

UNCLASSIFIED

TECHNICAL INFORMATION

for

TRANSMIT/RECEIVE SWITCHING UNIT

MODEL AX-198



THE TECHNICAL MATERIEL CORPORATION
MAMARONECK, N.Y.

OTTAWA, ONTARIO

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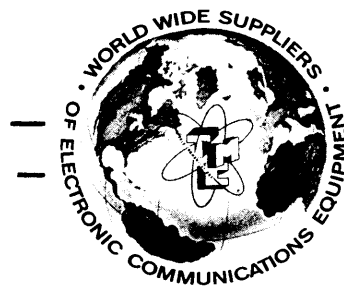
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NOTICE

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THE TECHNICAL MATERIEL CORPORATION

C O M M U N I C A T I O N S E N G I N E E R S

700 FENIMORE ROAD

MAMARONECK, N. Y.

W a r r a n t y

The Technical Materiel Corporation, hereinafter referred to as TMC, warrants the equipment (except electron tubes,*fuses, lamps, batteries and articles made of glass or other fragile or other expendable materials) purchased hereunder to be free from defect in materials and workmanship under normal use and service, when used for the purposes for which the same is designed, for a period of one year from the date of delivery F.O.B. factory. TMC further warrants that the equipment will perform in a manner equal to or better than published technical specifications as amended by any additions or corrections thereto accompanying the formal equipment offer.

TMC will replace or repair any such defective items, F.O.B. factory, which may fail within the stated warranty period, PROVIDED:

1. That any claim of defect under this warranty is made within sixty (60) days after discovery thereof and that inspection by TMC, if required, indicates the validity of such claim to TMC's satisfaction.
2. That the defect is not the result of damage incurred in shipment from or to the factory.
3. That the equipment has not been altered in any way either as to design or use whether by replacement parts not supplied or approved by TMC, or otherwise.
4. That any equipment or accessories furnished but not manufactured by TMC, or not of TMC design shall be subject only to such adjustments as TMC may obtain from the supplier thereof.

Electron tubes*furnished by TMC, but manufactured by others, bear only the warranty given by such other manufacturers. Electron tube warranty claims should be made directly to the manufacturer of such tubes.

TMC's obligation under this warranty is limited to the repair or replacement of defective parts with the exceptions noted above.

At TMC's option any defective part or equipment which fails within the warranty period shall be returned to TMC's factory for inspection, properly packed with shipping charges prepaid. No parts or equipment shall be returned to TMC, unless a return authorization is issued by TMC.

No warranties, express or implied, other than those specifically set forth herein shall be applicable to any equipment manufactured or furnished by TMC and the foregoing warranty shall constitute the Buyers sole right and remedy. In no event does TMC assume any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of TMC Products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

*Electron tubes also include semi-conductor devices.

PROCEDURE FOR RETURN OF MATERIAL OR EQUIPMENT

Should it be necessary to return equipment or material for repair or replacement, whether within warranty or otherwise, a return authorization must be obtained from TMC prior to shipment. The request for return authorization should include the following information:

1. Model Number of Equipment.
2. Serial Number of Equipment.
3. TMC Part Number.
4. Nature of defect or cause of failure.
5. The contract or purchase order under which equipment was delivered.

PROCEDURE FOR ORDERING REPLACEMENT PARTS

When ordering replacement parts, the following information must be included in the order as applicable:

1. Quantity Required.
2. TMC Part Number.
3. Equipment in which used by TMC or Military Model Number.
4. Brief Description of the Item.
5. The *Crystal Frequency* if the order includes crystals.

PROCEDURE IN THE EVENT OF DAMAGE INCURRED IN SHIPMENT

TMC's Warranty specifically excludes damage incurred in shipment to or from the factory. In the event equipment is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved and not with TMC.

All correspondence pertaining to Warranty Claims, return, repair, or replacement and all material or equipment returned for repair or replacement, within Warranty or otherwise, should be addressed as follows:

THE TECHNICAL MATERIEL CORPORATION
Engineering Services Department
700 Fenimore Road
Mamaroneck, New York

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1. FUNCTIONAL DESCRIPTION

Transmit/Receive Switching Unit, AX-198 is a relay switching network, enabling a transmitter and an associated receiver to operate from one common antenna.

2. PHYSICAL DESCRIPTION

The AX-198 is normally mounted at the rear of the equipment rack, with button-contacter E602 mating with the button-contacter receptacle of the associated system's linear r-f amplifier unit. The AX-198 contains two relays, with associated input, output, and control input connectors.

