ACQ 1/11

SECTION 8 OF 10

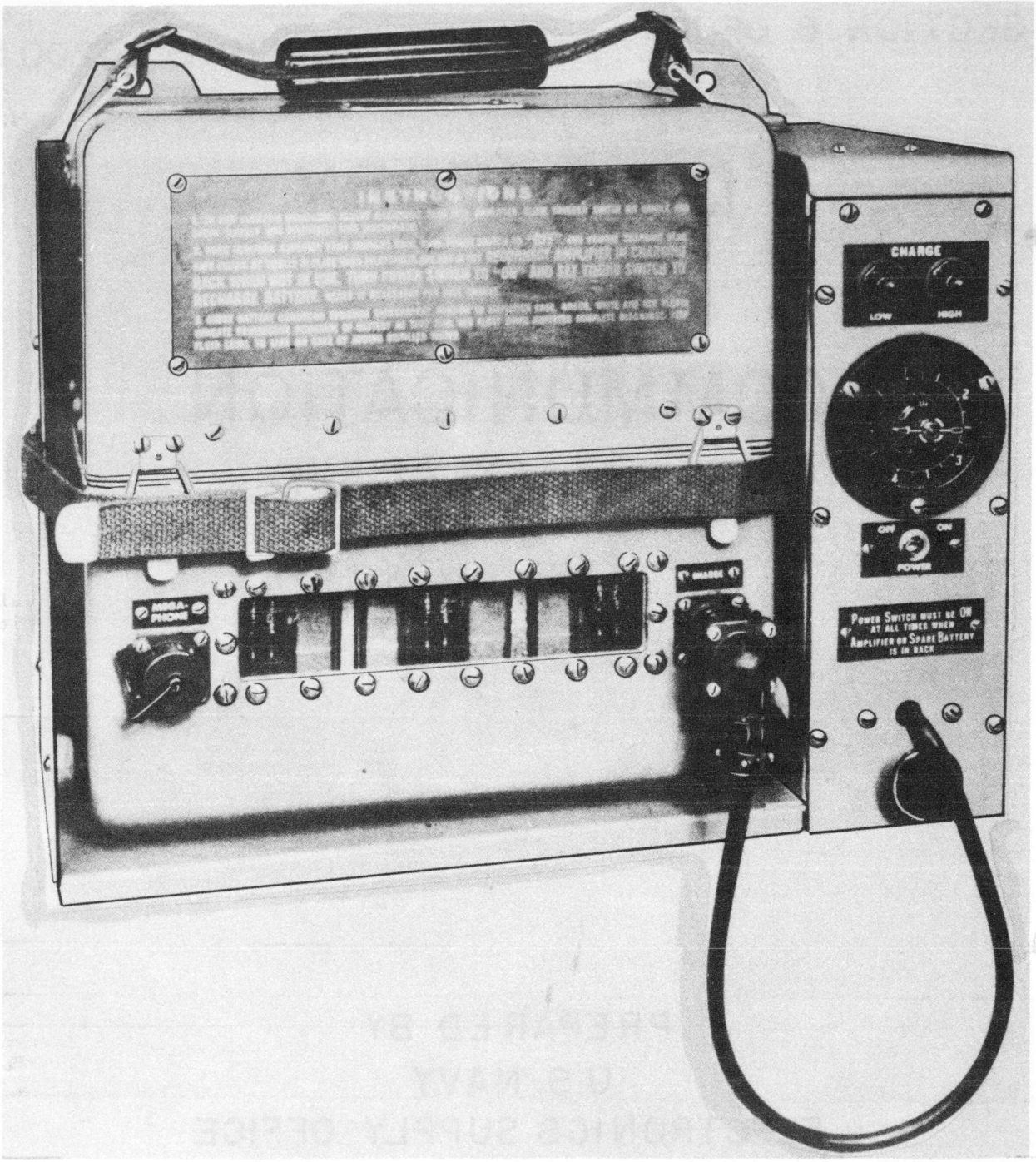
NAVSHIPS 94200.1

DIRECTORY OF COMMUNICATION EQUIPMENT

(CONTINUED)

PREPARED BY
U.S. NAVY
ELECTRONICS SUPPLY OFFICE
GREAT LAKES, ILLINOIS

ELECTRIC MEGAPHONE SYSTEM PAE-1

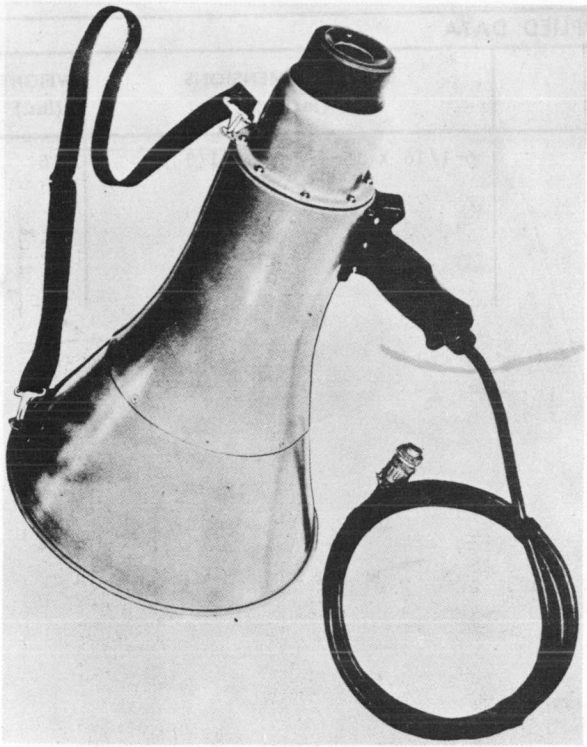


Portable Amplifier

FUNCTIONAL DESCRIPTION

The Navy Model PAE-1 Electric Megaphone equipment is designed for voice reinforcement in much the same manner as, but to a greater degree than, the familiar acoustic megaphone.

PAE-1 ELECTRIC MEGAPHONE SYSTEM



Megaphone Unit

Essentially it consists of (1) the megaphone unit, which combines a microphone and a reproducer in a single assembly; (2) a portable amplifier which electrically amplifies the output signal of the microphone section of the megaphone and feeds this amplified signal to the reproducer section; and (3) a charging rack for recharging the self-contained storage battery of the portable amplifier.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING POWER RQMT: 6 v storage battery.
CHARGING RACK DATA: Has facilities for charging from power supplies of 12, 24, 48, 96 or 120 v DC or 120 v AC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Guided Radio Corporation, New York, N.Y.
Contract NObs-20050.
Contract NObs-20335.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 1D5-GP (4) 1J6-G (1) 3A-4

Total Tubes: (6)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 365-0166 I.C. Technical Manual No. 103A for Navy Model PAE-1 Electric Megaphone System.

TYPE CLASSIFICATION

DESIGN COGNIZANCE BUSHIPS

PROCUREMENT COGNIZANCE

STOCK NO.

R.D.B. IDENT. NO.

SHIPPING DATA

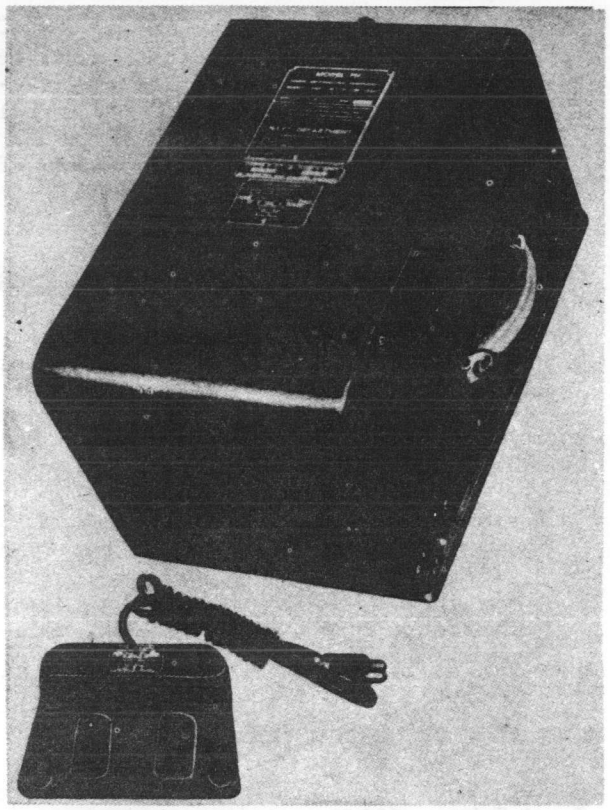
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Electric Megaphone System Including: (1) Megaphone Unit (1) Portable Amplifier (1) Charging Rack	1.0	7-15/16 X 15-1/8 X 26-1/8	86
1	Set of Equipment Spares			

ELECTRIC MEGAPHONE SYSTEM PAE-1

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electric Megaphone System PAE-1 including: (1) Megaphone Unit (1) Portable Amplifier (1) Charging Rack	6-1/16 X 15-1/8 X 18-1/8	46
1	Set of Equipment Spares		

SOUND REPRODUCING EQUIPMENT PH



Sound Reproducing Equipment PH

FUNCTIONAL DESCRIPTION

The Moded PH is a complete sound reproducing equipment for reproducing voice or other audio signals, at variable speeds, from discs recorded on Model PJ Sound Recording Equipment, Model PD, PD-1 or other Similar constant angular velocity recording equipment. It is a portable equipment and is supplied with a weatherproof canvas carrying case that has a pocket containing the power cord and Stepback-Brake Control Unit.

It is designed for reproducing CW or voice signals and contains provisions for using headphones or loudspeaker for listening.

No field changes in effect at time of preparation (12 February 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Headphone.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 200 to 3000 cps.
TURNTABLE SPEED: 2.5 to 33 rpm.
HEADPHONE IMPEDANCE: 600 ohms.
PHONE JACK POWER: 15 mw max.
POWER REQUIREMENTS: 115 v, 60 cps, single ph, 0.51 amps, 53 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Soundscriber Corp., New Haven, Conn. Contract NXss-16639, dated 31 October 1942.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6SL7GT (2) 6V6GT (1) 6X5GT
Total Tubes: (5)

REFERENCE DATA AND LITERATURE

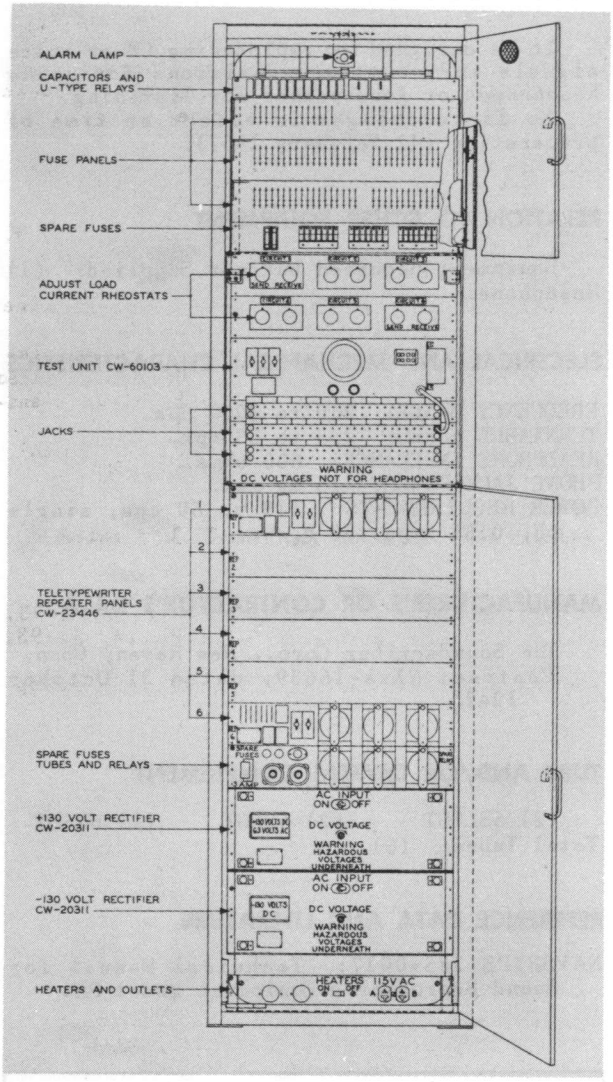
NAVSHIPS 385-0017: Technical Manual for Sound Reproducing Equipment Model PH.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Stepback-Brake Control Unit 23352		4.75
1	Variable Speed Reproducer Unit 67008	11.12 X 13 X 18.5	62
2	Technical Manual NAVSHIPS 385-0017		
1	Set of Equipment Spares		36

TELETYPEWRITER REPEATER PM



Teletypewriter Repeater PM

FUNCTIONAL DESCRIPTION

The PM is designed for use in the telegraph circuits of the Carrier Control System UN. The general purpose of this repeater is to provide the necessary equipment and interconnections so that teletypewriters may be used for sending and receiving on the telegraph circuits of the UN carrier Control System.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TELEGRAPH SIGNAL SPEED: 60 or 75 wpm.
OPERATING POWER: 103 to 126 v or 207 to 253 v, 50 to 60 cps.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Co., Inc. New York, N.Y.
Contract NXsr-55602, dated 29 December 1943.
Contract NXsr 83392, dated 14 June 1946.
Approximate Cost: $3600.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 394A
Total Tubes: (2)

REFERENCE DATA AND LITERATURE

NAVSHIPS 900,315: Technical Manual for Teletypewriter, Repeater Navy Model PM, for use with Carrier Control System Model UN.

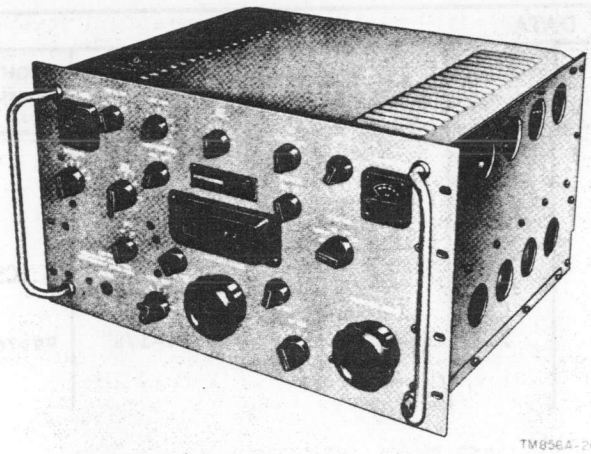
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Teletypewriter Repeater Equipment PM enclosed in cabinet and consisting of:	17 X 22-1/4 X 84	
1	Test Unit NT-60103		
6	Teletypewriter Repeater Unit NT-23446		
2	Rectifier Unit NT-20311		

March 1957

RADIO RECEIVER R-390/URR,390A/URR



TM856A-26

Radio Receiver R-390/URR

FUNCTIONAL DESCRIPTION

The R-390/URR and R-390A/URR are high performance, exceptionally stable, general purpose superheterodyne receivers for use in both fixed and mobile service. They provide reception of CW, MCW, VOICE and frequency-shift Keyed signals within a frequency range of .5 to 32 mc.

The receiver can be applied to a Space-Diversity Receiving System, to either of two types of Space-Diversity Radioteletype Receiving Systems and to a Single-Side band Radioteletype Receiving System.

The R-390/URR and R-390A/URR are similar and interchangeable except for component parts.

No field changes in effect at time of preparation (26 July 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Antenna, Low Impedance Transmission Line, Headset NT-49507 or equivalent, Cord CX-1334/U or equivalent, Speaker, Adapter Connector UG-970/U, Adapter Connector UG-971/U.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: .5 to 32 mc (in 32 steps).
SIGNALS RECEIVED: A1,A2,A3,A9 and F1.
AUDIO POWER OUTPUT: 600 ohm unbalanced 500 milliwatt line; 600 ohm balanced 10 milliwatt line; headphones 5 milliwatt.
I.F. SELECTIVITY: 100 cps to 16 kc band width, in 6 steps.
I.F. OUTPUT: 20 mv with a receiver signal input of 3 uv.
INTERMEDIATE FREQUENCIES
1st VARIABLE I.F.: 9 to 18 mc (used only on eight lowest frequency bands).
2nd VARIABLE I.F.: 2 to 2.5 mc on lowest steps; 2 to 3 on all other steps.
FIXED I.F.: 455 kc.
SENSITIVITY
AM SIGNALS: 3 uv or better.
CW SIGNALS: 1 uv or better.
OPERATING POWER REQUIREMENTS: 115 or 230 v, 48 to 62 cps, 270 W.
ANTENNAS
UNBALANCED: Randum length straight wire or vehicular-mounted whip.
BALANCED: 125 ohm nominal terminal impedance; matches 50 to 200 ohm balanced transmission lines of unbalanced transmission lines using adapters.
AMBIENT TEMPERATURE RANGE: -40° to $+55^{\circ}$C.
OPERATING ALTITUDE: Up to 10,000 ft.

