier equipment also receives, demodulates and converts the resulting audio tones sent by a distant transmitter into mark and space signals which are applied to receiving teletypewriters. The OA-64/FRC-10 is contained in eight bays and is commercial land-line carrier telegraph equipment modified to operate over a single side-band radioteletype system. The OA-63/FRC-10 contained in two bays must be used with the OA-64/FRC-10 and it is designed to enlarge the operating capacities of that equipment when it is being used as a part of a radio system. The purpose of the OA-63/FRC-10 is to provide a method of frequency diversity known as double-modulation diversity (DMD) which prevents fluttering without reducing the number of teletypewriter circuits.

No field changes in effect at time of preparation (29 January 1957).

RELATION TO OTHER EQUIPMENT

This equipment is a part of Radio Set AN/FRC-10.

Equipment Required but not Supplied: Wires, Cables, conduit and cable rack to supply power or for connections to radio receiver, radio transmitter and teletypewriters also telegraph loop equipment and teletypewriters are required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF TELETYPEWRITERS SERVED
- SENDING: 6
- RECEIVING: 6

NUMBER OF CHANNELS: 6 each, send and receive

FREQUENCY SPECTRUM: Voice frequency audio range.

NUMBER OF FREQUENCIES USED: 26 carrier frequencies.

FREQUENCY RANGE: 425 to 4845 cps.

MODE OF TRSNSMISSION:
- CARRIER TERMINAL TO TRANSMITTER SITE: audio tones over wire facilities.
- RADIO TRANSMITTER TO DISTANT RADIO RECEIVER: tone amplitude modulation over single side-band radio system.
- RADIO RECEIVER TO CARRIER TERMINAL: audio tones over wire facilities.

WIRE FACILITIES SEPARATING TERMINAL AND SENDING AND RECEIVER SITES.
- 128-MIL NONLOADED OPEN WIRE: 200 mi.
- LOADED CABLE (CUTOFF FREQUENCY ABOVE 5000 cps): 20 mi.

NONLOADED CABLE (ATTENUATION NOT EXCEEDING 26DB): 20 mi.

Radio-Communication Terminal Equipment

October 1957

OA-63/FRC-10, OA-64/FRC-10 CARRIER TERMINALS

POWER FACILITIES
AC INPUT: 115 v, 50 to 60 cps
POWER CONSUMPTION: 3 kw
POWER FACTOR: 0.75.

REFERENCE DATA AND LITERATURE

TM11-2132: Dept of the Army Technical Manual for Carrier Terminals OA-63/FRC-10 and OA-64/FRC-10.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric, New York, N.Y.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) 355A
(2) 311A
(6) 6SJ7GT
(1) 77
(1) 274B
(4) 393A
(37) 310A
(6) 6SL7GT
(1) 43
(16) 101D
(12) 337A
(3) 349A
(1) 25Z5
Total Tubes: (96)

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Power Bay No. 1	36.9	24 X 36 X 91	1195
1	Power Bay No. 2	41.5	24 X 32 X 91	965
1	Carrier Supply Bay No. 1	30.6	22 X 28 X 90	780
1	Carrier Supply Bay No. 2	30.6	22 X 28 X 90	740
1	Channel Terminal Bay No. 1	30.6	22 X 28 X 90	760
1	Channel Terminal Bay No. 2	30.6	22 X 28 X 90	760
1	Channel Terminal Bay No. 3	30.6	22 X 28 X 90	760
1	Common Equipment Bay	30.6	22 X 28 X 90	820
1	Shifter Bay	30.6	22 X 28 X 90	810
1	Restorer Bay	30.6	22 X 28 X 90	630
1	Loudspeaker Set 100E	1.7	12 X 14 X 17	52
1	Carrier Telegraph Set - 160A1	6.4	19 X 20 X 29	150
1	Bulletins and Drawings	4.2	17 X 20 X 22	75
1	Oscilloscope I-245	5.8	16 X 24 X 26	110
1	Hickok-560 Vacuum Tube Tester	7.6	22 X 23 X 26	86
1	Test Equipment, Tools, and Accessories 163C1 Test Unit Ammeter, Model 1 (Weston) Decibel Meter TS-399/U Multimeter TS-380/U	1.8	8 X 10 X 14	35
1	Test Set TS-190/U Current Flow Test Set I-181	4.2	17 X 20 X 22	80
1	Tools and Accessories-Oscillator TS-379/U	1.3	8 X 14 X 19	42
1	Teletypewriter Test Distributor-100C Teletypewriter Test Distributor-100A Wiring Test Set TS-563A Grid Emission Test Unit Tools and Accessories	4.2	17 X 20 X 22	80
		6.8	20 X 22 X 29	130