3. INSTALLATION

The AX-198 is normally mounted to the equipment rack prior to shipment. Refer to the associated system technical manual for installing and interconnecting details.

4. OPERATION

Operation of the AX-198 is accomplished by the associated transmitter system's control circuits, requiring no manual tuning or adjustments.

Figure 1 illustrates the AX-198 as used in a typical transmitter system.

When the transmitter system is unkeyed (not transmitting), the two relays K601 and K602 in the AX-198 are deenergized. This condition connects the antenna connector J609 to the receiver connector J606 via K602.

When the transmitter system is keyed (transmitting), relay K601 is energized by 115 volts a-c from the transmitter system's low voltage power supply. The low voltage power supply also supplies 500 volts to the solenoid of relay K602, energizing it via K601 closed contacts to ground. With K602

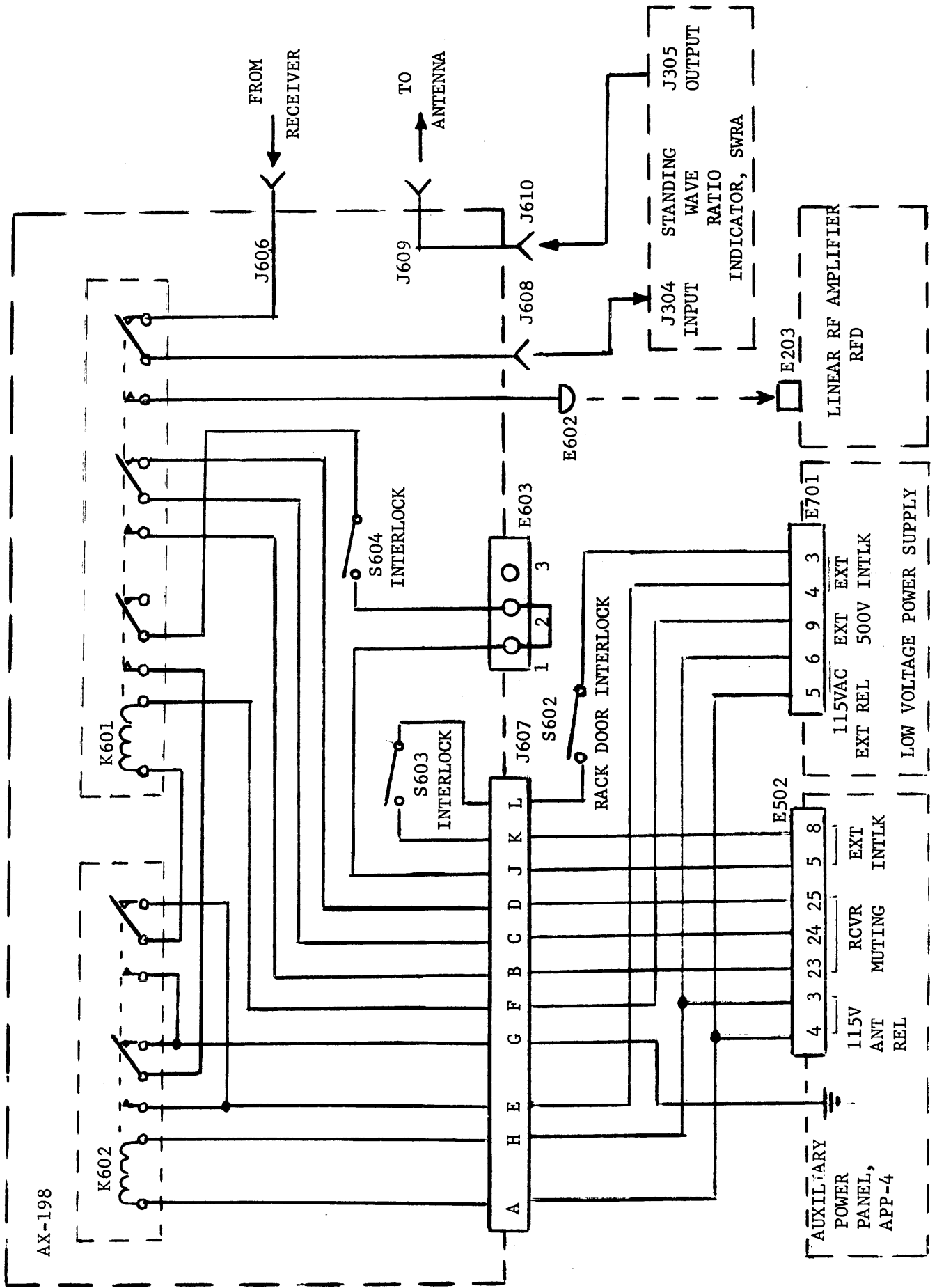


Figure 1. Functional Block Diagram

energized, antenna connector J609 is switched over to button-contacter E602, transmitter r-f output. Relay K602 also provides for interlock switch closure verification and receiver muting during transmit/receive switchover.