MANUFACTURER'S OR CONTRACTOR'S DATA

Collins Radio Co., Cedar Rapids, Iowa
R-390/URR Contract 14214-Phila. 51-93,
4-390A/URR Contract 14214-Phila. 51-93, dated 18 October 1955.
Approximate Cost: $2210.00 with equipment spares. R-390/URR.

TUBE AND/OR CRYSTAL COMPLEMENT

R-390/URR

(3) 6AJ5	(3) 6AK6	(1) 6BH6
(7) 6BJ6	(3) 6C4	(1) 12AT7
(6) 12AU7	(2) 5651	(2) 5749
(2) 6082	(2) 26Z5W	

Total Tubes: (32)

R-390A/URR

(1) 6DC6	(3) 6C4	(7) 5814A
(3) 6AK6	(1) OA2	(2) 26Z5W
(2) 5654/6AK5W	(6) 5749/6BA6W	

Total Tubes: (25)

R-390/URR

(1) CR-45/U	(24) CR-36/U	(1) 1N69

Total Crystals: (26)

R-390A/URR

(1) CR-45/U	(19) CR-36/U	(1) 1N198

Total Crystals: (21)

REFERENCE DATA AND LITERATURE

TM11-856 to 31R1-2URR-154 Army and Air Force Technical Manual for Radio Receiver R-390/URR.
TM11-856A: Dept of Army Technical Manual for radio Receiver R-390A/URR.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	MIL-4-1D474
STOCK NO.	

SHIPPING DATA

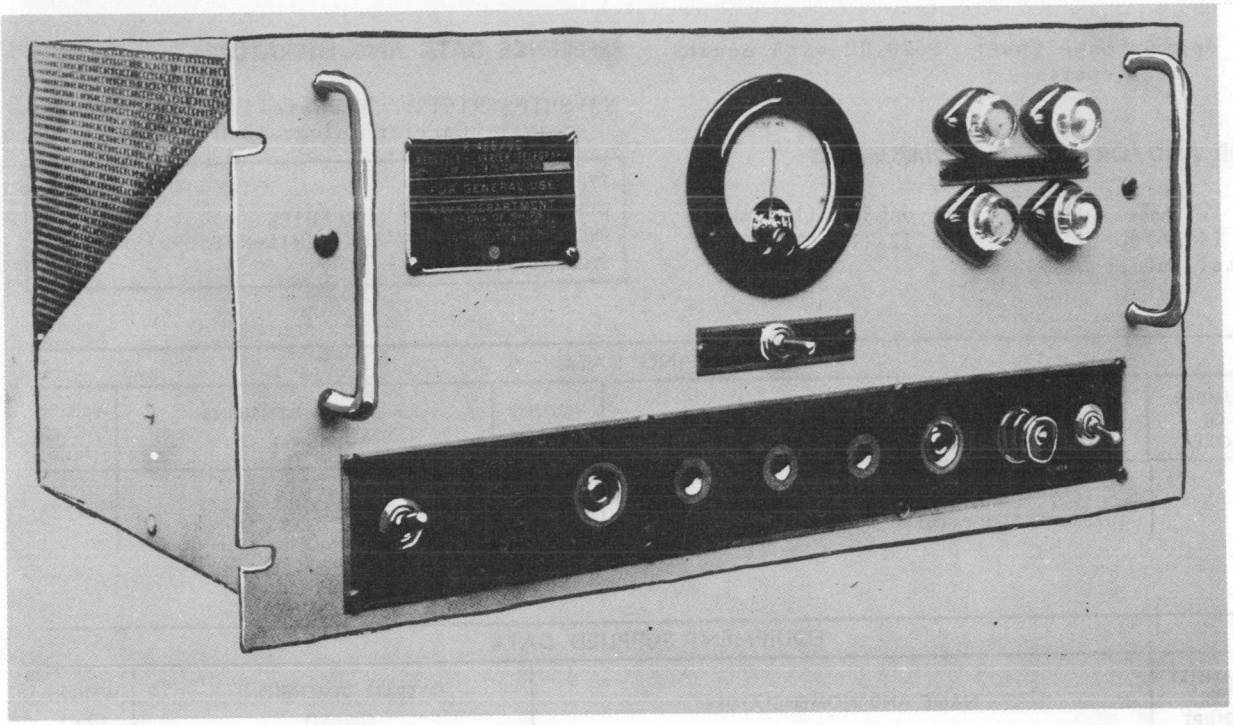
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiver R-390/URR Power Supply PP-621/URR Power Cable Assy CX-1358/U Technical Manuals TM11-856'	12.4	21 X 32 X 32	
1	Set of Running Spares			
	or			
1	Radio Receiver R-390A/URR Running Spares Technicals Manuals	3.89	14-3/4 X 20-1/2 X 24-1/4	99.76

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-390/URR	10-1/2 X 17-1/4 X 19	65
1	Power Supply PP-621/URR	4-1/8 X 5-7/8 X 6-3/4	15
1	Power Cable Assy CX-1358/U	96	0.677
2	Technical Manuals TM11-865		2
1	Set Spare Tubes		
1	Set Spare Fuses		
1	Set Spare Lamps		
	or		
1	Radio Receiver R-390A/URR	10-15/32 X 16-19/32 X 19	75
2	Technical Manuals TM11-856A		1
1	Set Running Spares		

December 1956

RECEIVER, CARRIER TELEGRAPH R-466/UC



Receiver, Carrier Telegraph R-466/UC

FUNCTIONAL DESCRIPTION

The R-466/UC is capable of accepting an on-off tone telegraph signal and emitting a corresponding direct current signal.

The Receiver is capable of keying a 20 to 60 ma neutral telegraph loop with battery supplied from the Receiver, a 20 to 60 ma neutral telegraph loop with battery supplied from the loop, a 30 ma polar telegraph loop with battery supplied from the Receiver.

Transportation of the on-off tone telegraph signal into a corresponding direct current signal is accomplished by electronic means. The on-off tone telegraph signal is rectified and applied to trigger circuits which key the output of the Receiver.

The Receiver functions as an individual unit with a self-contained power supply.

No field changes in effect at time of preparation (26 July 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

INPUT: 600 ohms balanced or unbalanced, for on-off tone 400 to 8000 cps.

OUTPUT KEYING: 20 to 60 ma neutral remote battery, 20 to 60 ma neutral local battery, 30 ma polar local battery, either side of ground may be grounded.

OUTPUT DISTORTION: Correction to zero for ±20% distortion at input.

INPUT LEVEL: The input circuit is capable of adjustment to signals at any level in the range from −24 to +10 dbm. Input level variations of ±7.5 dbm will be tolerated during operation.

INPUT KEYING SPEED: 20 to 200 dot cycles (equivalent to 60 to 600 wpm operation). Higher keying speeds may be handled if input level variations are not over ±5 dbm.

INPUT TONE FREQUENCY: 400 to 8000 cps. Tone frequencies above 2000 cps are desirable to minimize fortuitous distortion. This is especially true for higher keying speeds.

OPERATING POWER REQUIREMENTS: 115 or 230 v, 50 to 60 cps, 150 W.

VISUAL OPERATION INDICATOR: Indicator light on front panel. Meter for dbm level and output current.

MANUFACTURER'S OR CONTRACTOR'S DATA

CGS Laboratories, Inc. Stamford, Conn. Contract NObsr 52314, dated 25 February 1952.

R-466/UC RECEIVER, CARRIER TELEGRAPH

Approximate Cost: $620.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) OB2 (1) 5U4G (1) 6AL5W (1) 6AU6
(4) 6Y6G (1) 6X4W (2) 12AT7 (3) 12AU7
Total Tubes: (15)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91612: Technical Manual for Receiver, Carrier Telegraph R-466/UC.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	MIL-R-15890(SHIPS)
STOCK NO.	

SHIPPING DATA

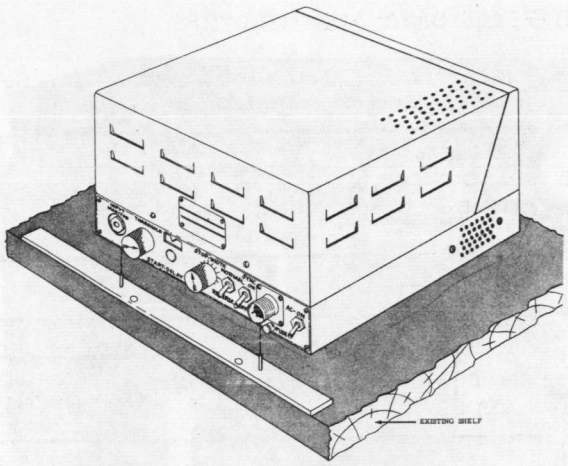
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Receiver, Carrier Telegraph R-466/UC Equipment Spare Parts Carton	9.25	18 X 24 X 37	94.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Receiver, Carrier Telegraph R-466/UC	8-23/32 X 14-3/8 X 19	36.5
1	Equipment Spare Parts Carton	8 X 8 X 12	24
2	Technical Manuals		

December 1956

RECEIVER, TELEGRAPH CARRIER R-551/UC



Receiver, Telegraph Carrier R551/UC

FUNCTIONAL DESCRIPTION

The R-551/UC is designed to convert keyed audio tone teletype signals to direct current on-off pulses suitable for operating a teletype printer. Provisions are included for generating teletype synchronizing pulses of variable rate and duration when used with an appropriately equipped teletype receiver.

No field changes in effect at time of preparation (31 July, 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (3) Plugs.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

IMPEDANCE DATA

INPUT: 600 ohms nominal.
OUTPUT: 40 to 200 ohms.
INPUT FREQUENCY: 400 to 8000 cps.
INPUT LEVEL: 0.1 to 2 v rms.
OUTPUT: 60 milliamp.
POWER REQUIREMENTS: 115 v, 60 cps, single ph, 100 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Schuttig and Company Inc., Washington, D.C.
Contract Nobsr 52670, dated 30 1951.
Approximate Cost: $345.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) OA2	(3) 12AX7	(1) 6AS7
(5) 6J6	(1) 5R4GY	(1) 6X4

Total Tubes: (13)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91907: Technical Manual for Receiver, Telegraph Carrier R-551/UC.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-D-16284
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Receiver, Telegraph Carrier R-551/UC	8-1/2 X 12 X 13-1/2	33
1	Mounting Strip		
1	Technical Manual NAVSHIPS 91907		
1	Set of Equipment Spares	6-3/4 X 7 X 13-1/4	24

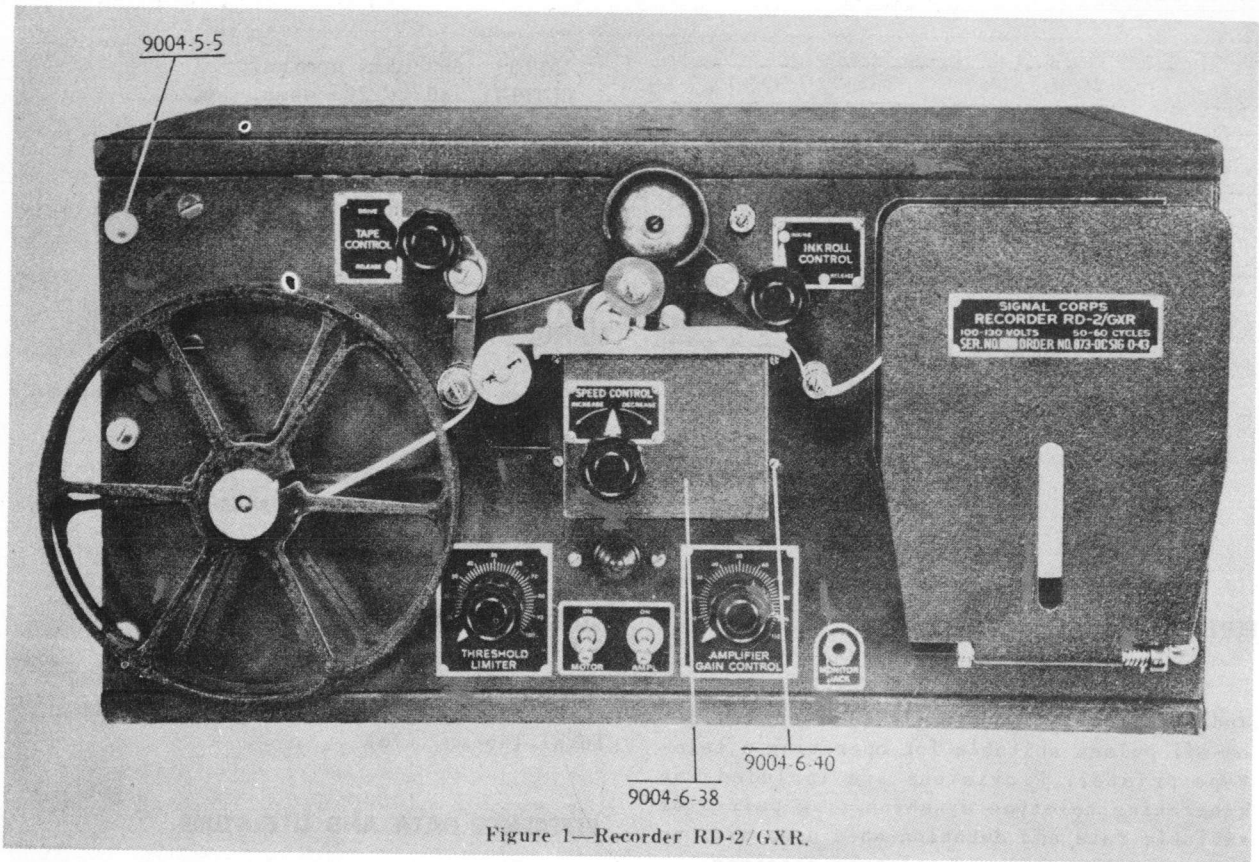


Figure 1—Recorder RD-2/GXR.

Recorder RD-2/GXR

FUNCTIONAL DESCRIPTION

The RD-2/GXR is a cabinet or rack mounted recorder designed for ink recording of 7 X 7 signal patterns facsimile signals on 3/4 inch paper tape at varying speeds up to 75 words per minute. The input of the recorder may be connected to a telephone line from a remote radio receiver or directly to the output of a radio receiver. The recorder is a self-contained unit only requiring connection to a power line and a source of signal to the input terminals.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

OPERATING POWER REQUIREMENTS: 100 to 130 v, 50 to 60 cps.
POWER CONSUMPTION: 150 W.

RECORDING SPEED: 25 to 85 words per minute.
TAPE SPEED: 54, 60 and 72 inches per minute.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6SC7 or 6SC7GT/G
(1) 5V4G (2) 6J5GT (3) 6H6GT
Total Tubes: (7)

REFERENCE DATA AND LITERATURE

TM11-382 War Dept. Technical Manual for Recorder RD-2/GXR.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE TASSA
STOCK NO.

RD-2/GXR RECORDER

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Recorder RD-2/GXR (cabinet Mounting)	10-1/8 X 14-5/8 X 19-1/4	75
1	Recorder RD-2(GXR-(less cabinet)	8-3/4 X 11-1/8 X 19	60
1	Chest CX-65/GXR (less contents)	13-1/2 X 19-1/2 X 29	40
1	Chest CX-65/GXR, with RD-2/GXR and spare parts packed	13-1/2 X 19-1/2 X 29	125

30 August 1962

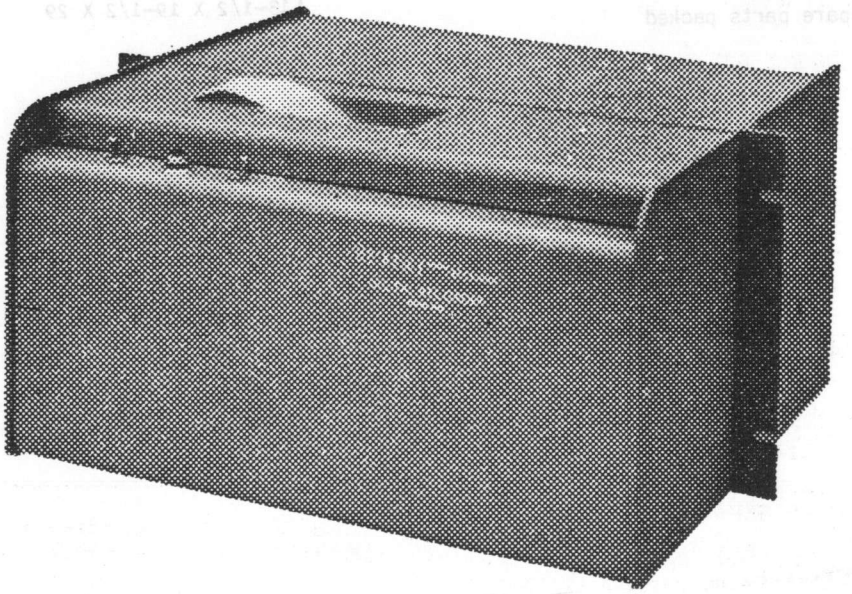
Cog Service: **FSN:** **RECORDER, SIGNAL DATA RO-153/U**

Functional Class:

USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Beckman/Berkeley Div., Beckman Instruments Inc.