CARRIER TERMINALS

OA-63/FRC-10, OA-64/FRC-10

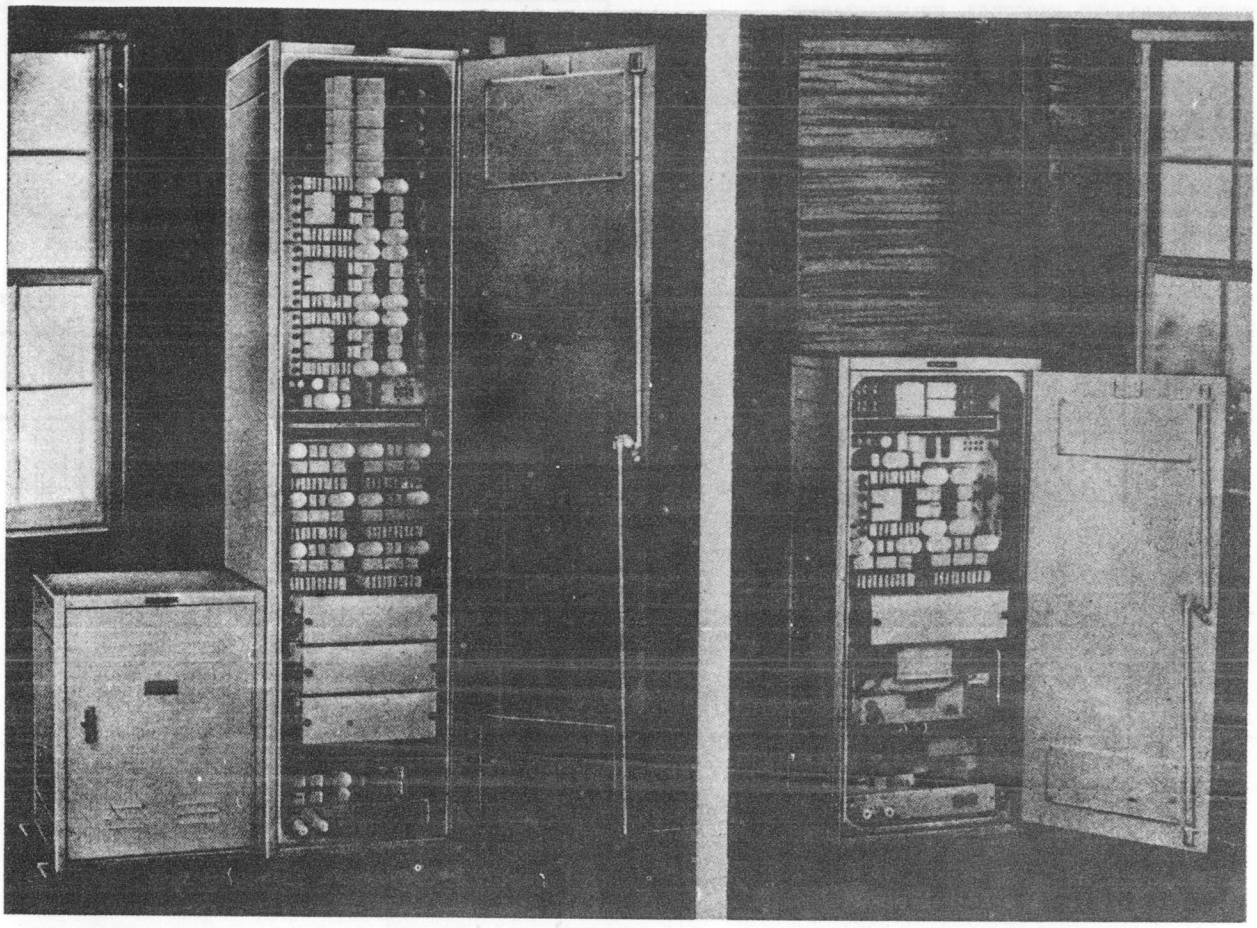
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Bay No. 1	17 X 26-1/4 X 84	880
1	Power Bay No. 2	17 X 26-1/4 X 84	640
1	Carrier Supply Bay No. 1	17 X 22-1/4 X 84	485
1	Carrier Supply Bay No. 2	17 X 22-1/4 X 84	445
1	Channel Terminal Bay No. 1	17 X 22-1/4 X 84	465
1	Channel Terminal Bay No. 2	17 X 22-1/4 X 84	465
1	Channel Terminal Bay No. 3	17 X 22-1/4 X 84	465
1	Common Equipment Bay	17 X 22-1/4 X 84	525
1	Shifter Bay	17 X 22-1/4 X 84	515
1	Restorer Bay	17 X 22-1/4 X 84	335
1	160A1 Carrier Telegraph Test Set	9-9/16 X 11-1/2 X 23	58
1	163C1 Test Unit	5-1/4 X 6-3/16 X 6-3/4	5
1	Ammeter - Weston Model 1	3-1/2 X 6 X 6-5/8	7
1	Decibel Meter - TS-399/U	8 X 8 X 10	15
1	Multimeter TS-380/U	3 X 4 X 7-1/2	8.5
1	Oscilloscope I-245	14 X 22 X 24	54
1	Hickok 560 Vacuum Tube Tester	8-1/2 X 17 X 18	36
1	Test Set TS-190/U	4 X 5 X 6	3
1	Current Flow Test Set I-181	5-1/8 X 5-1/8 X 8-3/4	9
1	Oscillator TS-379/U	9-1/4 X 9-1/2 X 15	27
1	Grid Emission Test Set-J-70047-D	2 X 2-1/2 X 4-1/4	0.2
1	Wiring Test Set TS-563A/FT	1-3/4 X 3-1/8 X 4-5/8	0.5
1	Loudspeaker Set 100E	7 X 8 X 11	11
1	Teletypewriter Test Distributor 100C	5 X 7 X 8-3/4	12
1	Teletypewriter Test Distributor 100A	5 X 7 X 8-3/4	12