5. MAINTENANCE

The AX-198 requires no alignment or adjustments, therefore maintenance may consist of observing for unit cleanliness, secure and accurate interconnections and normal component checks and replacement. See figure 2, schematic diagram for unit circuitry and component layout reference.

6. PARTS LIST

The parts list presented is a cross-reference list of parts identified by a reference designation and TMC part number. In most cases, parts appearing on schematic diagrams are assigned reference designations in accordance with MIL-STD-16. Wherever practicable, the reference designation is marked on the equipment, close to the part it identifies. In most cases, mechanical and electro-mechanical parts have TMC part numbers stamped on them.

To expedite delivery when ordering any part, specify the following:

- a. Reference symbol.
- b. Description as indicated in parts list.
- c. TMC part number.
- d. Model and serial numbers of the equipment containing the part being replaced; this can be obtained from the equipment nameplate.

PARTS LIST, AX-198

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
C601	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 10,000 uuf; GMV; 500 WVDC.	CC100-16
C602 thru C612	Same as C601.	
CP601	ADAPTER, CONNECTOR: rf type; 1 male and 1 female contact; angle type; series UHF to UHF.	SA129
CP602 thru LP605	Same as CP601.	
CP606	ADAPTER, CONNECTOR: rf type; 2 round male contacts; straight type UHF to UHF.	SA104
CP607	Same as CP606.	
E601	NOT USED	
E602	CONTACT, ELECTRICAL: beryllium copper silver plated; spring loaded 3/4 x 1-1/8 x 3/4 over all.	AX154
E603	TERMINAL BOARD: barrier type; three single screw terminals and feed thru solder lugs 8-32thd; phenolic body.	TM100-3
J601 thru J605	NOT USED	
J606	ADAPTER, CONNECTOR: rf type; 2 round female contact; straight type; series BNC to BNC.	UG492*/U
J607	CONNECTOR, RECEPTACLE, ELECTRICAL: 14 No. 16 round male contacts; straight type.	MS3102A20-27P
J608	ADAPTER, CONNECTOR: rf type, two round female contacts; straight type series UHF to UHF.	UG307*/U
J609	ADAPTER, CONNECTOR: rf type, 1 round female contact each end; straight type; series QDS to UHF.	JJ147
J610	Same as J608.	

PARTS LIST, AX-198 (CONT)

REF SYMBOL	DESCRIPTION	TMC PART NUMBER
J611	CONNECTOR, RECEPTACLE, ELECTRICAL: rf type; 1 round female contact; straight type; series UHF to UHF.	JJ195
K601	RELAY, SOLENOID: coaxial type; coil rating, 220 vdc at 2 watts; auxiliary contacts, DPDT; transmit-receive contact, 1 KW power rating to 400 mc; c/o three 50 ohm UHF connectors.	RL139-4-220DC
K602	RELAY, ARMATURE: 10,000 ohm coil resistance; 115 VAC; contacts rated at 5 amps 115 V non-inductive.	RL116AC2C115
P601 thru P615	NOT USED	
P616	CONNECTOR, PLUG, ELECTRICAL: rf type; 1 round male coaxial contact; straight type; teflon dielectric.	PL259A/TEF
P617	CONNECTOR, PLUG, ELECTRICAL: rf type; 1 round male coaxial contact; straight type; series BNC to BNC.	UG260/U
P618	Same as P616.	
P619	Same as P616.	
R601	RESISTOR, FIXED WIRE-WOUND: 35,000 ohms; $\pm 5\%$; 10 watts.	RW109-40
S601	NOT USED	
S602	NOT USED	
S603	SWITCH, PUSH-PULL: SPDT; 15 amps at 120, 250 VAC; .2 amps at 250 vdc.	SW230
S604	SWITCH, SENSITIVE: SPDT; operating force 6 to 14 oz. release force, 4 oz. min.; 10 amps at 125/250 vac; 1/2 amp at 125 vdc.	SW189
W601	CABLE ASSEMBLY, RF: consists of 5-1/4 inch of RG-8/U cable and connectors P616 and P619.	CA512-1
W602	CABLE ASSEMBLY, RF; consists of 11-1/4 inch of RG-59/U and connectors P617 and P618.	CA480-9-1125