Recorder, Signal Data RO-153/U

FUNCTIONAL DESCRIPTION:

The Recorder, Signal Data RO-153/U is a general-purpose, digital equipment that collects readout information from a counter and prints the count indication on an adding machine tape. It is used for making long term stability checks, recording transients, or making a permanent printed record in digital control systems. The unit is installed by plugging the recorder into a 40-pin readout receptacle on a counter.

No field changes in effect at time of preparation (1 June 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Rack or bench mounted.
MAXIMUM CYCLE RATE: 0.85 sec for 6 digits.
INPUT: Direct from Berkeley decades.
OUTPUT: Adding machine tape.

RO-153/U RECORDER, SIGNAL DATA

RECORDING MEDIUM: Paper tape.
DATA RECORDED: Counter readout information recorded, digital control systems output recorded.
NUMBER OF CHANNELS: 8-channels max.
PRINTING SPEED: Sixty 7-digit numbers per minute max.
OPERATING POWER RQMT: 115 v ac, 50 to 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The RO-153/U is designed to be used with, but is not a part of, Frequency Meter FR-143/U and comparable counters.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Recorder, Signal Data RO-153/U		8-1/2 x 18 x 19	60

REFERENCE DATA AND LITERATURE:

Beckman Instrument Incorporated Catalog ESO Copy no. 00407-F for Recorder, Signal Data RO-153/U (Model 1452).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

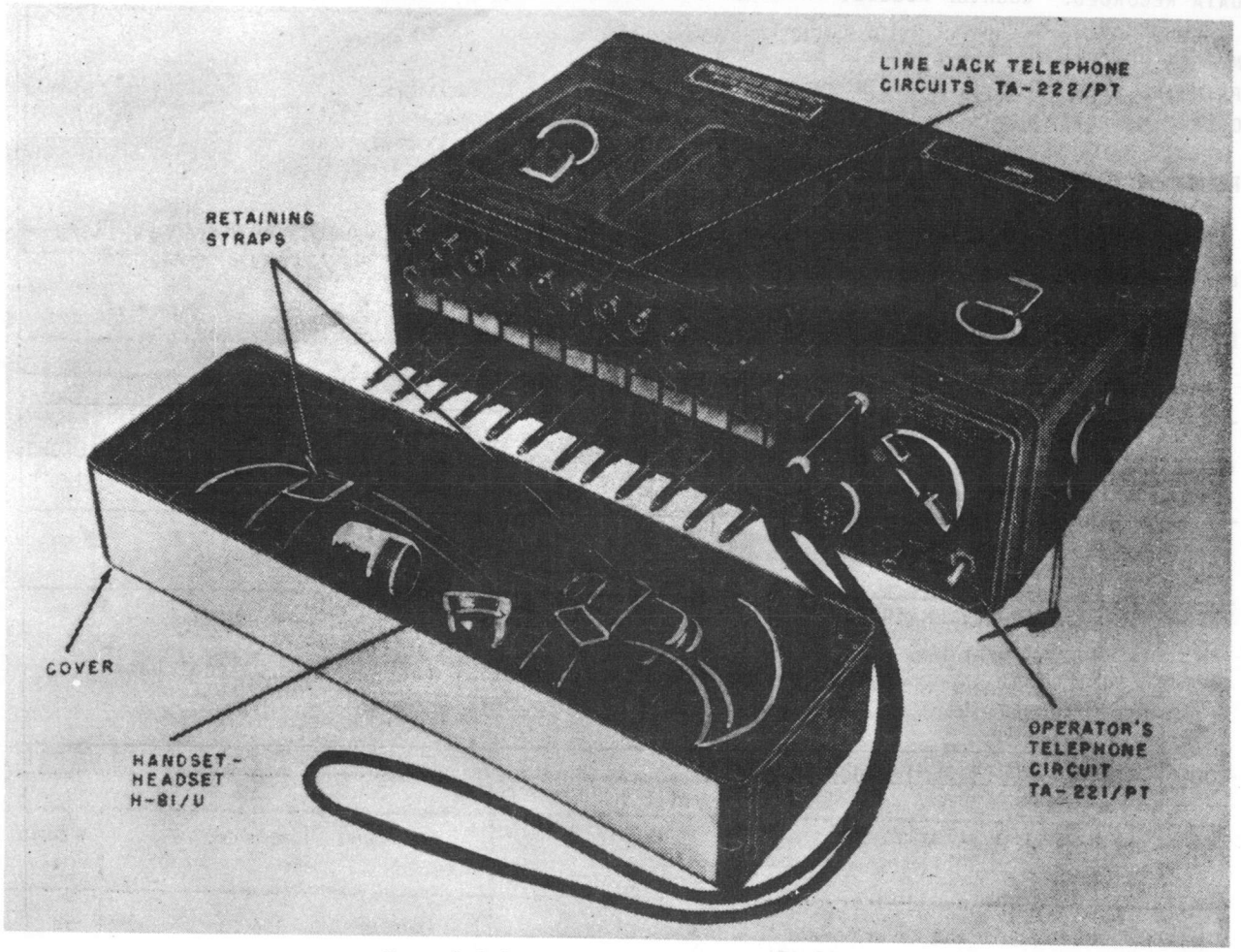
PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

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

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Beckman/Berkeley Div., Beckman Instruments Inc. Model no. 1452	Richmond, California		$950.00

MANUAL TELEPHONE SWITCHBOARD SB-22/PT



Manual Telephone Switchboard SB-22/PT

FUNCTIONAL DESCRIPTION

The SB-22/PT is a lightweight, local battery, field-type switchboard that can be installed rapidly to provide facilities for interconnecting 12 circuits. It is used to interconnect local battery telephone circuits, remote controlled radio circuits, and voice-frequency teletypewriter circuits.

Telegraph Terminal TH-5/TG and Teletypewriter Set AN/PGC-1 are required but not supplied with the SB-22/PT if it is to be used to interconnect teletypewriter circuits, and if power ringing is to be used, an external source of ringing current such as Converter M-222 or M-222-A, Power Supply PP-990/G, Interrupter PE-250, or Static Ringing Generator TA-248/TT is required.

No field changes in effect at time of preparation (25 July 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (4) Battery BA-30, (1) Ground Rod MX-148/G.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

LINES OR TRUNKS: 12.
RINGING POWER (MANUAL): 90 to 100 v, 20 cps.
PROTECTION: Lightning arrestor for each line.
POWER REQUIREMENTS: 3 v DC for Operator's telephone, 3 v DC for night alarm.

Radio-Communication Terminal Equipment

SB-22/PT MANUAL TELEPHONE SWITCHBOARD

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

REFERENCE DATA AND LITERATURE

TM11-2202: Technical Manual for Manual Telephone Switchboard SB-22/PT.

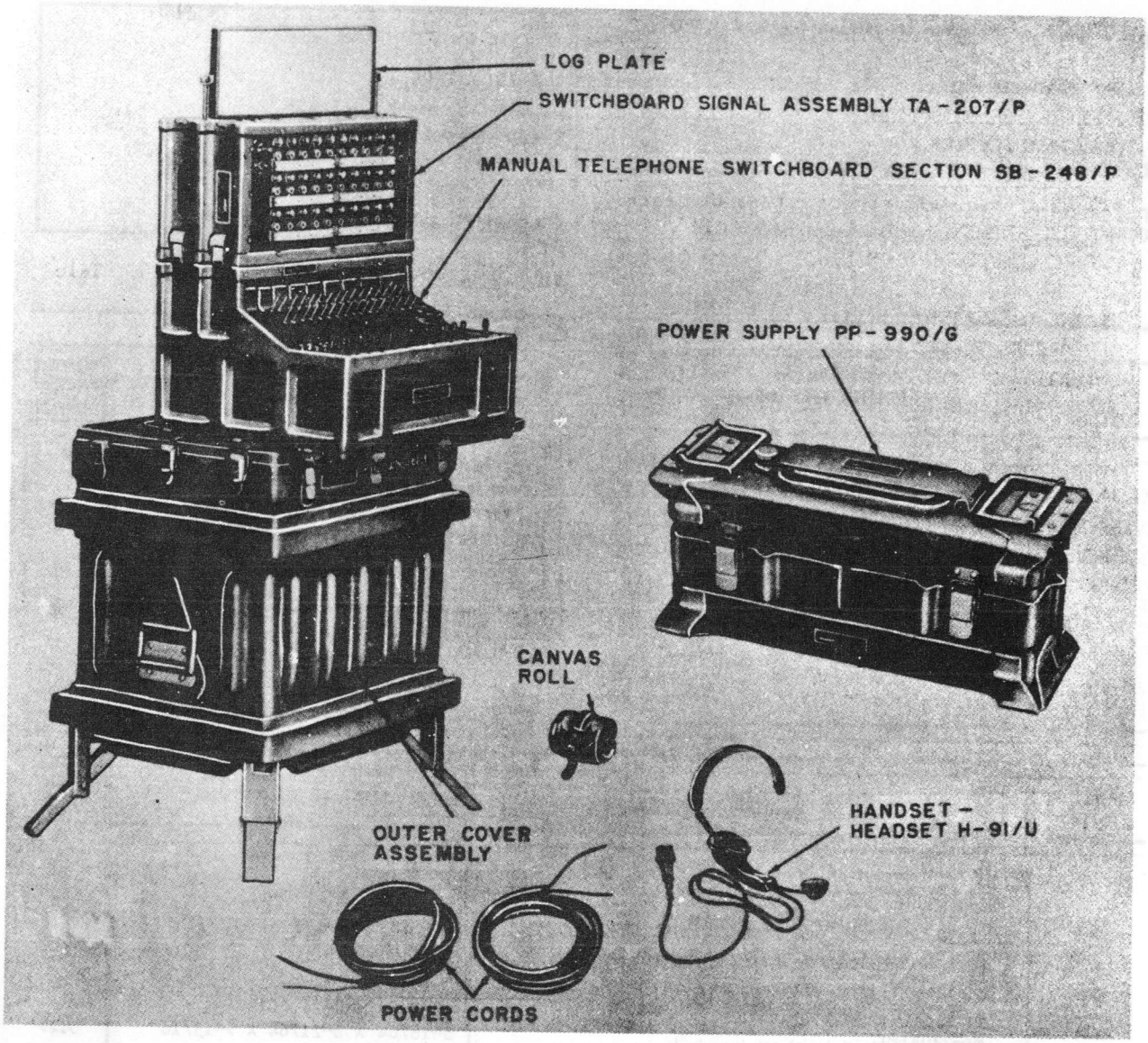
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Manual Telephone Switchboard SB-22/PT including: Accessory Kit MX-230/PT	2.8	14-1/2 X 17-1/4 X 19	58
	or			
	Manual Telephone Switchboard SB-22/PT including: Accessory Kit MX-230A/PT	2.6	9-1/2 X 16-1/2 X 28-1/2	58

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Bare Unit and Cover	5-1/4 X 12-1/2 X 16	30
1	Operators Telephone Circuit TA-221/PT		
12	Line Jack Telephone Circuit TA-222/PT		0.5
1	Handset-Headset H-81/U		
1	Battery Case		
1	Accessory Kit MX-230/PT or MX-230A/PT	4-1/2 X 10-1/2 X 15-1/2 5-15/64 X 5-21/64 X 9-13/16	4 4.9
2	Technical Manual TM11-2202	1/4 X 5-7/8 X 9-1/8	

MANUAL TELEPHONE SWITCHBOARD SB-86/P



Manual Telephone Switchboard SB-86/P

FUNCTIONAL DESCRIPTION

The SB-86/P is a portable local battery field-type switchboard used to interconnect up to 30 telephone lines. When additional equipment is available, up to 60 lines can be connected.

It is designed to be used with local battery telephones. Each line circuit operates either as a magneto signaling line or as a common battery signaling line. With magneto signaling, ringing current from a hand generator on a telephone operates the signals on the switchboard. With common battery signaling, lifting the telephone handset from its cradle operates the signals on the switchboard.

No field changes in effect at time of preparation (12 December 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Test Equipment as Required.

Radio-Communication Terminal Equipment

SB-86/P MANUAL TELEPHONE SWITCHBOARD

ELECTRICAL AND MECHANICAL CHARACTERISTICS

LINES SERVED: 30.
TELEPHONE CORD CIRCUITS: 16.
RINGING FACILITIES
AUTOMATIC: 20 cps vibrator in power pack.
MANUAL: Hand generator in operators pack.
POWER REQUIREMENTS (DRY CELL BATTERIES)
COMMON BATTERY SIGNALING: 20 to 26.5 v DC.
MAGNETO SIGNALING: 15 to 26.5 v DC.
OPERATORS TELEPHONE: 3 v DC.
NIGHT ALARM AND PANEL LAMPS: 3 v DC.
LINE WORKING LIMITS (OHMS RESISTANCE)

TYPE SIGNALING	MAX LOOP	MIN LEAK
MAGNETO	5000	10,000
COMMON BATTERY LINE	1000	10,000
COMMON BATTERY TRUNK	2000	10,000
COMMON BATTERY TRUNK (CIVILIAN)	1000	10,000

TUBE AND/OR CRYSTAL COMPLEMENT

(100) 1N92

Total Crystals: (100)

REFERENCE DATA AND LITERATURE

TM11-4134: Technical Manual for Manual Telephone Switchboard SB-86/P.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

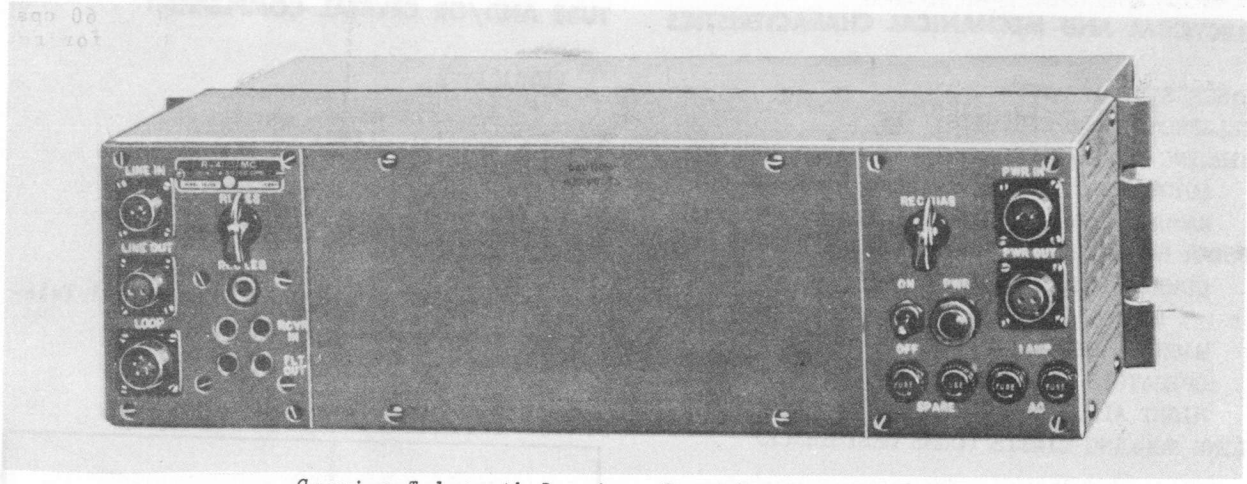
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Manual Telephone Switchboard Section SB-248/P containing:	18-1/2 X 21 X 23-1/2	65
	(1) Operators Telephone Circuit TA-220/P	4 X 10 X 14-1/2	6
	(8) Cord Telephone Circuit TA-208/P	2 X 10 X 14-1/2	4
1	Switchboard Signal Assembly TA-207/P	7-1/8 X 9-1/4 X 21	31
1	Power Supply PP-990/G	7-1/8 X 10 X 21	29
1	Handset-Headset H-91/U or H-91A/U		0.4
1	Outer Cover Assembly	18-3/4 X 22 X 24	41
1	Log Plate	5/8 X 6-1/4 X 21	2
1	3-Conductor Cord	72 lg	0.7
1	2-Conductor Cord	72 lg	0.5
1	Canvas Roll for Spare Parts		1
1	Set of Spares		

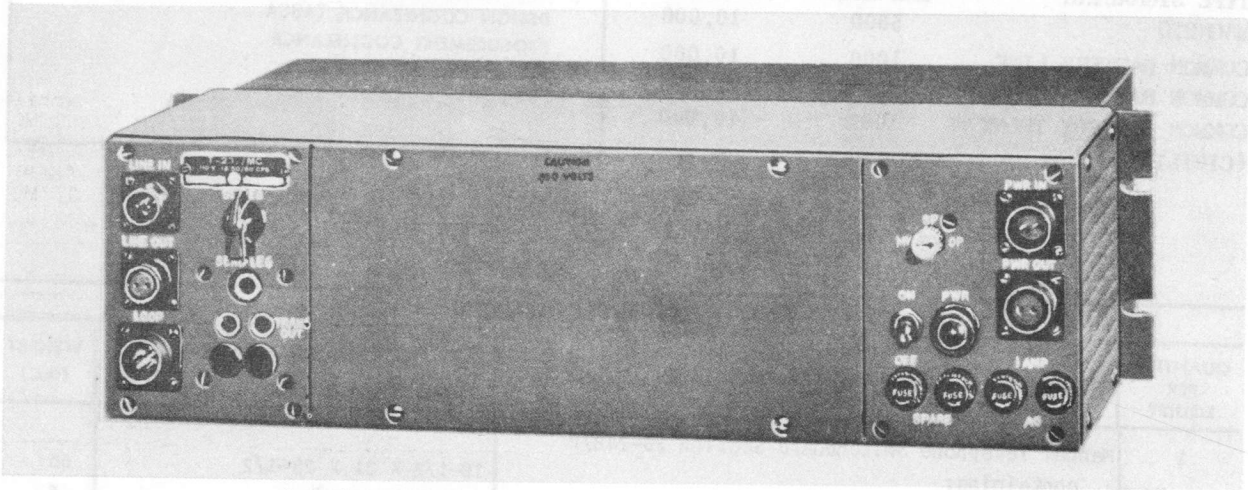
April 1958

CARRIER TELEGRAPH TRANSMITTERS AND CARRIER TELEGRAPH RECEIVERS

T-290/MC thru T-297/MC and R-405/MC thru R-412/MC



Carrier Telegraph Receiver R-405/MC Thru R-412/MC



Carrier Telegraph Transmitter T-290/MC Thru T-297/MC

FUNCTIONAL DESCRIPTION

Carrier Telegraph Receivers R-405/MC thru R-412/MC and Carrier Telegraph Transmitters T-290/MC thru T-297/MC are units of a voice-frequency carrier telegraph system capable of providing eight telegraph circuits. These telegraph circuits are usually used for teleprinter service.