October 1957

Radio-Communication Terminal Equipment

TELEPHONE REPEATERS OA-7/FC,OA-8/FC



Telephone Repeaters OA-7/FC, OA-8/FC

FUNCTIONAL DESCRIPTION

The OA-7/FC and OA-8/FC consists of voice frequency amplifying units and associated components designed especially to meet military requirements at permanent or semi-permanent installations. This equipment is used to extend the range of two-wire or four-wire voice-frequency telephone systems operated over open-wire or cable facilities. The OA-7/FC provides repeater equipment for only one voice-frequency telephone circuit while the OA-8/FC provides repeater equipment for three separate voice-frequency telephone circuits.

No field changes in effect at time of preparation (16 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 200 to 2500 cycles per sec.

MAX NET GAIN

TWO WIRE: 24 db.

FOUR WIRE: 30 db.

IMPEDANCES

INPUT: 600 ohms.

OUTPUT: 600 ohms.

POWER SOURCE REQUIRED: 105 to 125 v, 50 to 60 cps, 60 W.

Radio-Communication Terminal Equipment

October 1957

OA-7/FC, OA-8/FC TELEPHONE REPEATERS

TUBE AND/OR CRYSTAL COMPLEMENT

Tubes and Crystals: Not Available.

REFERENCE DATA AND LITERATURE

TM11-2028, Technical Manual for Telephone Repeaters OA-7/FC and OA-8/FC.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Telephone Repeater OA-8/FC		21 x 27 x 90	810
1	Miscellaneous-Parts and Materials or			106
1	Telephone Repeater-OA-7/FC			610

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone Repeater OA-7/FC	49 x 22-1/4 x 17	420
	Miscellaneous Equipment or		50
1	Telephone Repeater OA-8/FC or	17 x 22-1/4 x 84	540
	Miscellaneous Equipment		78