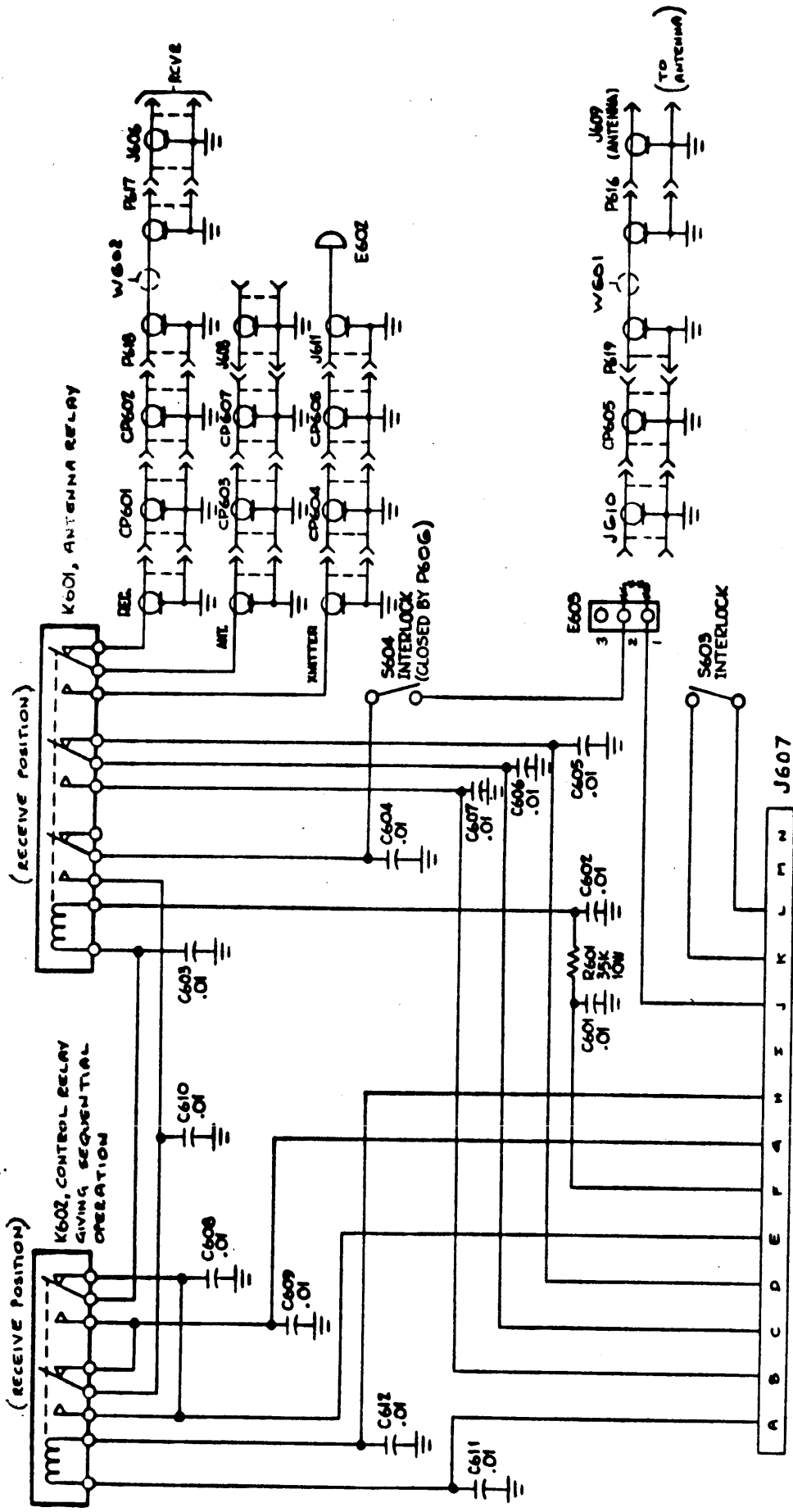


Figure 2. Schematic Diagram, AX-198