Up to eight carrier telegraph transmitters are coupled to a single, one-way voice-frequency transmitting medium, which may consist of a wire, carrier, or radio communication circuit. The other end of the circuit is connected with a corresponding number of carrier telegraph receivers. The carrier telegraph transmitters at the remote location(s) operate in a like manner with the carrier telegraph receivers at the local terminal. Locations of the units may be distributed or grouped as required to provide any number of one-way or two-way channels up to the system capacity.

Each transmitter of the carrier telegraph terminal is controlled by an associated keyboard sending printer signals (7.42 Baudot code) at a maximum nominal rate of 100 words per minute. The signals are used to frequency modulate an audio-frequency carrier signal generated within the transmitter, the center frequency of which corresponds to that of the associated carrier telegraph receiver at the other end of the communication circuit. The receiver translates the frequency-modulated carrier

Radio-Communication Terminal Equipment

T-290/MC thru T-297/MC and R-405/MC thru R-412/MC CARRIER TELEGRAPH TRANSMITTERS AND CARRIER TELEGRAPH RECEIVERS

signal to a DC telegraph signal which operates a teleprinter. Use of the equipment is not restricted to Baudot Keying; hand keying and other methods of telegraphic communication may be used.

No field changes in effect at time of preparation (21 November 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Wire, Cable or radio voice-frequency circuit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 850 to 2210 cps.
CHANNELS: 8.
CHANNEL INTERVALS: 170 cpx.
NOM CENTER FREQ
- T-290/MC, R-405/MC: 935 cps.
- T-291/MC, R-406/MC: 1105 cps.
- T-292/MC, R-407/MC: 1275 cps.
- T-293/MC, R-408/MC: 1445 cps.
- T-294/MC, R-409/MC: 1615 cps.
- T-295/MC, R-410/MC: 1785 cps.
- T-296/MC, R-411/MC: 1955 cps.
- T-297/MC, R-412/MC: 2125 cps.

FREQ CONTROL: Filter.
TRANSMITTER EMISSION: FM voice-freq carrier.
TRANSMITTER FREQ SWING: ±40 cps.
TRANSMITTER OUTPUT: -20 dbm to +6 dbm.
TRANSMITTRR INPUT: 7.42 Baudot code or other telegraph keying from dry contacts or from loop with battery at terminating equipment.
OPERATING SPEED: 100 wpm.
TRANSMITTER OUTPUT IMPEDANCE: 600 ohms.
RECEIVER INPUT IMPEDANCE: 600 ohms.
POWER SOURCE REQUIRED: 115 v, 50 to 60 cps, 30 watts for transmitter, 30 W for receiver.
MOUNTING DATA: Rack mounted.

MANUFACTURER'S OR CONTRACTOR'S DATA

Lenkurt Electric Co, Inc, San Carlos, California.
Contract N189s-76108 dated 22 August 1950.

TUBE AND/OR CRYSTAL COMPLEMENT

(16) 5Y3GT
(16) 6AL5
(8) 6SL7GT
(16) 6SN7GT
Total Tubes: (56)

No Crystals.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91514: Technical Manual for Carrier Telegraph Transmitters T-290/MC, T-291/MC, T-292/MC, T-293/MC, T-294/MC, T-295/MC, T-296/MC and T-297/MC and Carrier Telegraph Receivers R-405/MC, R-406/MC, R-407/MC, R-408/MC, R-409/MC, R-410/MC, R-411/MC and and R-412/MC.

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	Carrier Telegraph Transmitter T-290/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-291/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-292/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-293/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-294/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-295/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-296/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Transmitter T-297/MC	1.81	8-1/2 X 17-1/2 X 21	29.0
1	Carrier Telegraph Receiver R-405/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-406/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-407/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-408/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-409/MC	1.81	8-1/2 X 17-1/2 X 21	31.5

CARRIER TELEGRAPH TRANSMITTERS AND CARRIER TELEGRAPH RECEIVERS

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Carrier Telegraph Receiver R-410/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-411/MC	1.81	8-1/2 X 17-1/2 X 21	31.5
1	Carrier Telegraph Receiver R-412/MC	1.81	8-1/2 X 17-1/2 X 21	31.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Carrier Telegraph Transmitter T-290/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-291/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-292/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-293/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-294/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-295/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-296/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Transmitter T-297/MC	5-1/4 X 14-1/2 X 19	24.5
1	Carrier Telegraph Receiver R-405/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-406/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-407/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-408/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-409/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-410/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-411/MC	5-1/4 X 14-1/2 X 19	27.0
1	Carrier Telegraph Receiver R-412/MC	5-1/4 X 14-1/2 X 19	27.0

September 1956

TRANSMITTER, ORDER WIRE

T-389A/TRC-29

FUNCTIONAL DESCRIPTION

The T-389A/TRC-29 provides connecting circuits for all stations in radio relay system.

No field changes in effect at time of preparation (1 August 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TRANSMITTING FREQUENCY RANGE: 5.5 to 6.5 mc.

ORDER WIRE FREQUENCY RANGE: 300 to 3450 cycles.

KEYED CARRIER SIGNALING: 400 mv/500 ohms impedance power output.

OPERATING POWER: 115 v, 50 to 60 cps, single ph.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Transmitter, Order Wire T-389A/TRC-29.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

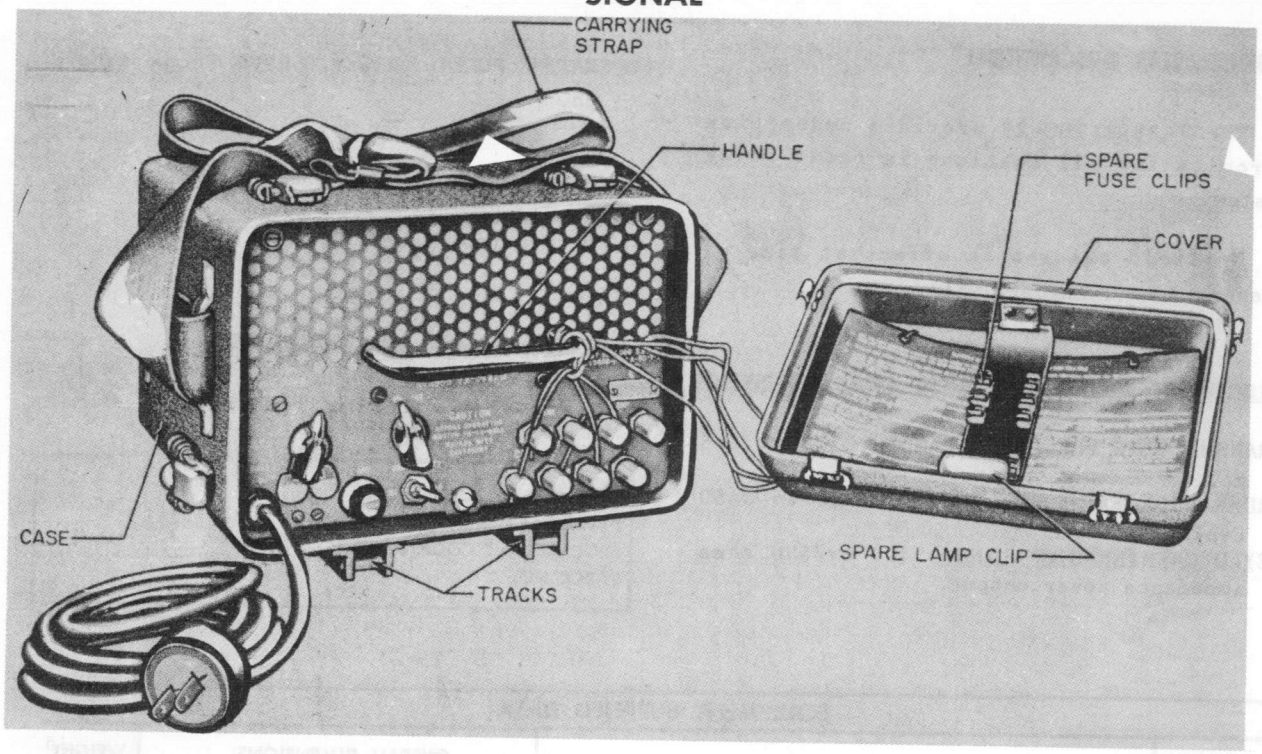
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Transmitter, Order Wire T-389A/TRC-29 consists of:	7 X 19-3/8 X 21-5/8	
1	Case, Standardized Components CY-1280/U		

December 1956

CONVERTER, TELEGRAPH-TELEPHONE SIGNAL

TA-182/U



Telegraph-Telephone Signal Converter TA-182/U

FUNCTIONAL DESCRIPTION

The TA-182/U Telephone-Telegraph Signal Converter provide means of signaling in circuits which will not pass 20 cps ringing signals because of line or equipment characteristics.

This function is performed in telegraph circuits by applying a 20 cps ringing signal to the converter for conversion to 1225 cps, ringing signal, or applying the 1225 cps ringing signal to the converter for conversion to a 20 cps ringing signal.

In telephone circuits, this equipment converts 20 cps ringing signals to 1600 cps ringing signals, and converts 1600 cps ringing signals to 20 cps ringing signals.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY LIMITS
TELEGRAPH: 1108 to 1278 cps.
TELEPHONE: 1396 to 1684 cps.
LOW FREQUENCY INPUT SIGNAL: 20 cps.
LOW FREQUENCY OUTPUT LEVEL: 100 v.
OUTPUT LEVEL TO LINE: 0 dbm ±2 db.
SENSITIVITY
LOW POSITION: −31 dbm.
HIGH POSITION: −58 dbm.
ON LOOP SIDE: 25 v.

POWER SOURCE REQUIRED: 115 v AC, 60 cps, single ph, 40 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Kellogg Switchboard and Supply Co., Chicago, Illinois.
Contract NO-DA-36-039-SC-777, No date.
Order No 19650 Phila 50-7-C, No date.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6X4W or 6X4
(3) 12AU7
(2) 5726/6AL5
(1) 12AX7
Total Tubes: (8)

REFERENCE DATA AND LITERATURE

TM 11-2137, TO 16-35TA182-5: Dept. of Army and Air Force Technical Manual for Telegraph-Telephone Signal Converter TA-182/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

TA-182/U CONVERTER, TELEGRAPH-TELEPHONE SIGNAL

December 1956

SHIPPING DATA

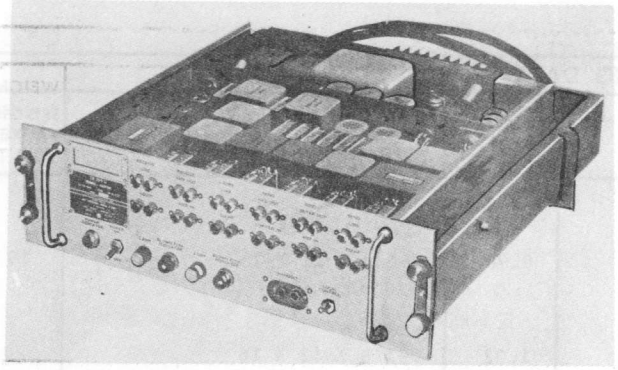
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	PACKED FOR DOMESTIC USE Telegraph-Telephone Signal Converter T-182/U	0.78	8-1/4 X 11 X 15	19
1	PACKED FOR EXPORT Telegraph-Telephone Signal Converter T-182/U	1.02	9-1/4 X 12 X 16	24

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph-Telephone Signal Converter T-182/U	7-1/2 X 10-1/2 X 11	15

December 1956

TELEPHONE TERMINAL TA-269/U



Telephone Terminal TA-269/U

FUNCTIONAL DESCRIPTION

The TA-269/U consists of the circuitry and components necessary to provide two-way conversation over a radio circuit on a 4 wire or 2 wire basis. Connections are provided to extend the two wire voice circuit to a point remote from the terminal. A local 4 wire handset can be used to communicate over the radio circuit or over the 2 wire voice line to a remote point. By setting a remote 3-position switch the internal circuits are switched by relays for communication with the local handset over the radio circuit, to the remote station (PBX board), or for the usual communication from the remote station on the 2 wire line over the 4 wire radio circuit.

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

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Standard Telephone Handset, (1) Remote Switch.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE

FREQUENCY RESPONSE OF AMPLIFIERS: Within 2 db from 200 to 3500 cps.

PASS-BAND OF FILTERS: Within 3 db from 200 to 3000 cps.

POWER OUTPUT: +8 dbm max output level of both receiver and transmitter amplifier.

SENSITIVITY: The 4 wire receive input to the equipment has a fixed pad which provides a 12 db loss. This pad is followed by the receiving amplifier having a gain which is adjustable from 8 db to 35 db. The output of this amplifier is attenuated by an additional 8 db from the receiving side of the hybrid circuit to the 2 wire line. The loss from the 2 wire line to the send side of the hybrid circuit is 10 db. Additional loss is incurred in the voice limiter circuit as follows: An input signal to the limiter circuit at a level of -15 dbm to +6 dbm appears at the limiter circuit output at a level of -28 dbm to - 18 dbm. The Signal is then amplified by the send amplifier which has an adjustable gain of 8 db to 35 db.

POWER REQUIREMENTS: 115 or 230 v ±10%, 50 to 60 cps, single ph, 35 W.

HEAT DISSIPATION: 34 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Frequency Laboratories, Inc., Boonton, N.J.

Part No HD-5700

Contract NObsr 52374, dated 5 April 1951.

