

30 August 1965

CONVERTER-SHIFT REGISTER GROUP AN/UGA-3

Cog Service: USN FSM:

Functional Class:

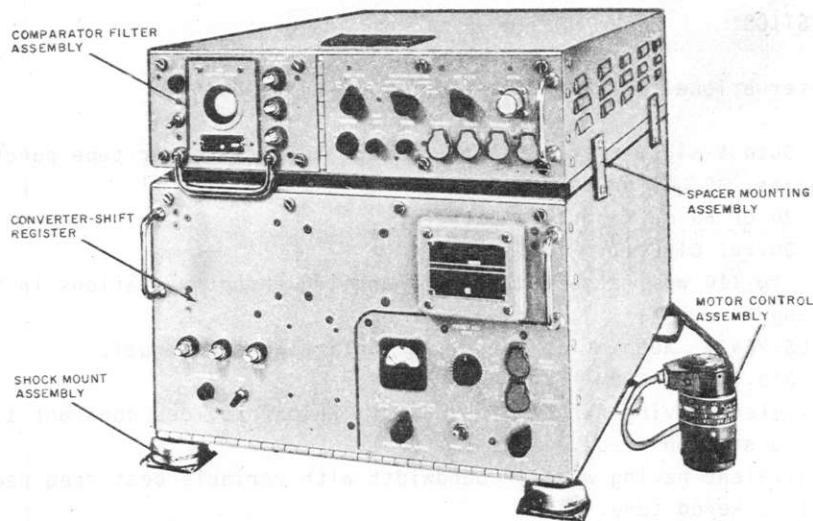
USA

USN

USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Trak Electronics Company Inc., (88769).



CONVERTER-SHIFT REGISTER GROUP AN/UGA-3

**FUNCTIONAL DESCRIPTION:**

Converter-Shift Register Group AN/UGA-3 is a complete transistorized digital computing system for converting Morse code transmissions into standard teleprinter code. The output of the system drives either a teleprinter or punch, recording the Morse code transmission as either a typed message or a punched tape.

The comparator-filter assembly receives its input from a radio communications receiver. This input consists of a mixture of Morse code audio signals and random noise. The comparator-filter assembly reduces the noise component to a minimum, demodulates the audio Morse code, and regenerates the signal. The output supplied from the comparator-filter assembly to the converter-shift register is noise-free Morse keyed dc. To accomplish its purpose, the comparator-filter assembly controls the audio frequency of the receiver output within close tolerance limits. This is accomplished automatically by the motor control assembly, an AFC servo-mechanism which is coupled to the beat-frequency oscillator shaft of the receiver.

## CONVERTER-SHIFT REGISTER GROUP AN/UGA-3

The converter-shift register recognizes the dots, dashes, and spaces of the Morse code. Spaces are identified as element spaces between the dots and/or dashes of a Morse character, letter spaces between characters, and word spaces between words or code groups. A code conversion matrix then translates the Morse code to a digital representation of standard teleprinter code. This code is applied, through buffer storage circuits, to the output machine.

No field changes in effect at time of preparation (13 August 1965).

**RELATION TO OTHER EQUIPMENT:** None.

### EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Radio Receiver or Radio Receiving Set AN/BRR-3(XN-1), AN/BRR-3(XN-2), AN/SRR-11, 12 or 13, R-389/URR, or R-390/URR; (1) Teletypewriter TT-47A/UG, TT-48A/UG, TT-69A/UG, or TT-70A/UG; (1) Line Battery; (6) Cables; (1) Headphones.

### TECHNICAL CHARACTERISTICS:

CODE CONVERSION: International Morse to teleprinter (7-Unit Baudot).

LANGUAGE: English.

OUTPUT CAPABILITIES: Output signals drive standard page teleprinter or tape punch machine with standard punches, 60, 75 or 100 wpm.

OUTPUT CURRENT: Nom 20 or 60 ma from line battery.

SERIES RESISTANCE OF OUTPUT CIRCUIT: 1000 ohms.

MORSE CODE SPEED: 10 to 110 wpm; also capable of handling abrupt variations in Morse code speed over this range.

MORSE CODE SPEED ADJUSTMENT: Automatic, manual, or automatic and manual.

ACCEPTS KEYED TONE AUDIO OUTPUT FROM

AN/BRR-3: Or equivalent having narrow IF bandwidth which provides constant 1 kc tone  $\pm$  5 cps when tuned to station freq.