Approximate Cost: $3850.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5814/12AU7 (1) 5Y3WGT

Total Tubes: (4)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92181: Technical Manual for Telephone Terminal TA-269/U.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

TA-269/U TELEPHONE TERMINAL

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Telephone Terminal TA-269/U including: (1) Set of Equipment Spares (2) Technical Manuals NAVSHIPS 92181	3.5	9-1/4 X 20 X 23	83

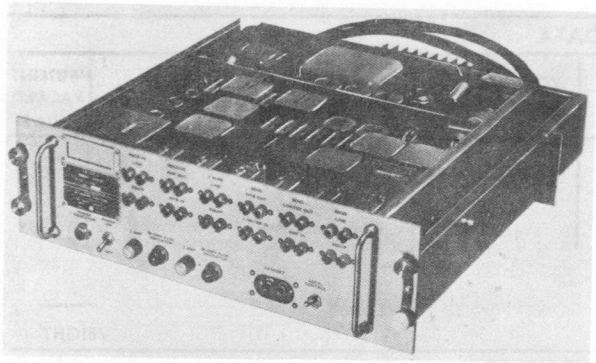
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone Terminal TA-269/U including:	5-1/4 X 16 X 19	53
1	Cable Assembly, Special Purpose Electrical CX-2124/FCC-3	56 lg	
1	Cable Assembly, Special Purpose Electrical CX-2725/FCC-3	56 lg	
1	Cable Assembly Power, Electrical CX-2125/U	52 lg	
2	Terminal Board	5/8 X 1-5/16 X 6-5/8	
1	Adapter Bracket	2-31/32 X 5 X 17-3/4	
1	Slide, Left	5/8 X 3-1/8 X 16	
1	Slide, Right	5/8 X 3-1/8 X 16	
1	Slide Mounting Plate, Left	1-1/4 X 3-1/2 X 16	
1	Slide Mounting Plate, Right	1-1/4 X 3-1/2 X 16	
1	Mounting Hardware		
1	Set of Equipment Spares	6 X 12 X 12	
2	Technical Manuals NAVSHIPS 92181		

February 1960

Radio-Communication Terminal Equipment

TELEPHONE TERMINAL TA-269A/U



Telephone Terminal TA-269A/U

FUNCTIONAL DESCRIPTION

Telephone Terminal TA-269A/U consists of the circuitry and components necessary to provide two-way conversion over a radio circuit on a 4 wire or 2 wire basis. Connections are provided to extend the 2 wire voice circuit to a point remote from the terminal. A local 4 wire handset can be used to communicate over the radio circuit or the 2 wire voice line to a remote point. By setting a remote 3-position switch the internal circuits are switched by relays for communication with the local handset over the radio circuit, to the remote station (PBX board), or for the usual communication from the remote station on the 2 wire line over the 4 wire radio circuit.

No field changes in effect at time of preparation (7 December 1959).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Standard Telephone Handset; (1) Remote Switch.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 35 W, 115 or 230 v ±10%, 50 to 60 cy, single ph.

FREQUENCY RANGE

FREQUENCY RESPONSE OF AMPLIFIER: Within 2 db from 200 to 3500

PASS-BAND OF FILTERS: Within 3 db from 200 to 3000 cps.

POWER OUTPUT: +8 dbm max output level of both receive and transmit amplifier.

SENSITIVITY: The 4 wire receive input to the equipment has a fixed pad which provides a 12 db less. This pad is followed by the receiving amplifier having a gain which is adjustable from 8 db to 35 db. The output of this amplifier is attenuated by an additional 8 db from the receiving side of the hybird circuit to the 2 WIRE LINE. The loss from the 2 wire line to the send side of the hybird circuit is 10 db. Additional loss is incurred in the voice limiter circuit as follows: An input signal to the limiter circuit at a level of -15 dbm to +6 dbm appears at the limiter circuit output at a level of -28 dbm to -18 dbm. The signal is then amplified by the send amplifier which has an adjustable gain of 8 db to 35 db.

MANUFACTURER'S OR CONTRACTOR'S DATA

Republic Electronic Industries Corp.,
Farmingdale, New York.
Contract NObsr-71890.
Contract NObsr-75202

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5814/12AU7 (1) 5Y3WGT

Total Tubes: (4)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92181: Technical Manual for TELEPHONE TERMINAL TA-269/U and TA-269A/U.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-T-17107 AMEND 1
STOCK NO.
R.D.B. IDENT. NO.

TA-269A/U TELEPHONE TERMINAL

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Telephone Terminal TA-269A/U	3.5	9-1/4 X 20 X 23	83

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone Terminal TA-269A/U	5-1/4 X 16 X 19	53
	Cable Assy, Special Purpose Electrical CX-2124/ FCC-3	56 lg	
	Cable, Assy, Special Purpose Electrical CX-2725/ FCC-3	56 lg	
	Cable Assy, Power Electrical CX-2125/U	52 lg	
2	Terminal Board	5/8 X 1-5-16 X 6-5/8	
	Adapter Bracket	2-31/32 X 5 X 17-3/4	
	Slide, Left	5/8 X 3/1/8 X 16	
	Slide, Right	5/8 X 3-1/8 X 16	
	Slide Mounting Plate, Left	1-1/4 X 3-1/2 X 16	
	Slide Mounting Plate, Right	1-1/4 X 3-1/2 X 16	
	Mounting Hardware		
	Set of Spare Parts	6 X 12 X 12	
2	Technical Manuals NAVSHIPS 92181	3/8 X 8-1/2 X 11	

24 April 1962 TELEPHONE TERMINAL TA-269B/U

Cog Service: USN FSN: 5805-448-0054 Functional Class:

USA	USN	USAF

Used by

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Peer Inc., (82764).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

Telephone Terminal TA-269B/U consists of the circuitry and components necessary to provide two-way conversion over a radio circuit on a 4 wire or 2 wire basis. Connections are provided to extend the 2 wire voice circuit to a point remote from the terminal. A local 4 wire handset can be used to communicate over the radio circuit or the 2 wire voice line to a remote point. By setting a remote 3-position switch, the internal circuits are switched by relays for communication with the local handset over the radio circuit, to the remote station (PBX board), or for the usual communication from the remote station on the 2 wire line over the 4 wire radio circuit.

No field changes in effect at time of preparation (18 May 1961).

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE

FREQUENCY RESPONSE OF AMPLIFIERS: Within 2 db from 200 to 3500 cps.

PASS-BAND OF FILTERS: Within 3 db from 200 to 3000 cps.

POWER OUTPUT: P8 dbm max output level of both receive and transmit amplifier.

SENSITIVITY: The 4 wire receive input to the equipment has a fixed pad which provides a 12 db loss. This pad is followed by the receiving amplifier having a gain which is adjustable from 8 db to 35 db. The output of this amplifier is attenuated by an additional 8 db from the receiving side of the hybird circuit to the 2 WIRE LINE. The loss from the 2 wire line to the send side of the hybird circuit is 10 db. Additional loss is incurred in the voice limiter circuit as follows: An input signal to the limiter circuit at a level of M15 dbm to P6 dbm appears at the limiter circuit output at a level of M28 dbm to M18 dbm. The signal is then amplified by the send amplifier which has an adjustable gain of 8 db to 35 db.

POWER REQUIREMENTS: 35 W, 115 or 230 v porm 10%, 50 to 60 cyc, single ph.

RELATION TO OTHER EQUIPMENT:

This equipment is identical to TA-269/U and TA-269A/U, except for improved design.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Standard Telephone Handset; and (1) Remote Switch.

TA-269B/U TELEPHONE TERMINAL

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Telephone Terminal TA-269B/U		5-1/4 x 16 x 19	53
	includes:			
1	Cable Assy, Special Purpose Electrical CX-2124/FCC-3		56 lg	
1	Cable Assy, Special Purpose Electrical CX-2725/FCC-3		56 lg	
1	Cable Assy, Power, Electrical CX-2175/U		52 lg	
2	Terminal Board		5/8 x 1-5/16 x 6-5/8	
1	Adapter Bracket		2-31/32 x 5 x 17-3/4	
1	Slide, Left		5/8 x 3-1/8 x 16	
1	Slide, Right		5/8 x 3-1/8 x 16	
1	Slide Mounting Plate, Left		1-1/4 x 3-1/2 x 16	
1	Slide Mounting Plate, Right		1-1/4 x 3-1/2 x 16	
1	Mounting Hardware			
1	Set of Spare Parts		6 x 12 x 12	
2	Technical Manuals		3/8 x 8-1/2 x 11	

REFERENCE DATA AND LITERATURE:

Nomenclature Card for Telephone Terminal TA-269B/U.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	3.5	83

PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

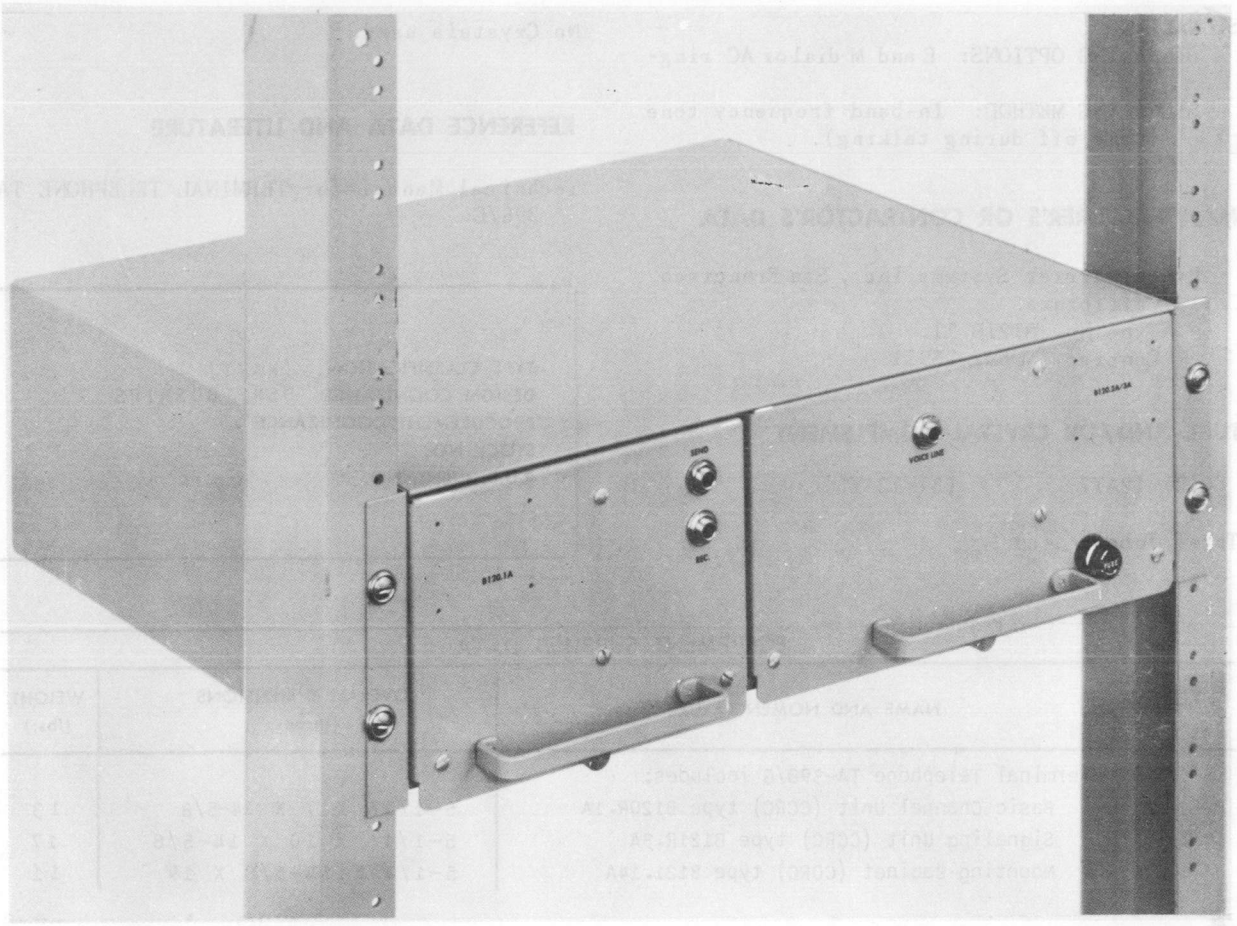
SPEC &/OR DWG: MIL-T-17107(SHIPS), Amend 1

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Peer Inc.	Benton Harbor, Mich.	NObsr-75943	$750.00

February 1960

Radio-Communication Terminal Equipment

TERMINAL TELEPHONE TA-398/G



Terminal Equipment TA-398/G

FUNCTIONAL DESCRIPTION

Terminal Telephone TA-398/G is used at each terminal of a radio facility to provide a toll-quality voice-frequency channel with E and M Dial or AC Ringdown signaling for telephone trunk service. The TA-398/G may also be used to provide E and M Dial or AC Ringdown facilities on a 4-wire voice channel.

No field changes in effect at time of preparation (30 December 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 117 v, 60 cy, single ph, 32 W.

VOICE FREQUENCY

FREQUENCY RESPONSE: 300 to 3400 cy.

TRANSMITTER OUTPUT (TO ASSOCIATED RADIO TRANSMITTER): +6 dbm max, 0 dbm nominal, corresponding to 0 dbm 2-wire input or -6 dbm 4-wire input.

RECEIVER-INPUT (FROM ASSOCIATED RADIO RECEIVER): -20 dbm min, to obtain 0 dbm 2-wire output or +6 dbm 4-wire output.

LINE IMPEDANCE TO RADIO TRANSMITTER AND RECEIVER: 150 ohms or 600 ohms unbalanced.

2-WIRE DROP LEVELS AT TELEPHONE SWITCHBOARD (DIAL OR RINGDOWN)

TRANSMITTING: 0 dbm nominal.

RECEIVING: 0 dbm max.

4-WIRE DROP LEVELS AT TELEPHONE SWITCHBOARD

TRANSMITTING: -6 dbm nominal.

RECEIVING: ±6 dbm nominal.

2-AND 4-WIRE DROP IMPEDANCE: 600 ohms balanced.

TA-398/G TERMINAL TELEPHONE

SIGNALING

SIGNALING OPTIONS: E and M dial or AC ring-down.

SIGNALING METHOD: In-band frequency tone (tone off during talking).

MANUFACTURER'S OR CONTRACTOR'S DATA

Lynch Carrier Systems Inc., San Francisco, California.
Type No. B121R.11.
Contract NObsr-75911.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 12AT7 (3) 12AY7

Total Tubes: (6)

No Crystals used.

REFERENCE DATA AND LITERATURE

Technical Manual for TERMINAL TELEPHONE TA-398/G.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, 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	Terminal Telephone TA-398/G includes:		
1	Basic Channel Unit (CCRC) type B120R.1A	5-1/16 X 7 X 14-5/8	13
1	Signaling Unit (CCRC) type B121R.3A	5-1/16 X 10 X 14-5/8	17
1	Mounting Cabinet (CCRC) type B121.14A	5-1/4 X 14-5/8 X 19	11

TELEPHONE TERMINAL TA-401/U

FUNCTIONAL DESCRIPTION

Telephone Terminal TA-401/U is for general purpose use and provides a basic 2 to 4 wire telephone terminal. Each leg of 4 wire side contains compression amplifiers compressing 45 db change to under 30 db variation. Hybrid directivity is better than 50 db.

No field changes in effect at time of preparation (11 January 1961).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

CHANNEL DATA: 1 channel, 2 way voice type.
FREQUENCY RANGE
TRANSMITTING: 200 to 3000 cycles.
RECEIVING: 200 to 3000 cycles.
AUDIO FREQUENCY: 200 to 3000 cycles.
POWER REQUIREMENTS: 115 v porm 10%, 50 to 60 cyc, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stelma Inc., Stamford, Conn.

Type No. VT-2.
Contract NObsr-81219, dated 4 February 1960.
Approximate unit cost $6,314.67.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tube or Crystal data available.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93400: Preliminary Data Sheet for Terminal, Telephone TA-401/U.

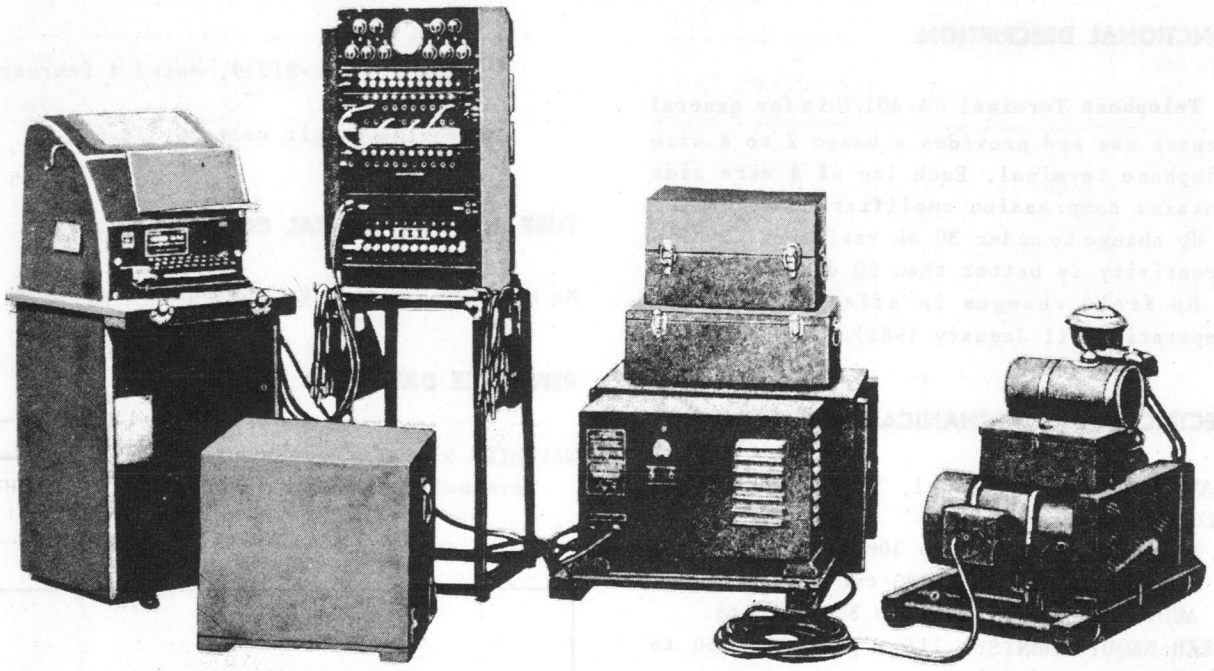
TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone Terminal TA-401/U	5 x 17 x 19	

Radio-Communication Terminal Equipment

TELEGRAPH CENTRAL OFFICE SET TC-3



Telegraph Central Office Set TC-3

FUNCTIONAL DESCRIPTION

Telegraph Central Office Set TC-3 is a complete transportable central office for receiving, transmitting, and switching tactical teletypewriter traffic in a field wire or cable system.

This equipment consists of a switchboard, teletypewriter, and associated accessories. It has provision for supplying line current alone, in conjunction with the remote station, or by the distant station alone. The switchboard provides switching and full repeating facilities for 10 lines (maximum), which may be ground return or metallic.

When it becomes necessary to expand the capacity of this telegraph central office, a maximum of two switchboards may be added and operated in multiple with the switchboard of this equipment.

It operates on about 500 W of AC power through appropriate rectifying equipment.

No field changes in effect at time of preparation (31 August 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF POSITIONS: 1 to 3.
NUMBER AND TYPE OF CIRCUITS PER POSITION: 1 cord, 10 line.
POWER REQUIREMENTS: 500 W, 115 or 230 v, 50 to 60 cyc, single ph.
RECTIFIER POWER OUTPUT: 4.5 amp at 115 v dc.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

TM11-358: Technical Manual for TELEGRAPH CENTRAL OFFICE SET TC-3 and Switchboard BD-100.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USA, SIG C
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

TC-3 TELEGRAPH CENTRAL OFFICE SET

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Power Unit PE-75-(*)	17.0	24-1/2 x 38 x 43	435
1	Rectifier RA-43	18.0	26 x 26-1/2 x 45-1/2	305
1	Printer TG-7-A or TG-7-B (Typing Unit)	14.9	28-1/2 x 28-1/2 x 31-1/2	181
1	Printer TG-7-A or TG-7-B (base in CH-50)	19.0	29-1/2 x 30-1/2 x 37	284
1	Chest CH-62-A or CH-62-B	8.1	23 x 23-1/2 x 26	92
1	Switchboard BD-100 and CH-70	12.8	26 x 31 x 40-1/2	311
1	Chest CH-53	2.5	15 x 15 x 24	50
1	Ground Rods MX-148/G	1.	4 x 6 x 72	25

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Unit PE-75-(*)	19 x 26 x 36	325
1	Rectifier RA-43-(*)	16 x 19 x 30	190
1	Printer TG-7-A or TG-7-B	19 x 20 x 42	225
1	Chest CH-50-A or CH-50-B	19 x 20 x 25	55
1	Chest CH-62-A or CH-62-B	16-1/2 x 18-1/2 x 20-1/2	45
1	Switchboard BD-100	16 x 16 x 26	180
1	Chest CH-70	7 x 12-1/2 x 21-1/2	45
15	Paper, Teletypewriter, (roll form)	9-1/2 x 26 x 26	35
1	Chest CH-53	10-1/2 x 11-1/2 x 19	30
2	Ground Rods MX-148/G	1 dia x 72	20

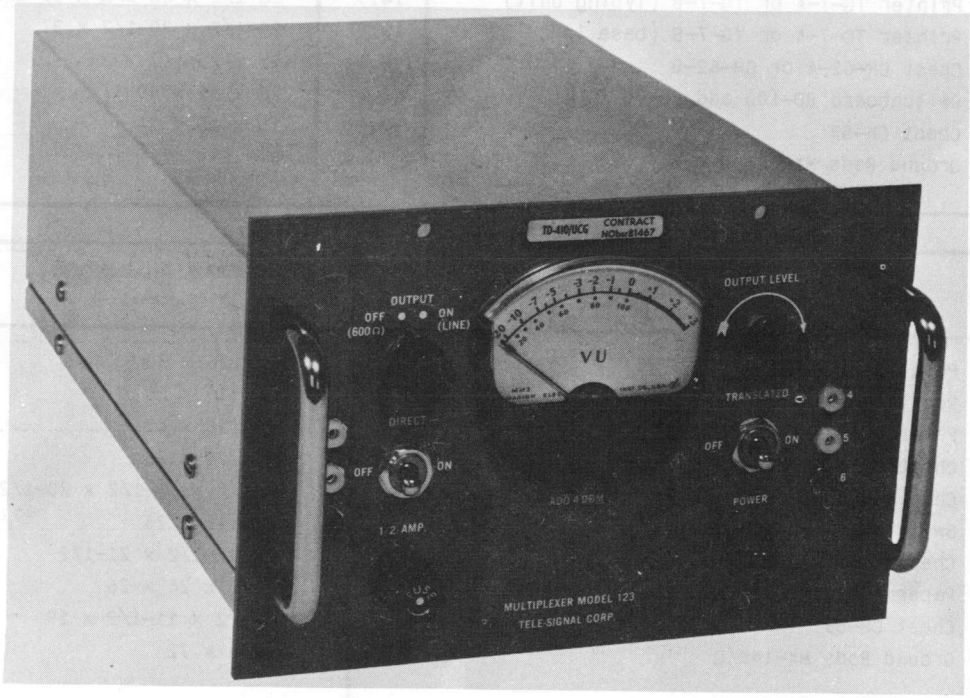
(*) indicates any item of equipment.

20 August 1962 MULTIPLEXER TD-410/UGC

Cog Service: USN FSN: Functional Class:

	USA	USN	USAF
TYPE CLASS:	Std	Std	

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



Multiplexer TD-410/UGC

FUNCTIONAL DESCRIPTION:

The Multiplexer TD-410/UGC is a fully transistorized equipment, designed for use with single sideband (twin channel) radio circuits. Its purpose is to combine two (2) Voice Frequency (VF) circuits into one (1) channel for transmission over the air. It operates in the frequency range of 375 to 3025 cycles per second (CPS).

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

TECHNICAL CHARACTERISTICS:

TYPE OF MULTIPLEXER: Frequency division type.
INPUT CHANNEL DATA
NUMBER OF CHANNELS: 1 channel.
BANDWIDTH: 2650 cycles.
IMPEDANCE: 600 ohms.

TD-410/UGC MULTIPLEXER

FREQUENCY RANGE: 375 to 3025 cycles.
OUTPUT CHANNEL DATA
NUMBER OF CHANNELS: 1 channel.
BANDWIDTH: 5540 cycles.
IMPEDANCE: 600 ohms.
FREQUENCY RANGE: 375 to 5915 cycles.
OPERATING POWER RQMT: 110 to 220 v ac, 50 to 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The TD-410/UGC is the same as Tele-Signal Corp's Commercial Model no. 123.
The TD-410/UGC is designed to be used as part of Telegraph, Terminal Set AN/FGC-60(V).

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Multiplexer TD-410/UGC		5-1/4 x 8 x 11	10

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93841: Technical Manual for Telegraph, Terminal Set AN/FGC-60(V) of which Multiplexer TD-410/UGC is a part of.
NAVSHIPS 93856: Technical Manual for Multiplexer TD-410/UGC.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (12) 1N191 (4) SD93

TRANSISTORS: (8) 2N414 (2) 2N156 (3) 2N1284

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

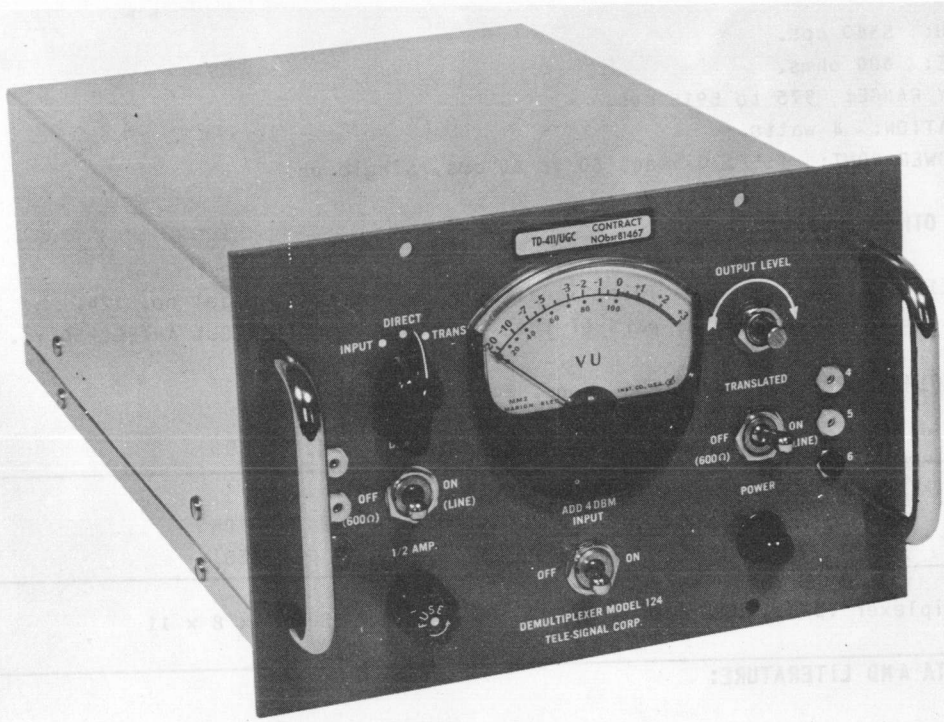
PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tele-Signal Corp. Inc. Model no. 123	Hicksville, N. Y.	NObsr-81467, 14 June 1960	

Cog Service: USN FSN: Functional Class:

	USA	USN	USAF
TYPE CLASS:	Std	Std	

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



Demultiplexer TD-411/UGC

FUNCTIONAL DESCRIPTION:

The Demultiplexer TD-411/UGC is a receiving terminal equipment and operates in conjuction with Multiplexer TD-410/UGC which is located at the transmitting terminal. The Demultiplexer separates the unchanged voice channel from the translated voice channel and converts the latter back to its original voice channel. These two (2) voice channels are separately amplified and fed to external equipments.

The TD-411/UGC is completely transistorized, self contained unit including its own power supply.

No. field changes in effect at time of preparation (27 June 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF FREQUENCY: Frequency division type.
OUTPUT CHANNEL DATA

TD-411/UGC DEMULTIPLEXER

CHANNEL ONE
BANDWIDTH: 2650 cps.
IMPEDANCE: 600 ohms.
FREQUENCY RANGE: 375 to 3025 cps.
CHANNEL TWO
BANDWIDTH: 2650 cps.
IMPEDANCE: 600 ohms.
FREQUENCY RANGE: 375 to 3025 cps.
INPUT DATA
BANDWIDTH: 5540 cps.
IMPEDANCE: 600 ohms.
FREQUENCY RANGE: 375 to 5915 cps.
HEAT DISSIPATION: 4 watts.
OPERATING POWER RQMT: 115/230 v ac, 50 to 60 cps, single ph.

RELATION TO OTHER EQUIPMENT:

The TD-411/UGC is the same as Tele-Signal Corp's Commercial Model no. 124.
The TD-411/UGC is designed as part of the Telegraph, Terminal Set AN/FGC-60(V).

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Demultiplexer TD-411/UGC		5-1/4 x 8 x 11	10

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93841: Technical Manual for Terminal, Telegraph Set AN/FGC-60(V) of which Demultiplexer TD-411/UGC is a part of.
NAVSHIPS 93857: Technical Manual for Demultiplexer TD-411/UGC.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (12) 1N191 (4) SD93

TRANSISTORS: (15) 2N414 (4) 2N156 (3) 2N1284

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN

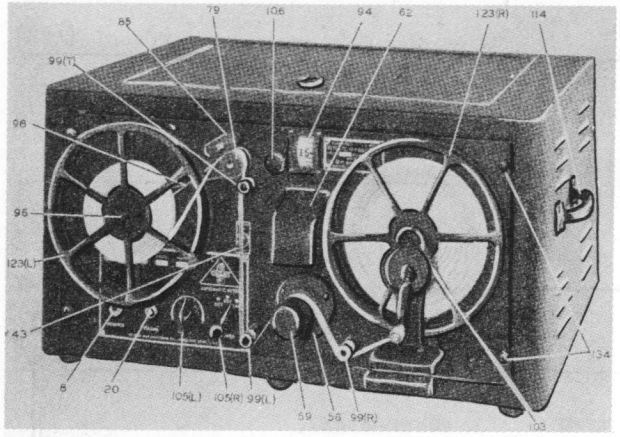
DESIGN COG: USN, BuShips

SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Tele-Signal Corp., Inc. Model no. 124	Hicksville, N. Y.	NObsr-81467, 17 June 1960	

KEYER

TG-10,10F



Keyer TG-10 and TG-10F

FUNCTIONAL DESCRIPTION

The TG-10 and TG-10F equipments are automatic Keying units designed to provide audible code practice signals from an inked-tape recording.

The output of the Keyer is an audio Frequency note of 800 cps, with sufficient power to supply a number of head sets, 500 to 1000 if necessary, or practice tables directly.

The Keyer, a self-contained unit, is ready for operation when connected to an adequate power source and directly to headsets or through practice tables.

Provisions are incorporated to permit external operation with a telegraph key; and suitable guide and pressure rollers are included which permit its use with anyone of several type of ink recorders, where the latter is not provided with its own tape pulling mechanism.

No field changes in effect at time of preparation (8 August 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) monitoring-headset, (1) external key.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

SPEED: 0 to 1000 wpm.
POWER SOURCE REQUIRED: 115 v AC, 50 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Gray Manufacturing Co., Hartford, Conn.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6N7 (2) 6L6 (1) 5U4G
(2) 6SJ7 (1) 923
Total Tubes: (8)

REFERENCE DATA AND LITERATURE

TM11-447: War Dept. Technical Manual for Keyer TG-10-A, TG-10-B, TG-10-C, TG-10-D, TG-10-F, TG-10-G, TG-10-H.
Preliminary Instructions for Keyer TG-10 (Automatic, 60 cycles).

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

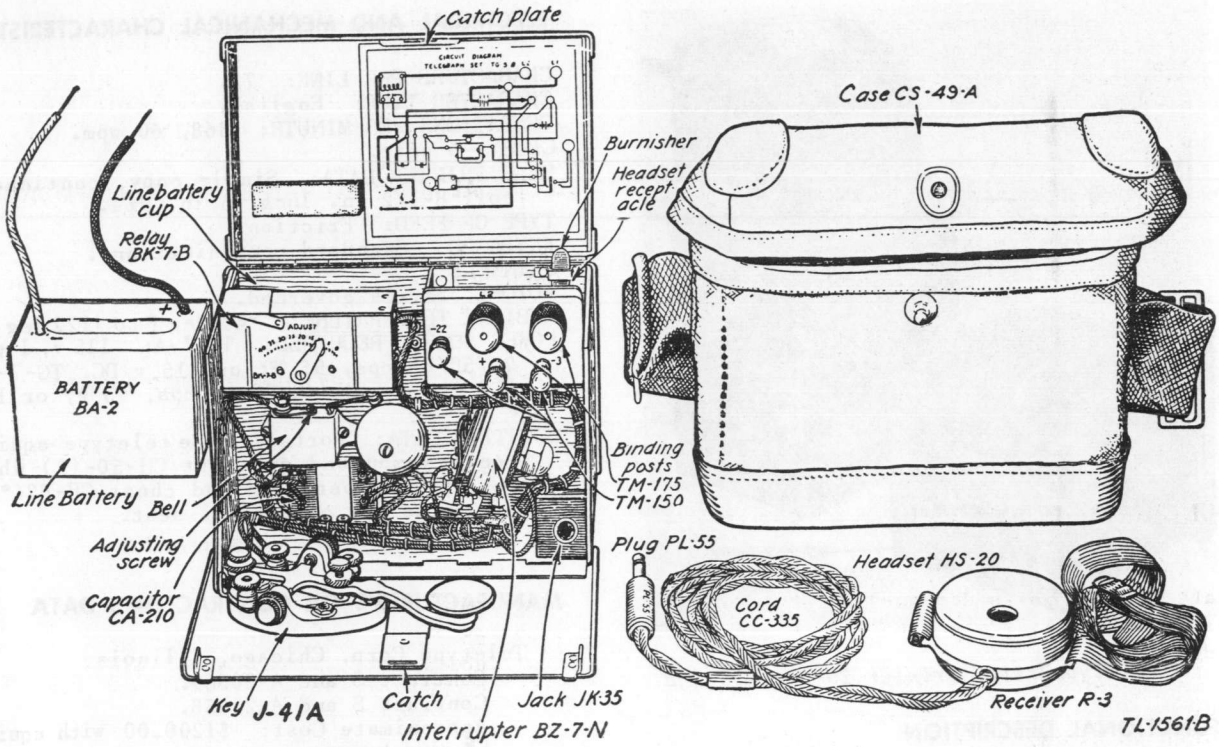
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Keyer-TG-10 or TG-10-F (within its Cabinet)	11 x 18-1/2 x 24	63
2	Tapes, Inked Paper		
3	Reels, Take Up		
1	Set Vacuum Tubes (8 total)		
1	Keyer (removed from cabinet for rack mounting)	8-3/4 x 19	40

December 1956

TELEGRAPH SET

TG-5B



Telegraph Set TG-5B

FUNCTIONAL DESCRIPTION

The TG-5B is a portable, open-circuit field set used for telegraph communication over short lines with few intermediate stations. Several sets may be operated in series, but ordinarily not more than three or four should be required to work together on one circuit.