AN/SRR-11: Or equivalent having wide IF bandwidth with variable beat freq oscillator providing approx 1 kc keyed tone.

RD-219/U: Or any variable speed tape recorder capable of playing back receiver audio output within tolerances of comparator-filter.

TOLERABLE ADVERSE RADIO RECEPTION CONDITIONS: Frequency drift, fading, high noise levels, interference from stronger nearby signals, and atmospheric interference as ordinarily encountered in radio communications systems.

COMPARATOR-FILTER ASSEMBLY OUTPUTS: (1) Two-level Morse keyed dc to converter-shift register; (2) Morse keyed audio signal output from communications receiver for auxiliary recorder; (3) Regenerated Morse keyed audio signals, variable in volume for headphone monitoring.

INPUT SIGNAL TO COMPARATOR FILTER ASSEMBLY: 1.0 kc  $\pm$  5 cps keyed audio from associated receiver or tape recorder; input level 0.25 v rms.

NOTE: The 5 cps tolerance is maintained by the motor control assembly supplied with the AN/UGA-3 equip when used with the AN/SRR-11 receiver. When using the AN/BRR-3 receiver, the receiver must be manually tuned precisely to signal freq to provide an output within this tolerance.

SPECIAL FUNCTIONS SIGNALS PROVIDED BY CONVERTER-SHIFT REGISTER: LTRS and FIGS shifts, LINE FEED, and CAR RET; Morse II = one word space; Morse BT or AR = carriage return and line feed.

WARMUP TIME: 2 min.

POWER REQUIREMENTS: 115 v, 60 cps, 1 ph, 120 W.

AMBIENT TEMPERATURE RANGE

**CONVERTER-SHIFT REGISTER GROUP AN/UGA-3**

OPERATION: - 5° C to + 55° C (+ 23° F to + 131° F).  
 STORAGE: - 62° C to + 77° C (- 80° F to + 160° F).  
 RELATIVE HUMIDITY: 95%.  
 PRESSURE ALTITUDE: Operates at sea level (or slightly below) to 10000 ft; air transportable without pressurization at altitudes up to 25000 ft.

**MAJOR COMPONENTS**

QTY	ITEM	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Converter-Shift Register Group AN/UGA-3 includes:		
1	Comparator-Filter Assembly CM-235/UGA-3	4-23/32 x 17-15/32 x 24-9/16	37.5
1	Converter-Shift Register CV-1287/UGA-3	10 x 17-15/32 x 24-9/16	70.75
1	Control Motor Assembly C-4070/UGA-3	2-1/2 dia x 4-1/4	1.75
2	Spacer-Mounting Assembly Pt No. C-200,135	5/8 x 2-3/8 x 21-1/2	0.25
1	Angle Bracket Pt No. C-200,133	1 x 1-1/4 x 10	0.5
1	Angle Bracket Pt No. C-200,405-1	1 x 1-1/4 x 4-23/32	0.25
1	Angle Bracket Pt No. C-200,405-2	1 x 1-1/4 x 4-23/32	0.25
1	Cable Pt No. C-202,045	2 dia x 15	1.0
6	Electrical Connector Plugs		
3	Telephone Plugs		
1	Tool Kit A-7521		

**REFERENCE DATA AND LITERATURE:**

NAVSHIPS 94316: Technical Manual for Converter-Shift Register Group AN/UGA-3A (and AN/UGA-3).

**TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:**

TUBES: (1) 1CP1

CRYSTALS: Not required.

SEMI-CONDUCTORS: (16) 2N526 (2) 2N388 (5) 2N404 (4) 2N539 (1) 2N174 (2) 2N498  
 (40) 1N277 (136) 1N276 (4) 1N249B (10) 1N253 (2) 1N3154 (3) 1N753A  
 (12) 1N645 (4) 1N753

**SHIPPING DATA**

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	7.5	140

1.5 AN/UGA-3: 3

533

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Trak Electronics Co., Inc.	Wilton, Connecticut	N0bsr 87076	

26 August 1965

Cog Service: USN FSN:

CONVERTER-SHIFT REGISTER GROUP AN/UGA-3A

Functional Class:

USA

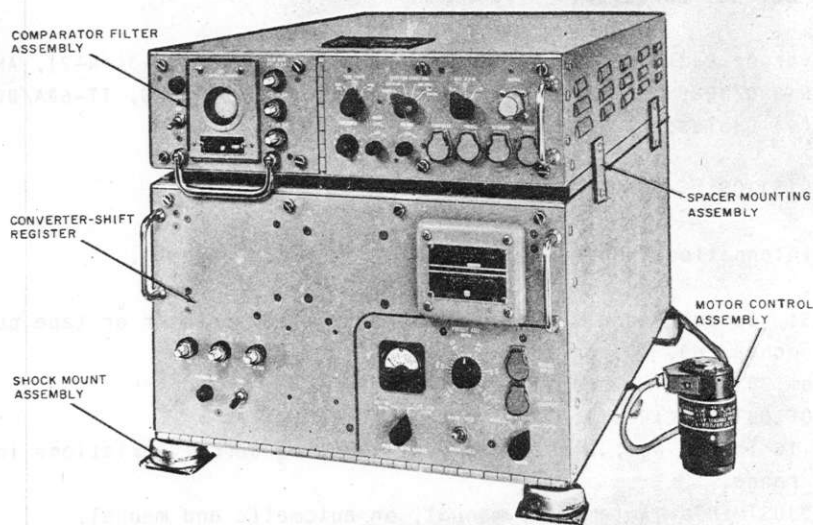
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Trak Electronics Company, Incorporated, (88769).



CONVERTER-SHIFT REGISTER GROUP AN/UGA-3A

#### FUNCTIONAL DESCRIPTION:

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## CONVERTER-SHIFT REGISTER GROUP AN/UGA-3A

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No field changes in effect at time of preparation (17 August 1965).

### RELATION TO OTHER EQUIPMENT:

The AN/UGA-3A is a modified AN/UGA-3 in that the Converter-Shift Register CV-1287A/UGA-3 replaces the CV-1287/UGA-3. The CV-1287A/UGA-3 includes board T, a one character generator capable of generating all input signals necessary to trouble shoot the CM-235/UGA-3 and the converter-shift register.

### EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Radio Receiver or Radio Receiving Set AN/BRR-3(XN-1), AN/BRR-3(XN-2), AN/SRR-11, 12 or 13, R-389/URR, or R-390/URR; (1) Teletypewriter TT-47A/UG, TT-48A/UG, TT-69A/UG, or TT-70A/UG; (1) Line Battery; (6) Cables; (1) Headphones.

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INPUT SIGNAL TO COMPARATOR-FILTER ASSEMBLY: 1.0 kc  $\pm 5$  cps keyed audio from associated receiver or tape recorder; input level 0.25 v rms.

NOTE: The 5 cps tolerance is maintained by the motor-control assembly supplied with the AN/UGA-3A equip when used with the AN/SRR-11 receiver. When using the AN/BRR-3 receiver, the receiver must be manually tuned precisely to signal freq to provide an output within this tolerance.

**CONVERTER-SHIFT REGISTER GROUP AN/UGA-3A**

SPECIAL FUNCTIONS SIGNALS PROVIDED BY CONVERTER-SHIFT REGISTER: LTRS and FIGS shifts, LINE FEED, and CAR RET; Morse II= one word space; Morse  $\overline{BT}$  or  $\overline{AR}$  = carriage return and line feed.

WARMUP TIME: 2 min.

POWER REQUIREMENTS: 115 v, 60 cps, 1 ph, 120 W.

AMBIENT TEMPERATURE RANGE

OPERATION:  $-5^{\circ}C$  to  $+55^{\circ}C$  ( $+23^{\circ}F$  to  $+131^{\circ}F$ ).

STORAGE:  $-62^{\circ}C$  to  $+77^{\circ}C$  ( $-80^{\circ}F$  to  $+160^{\circ}F$ ).

RELATIVE HUMIDITY: 95%.

PRESSURE ALTITUDE: Operates at sea level (or slightly below) to 1000 ft; air transportable without pressurization at altitudes up to 25,000 ft.

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1	Angle Bracket Pt No. C-200,405-2	1 x 1-1/4 x 4-23/32	0.25
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3	Telephone Plugs		
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 (40) 1N277 (155) 1N276 (4) 1N249B (10) 1N253 (2) 1N3154 (3) 1N753A  
 (12) 1N645 (4) 1N753

537

CONVERTER-SHIFT REGISTER GROUP AN/UGA-3A

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	7.5	140

PROCUREMENT DATA

PROCURING SERVICE: USN  
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Trak Electronics Co., Inc.	Wilton, Conn.	N0bsr 89442	

538

567