Data on this sheet reflects the following field changes, FC-2 (9 August 1956).

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

TM11-351: War Dept. Technical Manual for Telegraph Sets TG-5 and TG-5A and TG-5B.

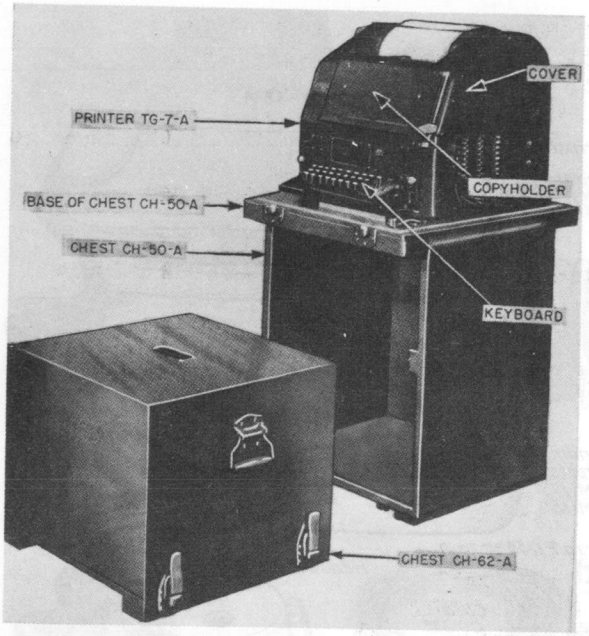
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph Set TG-5B	5-1/2 X 5-1/2 X 10	
1	Case CS-49-A with Shoulder Strap		
1	Head Set HS-20		

Radio-Communication Terminal Equipment

TELETYPEWRITER PRINTER TG-7-A,TG-7-B



Teletypewriter Printer TG-7-A, TG-7-B

FUNCTIONAL DESCRIPTION

The TG-7-A and TG-7-B are portable, sending-receiving, teletype page printers designed for field use. The printer is Teletype Model 15 type bar page printer. The equipment is carried in two chests which serve as a mounting table for the equipment and seat for the operator, when the equipment is assembled for operation.

The TG-7-A and TG-7-B are essentially identical except the TG-7-A has a motor control relay for separate line motor control, polar switching key, line relay mounting, and a tuning fork. The TG-7-A may be used in conjunction with Line Unit BE-77, or Line Relays RY-30 or RY-28.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

CHARACTERS PER LINE: 72.
CHARACTER TYPE: English.
OPERATIONS PER MINUTE: 368, 60 wpm.
CODE: 5 unit.
PAGE PRINTER DATA: Single copy, continuous roll 8-1/2 in. long, 5 in. dia.
TYPE OF FEED: Friction.
KEYBOARD: Standard communications.
CHANNELS: One.
MOTOR: Series governed.
AMBIENT TEMPERATURE: −40 deg F to +122 deg F.
POWER SOURCE REQUIRED: TG-7-A: 115 v, 1 ph, 25/50-60 cps, 95 W; or 115 v DC. TG-7-B: 115 v, 1 ph, 25/40/50-60 cps, 95 W; or 115 v DC.
MOUNTING DATA: Portable, the teletype equipment is mounted on chest CH-50-(*) when set up for operation and chest CH-62(*), serves as the operator's seat.

MANUFACTURER'S OR CONTRACTOR'S DATA

Teletype Corp, Chicago, Illinois
Contract S and A-20869.
Contract S and A-22558.
Approximate Cost: $1200.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals Used.

REFERENCE DATA AND LITERATURE

TM 11-352: Technical Manual for Printer TG-7-A and Teletypewriter TG-7-B.

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

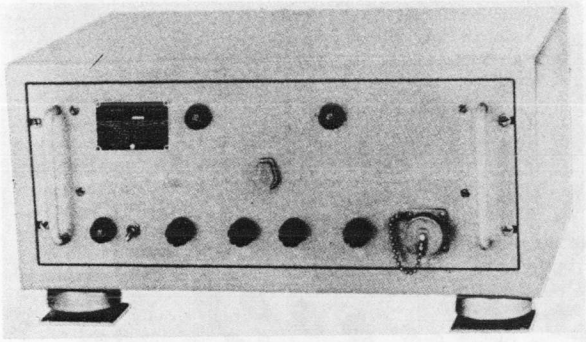
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Teletype Model 15 Type Bar Page Printer w/Radio Filters		
1	Chest CH-50A* CH-50B**		
1	Chest CH-62A* CH-62B**		

NOTES: *Supplied w/TG-7-A.
**Supplied w/TG-7-B.

April 1958

TELEGRAPH TERMINAL TH-20/UG



Telegraph Terminal TH-20/UG

FUNCTIONAL DESCRIPTION

The TH-20/UG is used in conjunction with a standard teletypewriter for the transmission and reception of teletypewriter messages by radio communication between stations similarly equipped. It converts the intelligence of outgoing messages to audio tone signals. Also it reconverts the intelligence of incoming signals to a form so as to facilitate operation of the associated teletypewriter.

No field changes in effect at time of preparation (14 March 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1 or more) Teletypewriters suitable for operation on 60 ma neutral loop.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY: 1225 and 1325 cps.
INPUT SIGNAL LEVEL: -40 dbm min.
OUTPOWER: -2 dbm ±2 dbm max.
OUTPUT IMPEDANCE: 600 ohms ±10%.
INPUT IMPEDANCE: 600 ohms ±10%.
HEAT DISSIPATION: 84 W.
POWER SOURCE REQUIRED
TELEGRAPH TERMINAL: 115 v ±10%, 50 to 60 cps, 0.73 amp.
TELETYPE LOOP: 110 v DC, 0.060 amp.

MANUFACTURER'S OR CONTRACTOR'S DATA

H. O. Boehme Inc, New York, N.Y.
Contract NObsr-63373 dated 2 April 1953.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 0A3
(4) 12AU7
(2) 12AX7
(2) 5Y3WGTB
(1) 5726/6AL5W
(1) 6AU6WA
(1) 6J6WA

Total Tubes: (13)
No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92484, Technical Manual for Telegraph Terminal TH-20/UG.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

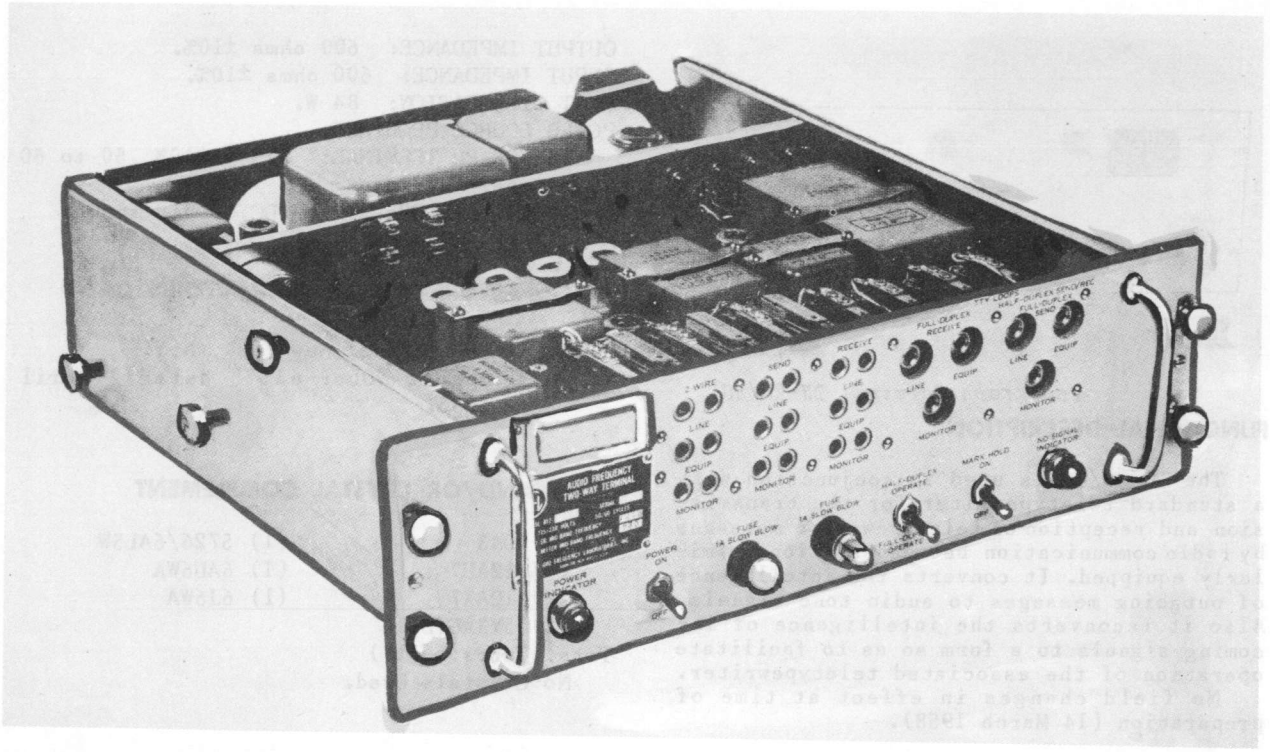
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Telegraph Terminal TH-20/UG		14 X 20 X 33	155.6
	Set of Equipment Maintenance Parts			
2	Technical Manuals NAVSHIPS 92484			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph Terminal TH-20/UG	10-11/32 X 16-1/8 X 20-5/8	70.6
1	Set of Equipment Maintenance Parts	6 X 9 X 12	20
2	Technical Manuals NAVSHIPS 92484	3/16 X 8-5/8 X 11-1/4	0.5

TERMINAL, TELEGRAPH TH21/UC



Terminal, Telegraph TH-21/UC

FUNCTIONAL DESCRIPTION

The TH-21/UC is a terminal for teletype writer communications, making possible the transmission and reception of teletypewriter messages by radio communication equipment.

In the Transmit position, the terminal converts current pulses from a teletypewriter into two-tone audio frequencies of similar time duration, for transmission over open wirelines, cable or radio.

In the Receive position teletype signals from distant teletypewriter transmitting equipment are received, demodulated and amplified for operation of the associated teletypewriter.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 382 to 3315 cps.
SPEED: 100 wpm with 85 cps frequency-shift and 250 wpm with 170 cps frequency-shift.
MODE OF OPERATION: Half or full duplex.
POWER SOURCE REQUIRED: 115 or 230 v AC, 60 cps, single ph, two-wire.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Frequency Laboratories, Inc. Boonton, N.J.
Model No-CAOR812
Contract NObsr 71039, dated 9 September 1955.
Approximate Cost: $1500.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 5814/12-AU7		(1) 5751/12AX7
(1) 6AU6WA	(1) 6W6	(1) 6X4
(1) OA2	(3) 5726/6AL5	

Total Tubes: (12)

TH21/UC TERMINAL, TELEGRAPH

December 1956

REFERENCE DATA AND LITERATURE

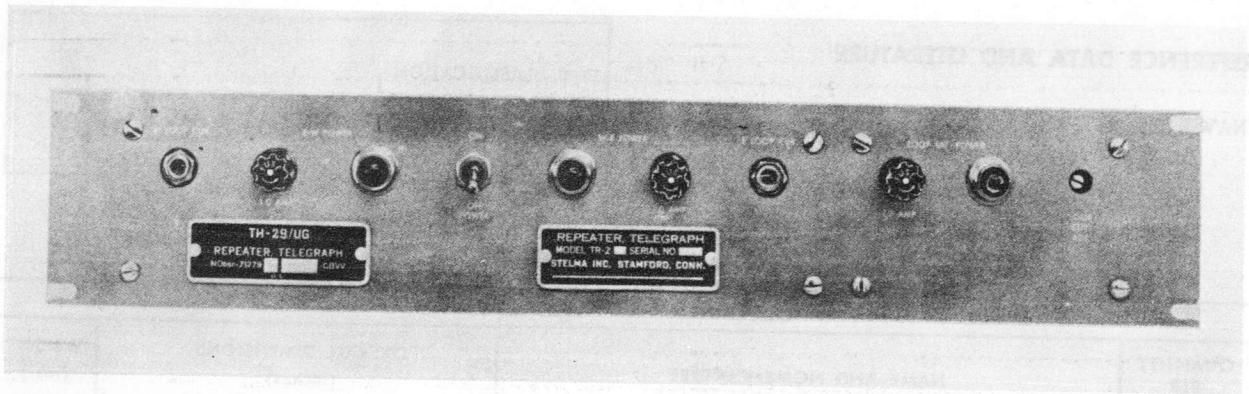
NAVSHIPS 92737: MA-7100 Handbook of Instructions for Audio Frequency Two-Way Terminal-Model 812.

TYPE CLASSIFICATION
DESIGN COGNIZANCE
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Terminal, Telegraph-TH-21/UC		

REPEATER TELEGRAPH TH-29/UG



Telegraph Repeater TH-29/UG

FUNCTIONAL DESCRIPTION

Repeater Telegraph TH-29/UG is an in-line repeater which is designed for 1-way reversable operation. It may also be connected for 4-wire or 2 to 4-wire operation. The unit is fully electronic and has complete isolation between input and output circuits. The repeater uses tone couplers for isolation on the input sides and low resistance vacuum tube keying on the output sides and has all circuits floating from chassis. For in 2-line service, the two one-way repeaters making up the unit, are operated with input of one connected in series with the output of the other. Electronic coupling means are provided between the two one-way repeaters so that the output keying tube of one repeater, in series with the input circuits of the other repeater, is continuously on mark during transmission. This means also provides that an open circuit at the receiving end will put the sending end on space.

No field changes in effect at time of preparation (4 September 1959).

RELATION TO OTHER EQUIPMENT

This equipment is identical to Stelma TR-2.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 50 W, 105 to 125 v, 50 to 60 cy, 1 ph.
TYPE OF LOOP: 20 ma or 60 ma neutral.
EFFECTIVE MARK INPUT or OUTPUT IMPEDANCE: 425 ohms ±5%.
FOUR WIRE SERVICE (EACH LOOP)
INPUT: 270 ohms, 20 ma loop.
90 ohms, 60 ma loop.
OUTPUT: 330 ohms (mark).
BATTERY VOLTAGE: 150 v (in series with repeater, this provides a loop supply of 120 v for a 60 ma loop).
KEYING SPEED: Up to 150 cps (dot cycle or reversals).
DISTORTION: Under 2%.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stelma Inc., Stamford, Connecticut.
Model TR-2.
Contract NObsr-71279, dated 20 April 1956.
Approximate Cost: $1760.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5651 (3) 5687 (4) 5963
(1) 6AU6 (1) 6X4W
Total Tubes: (10)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92873: Technical Manual for Repeater TELEGRAPH TH-29/UG.

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

TH-29/UG REPEATER TELEGRAPH

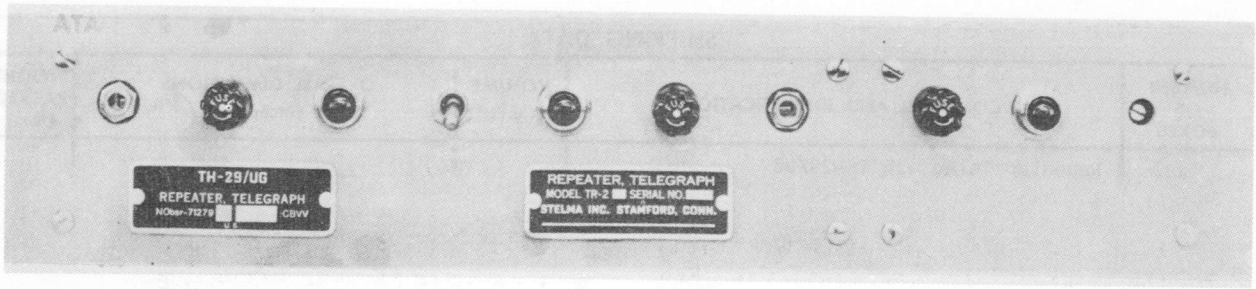
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Repeater Telegraph TH-29/UG			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Repeater Telegraph TH-29/UG	3-15/32 X 10-9/16 X 19	12

REPEATER TELEGRAPH TH-29/UG(TR-2)



Repeater Telegraph

FUNCTIONAL DESCRIPTION

The TH-29/UG (Stelma Inc model TR-2) is an in line repeater which is designed for 1-way reversable operation. It may also be connected for 4-wire or 2 to 4-wire operation. The unit is fully electronic and has complete isolation between input and output circuits. It is adaptable to either 20 ma or 60 max neutral telegraph loops. The repeater uses tone couplers for isolation on the input sides and low resistance vacuum tube Keying on the output sides and has all circuits floating from chassis. For in line 2-wire service, the two one-way repeaters making up the unit, are operated with input of one connected in series with the output of the other. Electronic coupling means are provided between the two one-way repeaters so that the output Keying tube of one repeater, in series with the input circuits of the other repeater, is continuously on mark during transmission. This means also provides that an open circuit at the receiving end will put the sending end on space.

No field changes in effect at time of preparation (31 January 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF LOOP: 20 ma or 60 ma neutral.
EFFECTIVE MARK INPUT OR OUTPUT IMPEDANCE: 425 ohms ±5%.
FOUR WIRE SERVICE (EACH LOOP).
INPUT: 270 ohms, 20 ma loop, 90 ohms, 60 ma loop.
OUTPUT: 330 ohms (mark)
KEYING SPEED: up to 150 cps (dot cycles or reversals)
DISTORTION: under 2%.
BATTERY VOLTAGE: 150 v (in series w/repeater, this provides a loop supply of 120 v for a 60 ma loop).
POWER SOURCE REQUIRED: 105 to 125 v, 50 to 60 cps, single ph, 50 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stelma, Incorporated, Stamford, Conn.
Model - TR-2.
Contract NObsr-71279, dated 20 April 1956.
Approximate Cost: $1760.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 5963
(3) 5687
(1) 6X4W
(1) 6AU6
(1) 5651

Total Tubes: (10)

(4) 1N34-A
(6) 8Y1

Total Crystals: (10)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92873: Technical Manual for Repeater Telegraph TH-29/UG.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Repeater Telegraph TH-29/UG	3-1/2 x 10-19	12

TELEGRAPH REPEATER TH-31/U

FUNCTIONAL DESCRIPTION

The TH-31/U is a single line telegraph repeater designed primarily to provide half-duplex operating from a full-duplex carrier telegraph circuit. However, the repeater will also provide optional arrangements of half-duplex to half-duplex, or duplex to duplex. From the repeater to the loop the circuit may be either neutral or effective polar. From the loop to the repeater the circuit will be neutral. When wired for half-duplex, the repeater may be inserted in series with any neutral teletype circuit providing the teletype circuit is capable of absorbing the additional 155 ohms inserted resistance.

No field changes in effect at time of preparation (23 April 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

LOOP BATTERY CURRENT: 60 ma.
POWER SOURCE REQUIRED: 100 to 260 v dc.
OPERATE COIL CURRENT: 29 ma.
BIAS COIL CURRENT: 14-1/2 ma.
OPERATION: Full-duplex to half-duplex (half duplex to half duplex or duplex to duplex optional).

MANUFACTURER'S OR CONTRACTOR'S DATA

Lynch Carrier Systems Inc., San Francisco, Calif.
Contract NObsr-71258.
Approximate Cost: $1224.99 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

NAVSHIPS-92910, Technical Manual for Telegraph Repeater TH-31/U.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

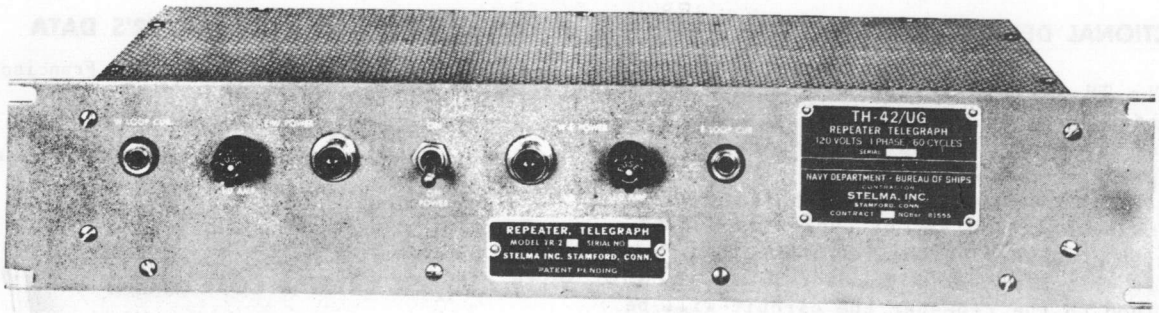
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
2	Telegraph Repeater TH-31/U			
1	Set of Maintenance Parts			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph Repeater TH-31/U	3-1/2 x 10-1/4 x 19	

TELEGRAPH REPEATER TH-42/UG



Telegraph Repeater TH-42/UG

FUNCTIONAL DESCRIPTION

The TH-42/UG is a general-purpose equipment that receives, reshapes, and automatically retransmits coded signals over wire circuits. The wire circuits may be two (2) or four (4) wires, half or full duplex.

No field changes in effect at time of preparation (13 January 1961).

RELATION TO OTHER EQUIPMENT

The TH-42/UG is similar to, but is not interchangeable with, TH-29( )/UG (Less Loop Battery Supply).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF LOOP: 20 ma or 60 ma neutral.
TWO WIRE SERVICE
INPUT IMPEDANCE: 425 ohms.
OUTPUT IMPEDANCE: 425 ohms.
FOUR WIRE SERVICE (PER LOOP)
INPUT: 270 ohms, 20 ma loop; 90 ohms, 60-ma loop.
OUTPUT: 330 ohms, (Mark).
KEYING SPEED: Up to 150 cps (300 baud).
DISTORTION: Under 2%.
OPERATING POWER RQMT: 105 to 125 v ac, 50 to 60 cps, single ph,-50 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Stelma Incorporated, Stamford, Conn.
Model No. TR-2B.
Contract NObsr-81555.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 5963 (2) 5687
Total Tubes: (6)
No Crystals used.

TRANSISTORS
(2) 2N64
Total Transistors: (2)

REFERENCE DATA AND LITERATURE

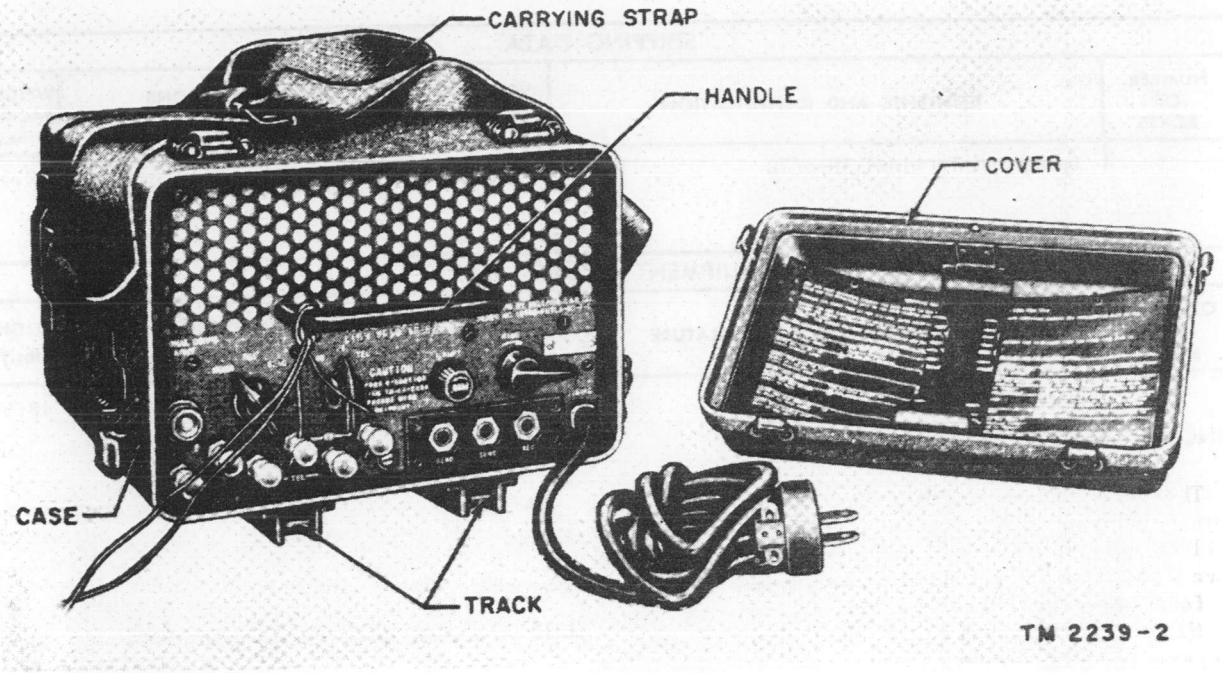
NAVSHIPS 93742: Technical Manual for Repeater, Telegraph TH-42/UG.

TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	NAVY 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	Repeater, Telegraph TH-42/UG	3-1/2 x 11 x 19	12

TERMINAL TELEGRAPH TH-5/TG



Telegraph Terminal TH-5/TG

FUNCTIONAL DESCRIPTION

The TH-5/TG is designed as a 15 tube, frequency shift carrier modulator and demodulator. It modulates Direct Current (DC) teletypewriter pulses to 1,225 cycles per second (cps) and 1,325 cps. It demodulates 1,225 and 1,325 cps frequencies to DC teletypewriter pulses. The pulses must be capable of activating a teletypewriter selector magnet which requires 20 milliampere (MA) current.

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

RELATION TO OTHER EQUIPMENT

The TH-5/TG is designed as part of the AN/TCC-14.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF DIVISION: Frequency Division.
NUMBER OF CHANNELS: 1 channel for use alternately in either direction with 2 wire operation. 1 channel for use simultaneously in both directions with 4 wire operation.
OPERATING POWER RQMT: 115 v ac, 50 to 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

U. S. A. F. and TASSA.
Proc. 1965C-PH-50-7C.

TUBE AND/OR CRYSTAL COMPLEMENT

(7) 12AU7
(2) 6X4
(4) 6AL5
(2) 12AX7
Total Tubes: (15)
No Crystals used.

REFERENCE DATA AND LITERATURE

TM11-2239/to 16-30TCC14-5: Technical Manual for Telegraph-Telephone Terminal AN/TCC-14.

TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	MIL-T-10267
STOCK NO.	
R.D.B. IDENT. NO.	

TH-5/TG TERMINAL TELEGRAPH

SHIPPING DATA

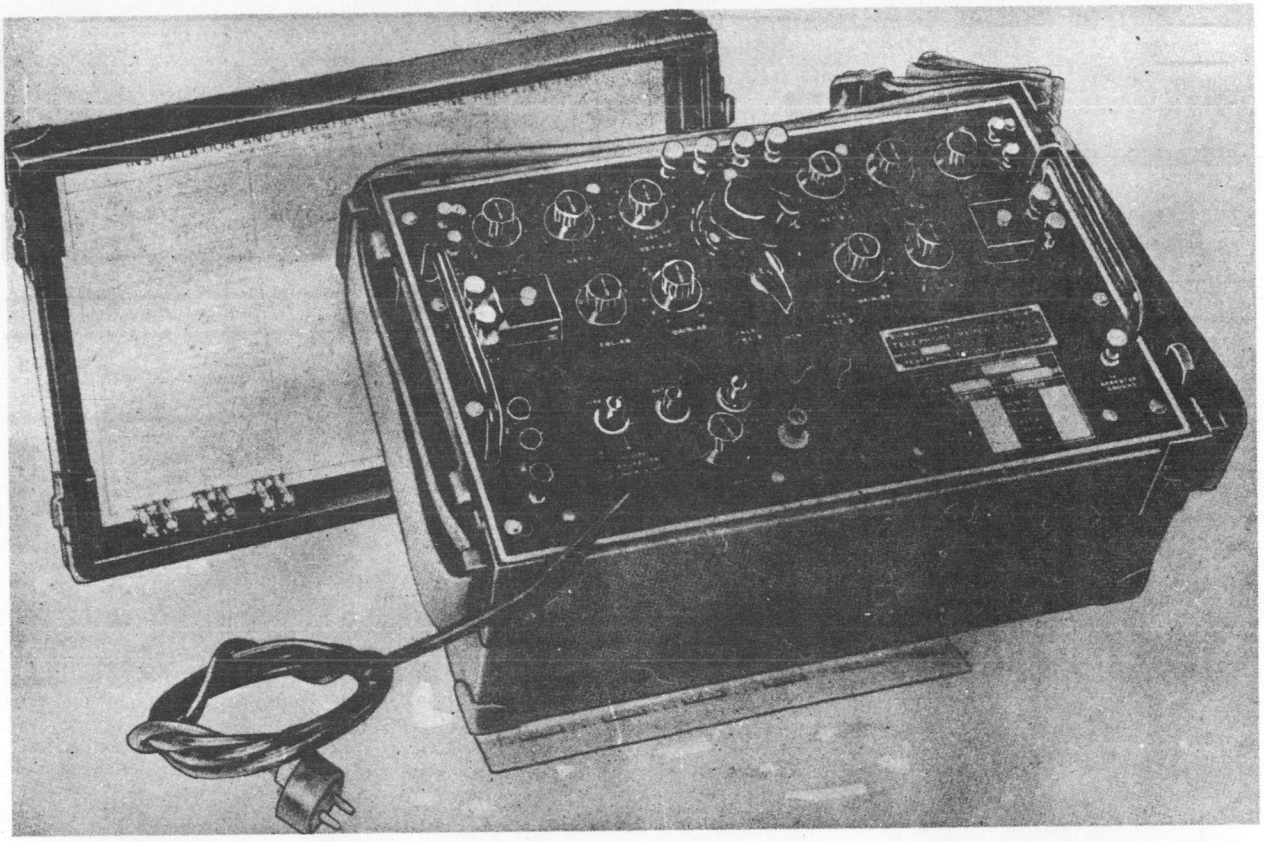
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Telegraph Terminal TH-5/TG	.78	8-1/4 x 11 x 15	22.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telegraph Terminal TH-5/TG	7-1/2 x 10-1/2 x 11	18.5

TELEPHONE REPEATER

TP-14



Telephone Repeater TP-14

FUNCTIONAL DESCRIPTION

The TP-14 is a portable unit designed to extend the telephonic communication range of two-wire military line facilities. It may be used at terminal or intermediate points, at the junction of different type of line facilities, and at points where entrance cables are used. It can also be used as a 21-type repeater, or as a special form of repeater for interconnecting two-wire and four-wire facilities, or as a special form of four-wire repeater. Telephone Repeaters TP-14 may be used in tandem to extend communication circuits in excess of those which may be realized by the use of Telephone Repeater EE-89-A, which is particularly true in the case of lines made up of mixed facilities, such as combinations of open wire and field cable. The repeater spacings and the maximum length of line on which the repeaters can be used are limited by the balance which can be obtained between the lines and the balancing networks.

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

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 110 to 130 v or 220 to 250 v, 50 to 60 cps, 11 W or 12 v DC storage battery or 12 v DC and 135 v DC, dry cell batteries.

TRANSMISSION PERFORMANCE

GAIN: Varied in 2 db steps from 0 to 18 db.

LOAD CARRYING CAPACITY (AMPLIFIERS): Sufficient to permit output level at terminals of +10 dbm with negligible overloading. Total harmonic distortion with +15 dbm output level will not exceed 5%.

IMPEDANCE: Approx 600 ohms over useful voice-frequency range at line A or B terminals.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio Corp, Newark, N.J.

Radio-Communication Terminal Equipment

October 1957

TP-14 TELEPHONE REPEATER

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6G6G
Total Tubes: (2)

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

REFERENCE DATA AND LITERATURE

TM11-2007: Technical Manual for Telephone Repeater TP-14.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Telephone TP-14 Including: (1) Set of Spares	8 x 11 x 17-1/2	46