METRIC

A-A-59003/2
31 May 1995
Superseding
MIL-A-21577/2
17 October 1965

COMMERCIAL ITEM DESCRIPTION

AMPLIFIER-CONTROL GROUP AN/SIA-115

The General Services Administration has authorized the use of this commercial item description as a replacement for MIL-A-21577/2 which is canceled.

1. **Scope**. This specification covers the detailed requirements for an audio frequency amplifier-control group AN/SIA-115 for general announcing system, circuit 1MC.

2. **Salient Characteristics**.

2.1 **General**. Amplifier-control group AN/SIA-115 shall be in accordance with the applicable paragraphs of A-A-59003 and as specified herein. Whenever a requirement of A-A-59003 conflicts with a requirement of this specification, the requirement of this specification shall govern.

2.1.1 **Speech processor**. A speech processor shall be incorporated into the audio circuit path. The speech processor circuit shall be a separate card from any other audio card. Insertion of or removal of the processor shall not disable normal 1MC or 6MC operation. The speech processor output shall be for engineering space loudspeaker groups only; all other loudspeaker output groups shall have unprocessed audio. The processor shall operate as specified in the acquisition specification.

2.2 **Equipment**. The equipment complement shall consist of eight power amplifiers, two amplifier-oscillator modules, one relay section, and one test section in a common enclosure.

2.2.1 **Preamplifier**. Preamplifiers shall be included as part of each power amplifier.

2.2.2 **Amplifier oscillator**. An amplifier oscillator module shall consist of the plug-in type cards required to generate alarm signals as specified in 3.19, a power supply common to all oscillator cards, and necessary wiring to connect the module to the system. Oscillator cards shall be provided with a device to prevent inadvertent insertion of cards in the wrong order of priority. The device shall allow intentional change in alarm priority by a simple adjustment.

2.3 **Equipment function**. The function of the amplifier-control group AN/SIA-115 described herein is to provide the control switching, amplification of voice and alarm signals, and generation of alarm signals required for general announcing system, circuit 1MC.

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2.3.1 **Circuit 1MC function.** The function of the general announcing system, circuit 1MC is to provide one-way transmission of orders and electronically generated alarm signals to all areas of a ship in which ship's personnel are located.

2.3.2 **Loudspeakers.** Loudspeakers used in circuit 1MC shall be in accordance with A-A-59003.

2.3.3 **Alarm contact makers.** Contact makers are normally open, single-pole switches. Contact makers for all alarms except the general alarm are held closed throughout the time the alarm is sounded. The contact maker for the general alarm, when actuated, momentarily closes the circuit and then opens.

2.4 **System operation.** The amplifier-control group AN/SIA-115 shall provide the types of operation specified in 2.4.1 through 2.4.4.

2.4.1 **Microphone press-to-talk switches circuit 1MC.** The operation of a 1MC microphone press-to-talk switch shall:

(a) Connect the microphone audio circuit at that microphone station to the input of the amplifiers.

(b) Actuate appropriate system priority circuits.

(c) Place the amplifier in "ready" condition.

(d) Disconnect the adjacent loudspeaker on the local loudspeaker circuit associated with the microphone station box.

(e) Attenuate the ship's entertainment system (SE).

2.4.2 **Local loudspeaker cutout circuit.** A cutout circuit shall be included for each microphone station to automatically disconnect local loudspeakers when the microphone is in use. The cutout circuit shall consist of a normally closed relay which shall operate to open the audio circuit supplying the local loudspeakers when the microphone press-to-talk switch is operated.

2.4.3 **Circuit SE attenuation.** Operation of any 1MC press-to-talk switch shall operate a normally open relay which shall complete an external attenuation circuit in the ship's entertainment system.

2.4.4 **Circuit SE muting.** Operation of any alarm contact maker shall operate a relay which, through an external circuit, shall mute the output of the ship's entertainment system.

2.5 **Enclosure.** The interior of the enclosure shall be divided into sections. The sections shall be further subdivided to accommodate various plug-in modules. Each section shall contain functional facilities as follows:

(a) Top section.

(1) Forced air cooling fan or fans and ventilation louvers.

(2) Necessary terminal boards for interconnection between the cabinet and the ship's wiring.

(3) A front plate for access to the terminal boards.

(4) A top plate for terminal tubes.

(b) Control section.

(1) A hinge mounted panel with safety stops to hold the panel in open position for servicing.

(2) Microphone and speaker disconnect switches, power supply switches, amplifier and oscillator transfer switches, fuses and power available indicator lamp mounted on the panel.

(c) Amplifier and oscillator section.

(1) Subdivisions to accommodate drawer type power amplifier modules and amplifier oscillator modules mounted on guide rails.

(2) Connectors to provide connection of modules to the system.

(3) A safety catch on the right hand side of the module to prevent the inadvertent removal of the module from the cabinet.

(4) Provision to intentionally remove a module from the cabinet after releasing the safety catch.

(5) Dowels and matching bushings to provide support and alignment of amplifier modules and oscillator modules. Dowels and bushings shall be arranged to permit insertion of duplicate units only where an identical unit has been removed.

(d) Relay and test section.

(1) Unit construction similar to that for the amplifier and oscillator section shall be considered. If unit construction is impractical, the components shall be mounted on hinged panels.

2.6 **Size**. Maximum overall dimensions of the amplifier-oscillator control rack shall be 1753 mm in height, 521 mm in width, and 381 mm in depth. Minimum practical dimensions consistent with design requirements will be acceptable.

2.7 **Semiconductors**. Semiconductor circuits shall be used exclusively.

2.8 **Relays**. Relays, with the exception of power type contactors, may be hermetically sealed.

2.9 **Output power**. The rated output power for the individual power amplifier units shall be 20 watts, minimum rating.

2.10 **Time constant**. Under the conditions specified in the overload limiter characteristic requirements of A-A-59003 the preamplifier output voltage shall return to the value specified in the overload limiter characteristic requirements within 0.025 second after the sudden increase in input signal voltage above reference level.

2.11 **Interstage input facilities**. Interstage input circuit, input impedance, and input level will not be required.

2.12 **Power supply**. Each amplifier or amplifier-oscillator unit shall be provided with its own power supply for all power requirements of the unit.

2.13 **Output level.** The amplifier-oscillators shall maintain an output level equal to that selected for the microphone preamplifiers. This voltage shall be used as a test signal source in accordance with A-A-59003.

2.14 **Adjustment of output level.** A lockable adjustment, adjustable by screwdriver, coin, or hand, shall be provided in the amplifier-oscillator or in combination with the associated control circuits to permit independent adjustment of the amplifier-oscillator output level for the alarm signal into the amplifier input.

2.15 **Visual alarm.** Operation of alarm signals number 1 and 5 shall operate a relay for control of external visual alarm signal.

2.16 **Alarm signals.** The following alarms shall be provided and shall have the following order of priority:

(a) Collision alarm.
(b) Chemical alarm.
(c) General alarm.
(d) Flight crash alarm.
(e) Unassigned.

2.17 **Input facilities.** The number and type of microphone control stations associated with the amplifier system shall be as follows:

Microphone station number	Microphone station Type	Circuit controlled
1	IC/MSB-2	1MC
2	IC/MSB-2	1MC
3	IC/MSB-2	1MC
4	IC/MSB-2	1MC

2.18 **Output facilities.** The number and designation of loudspeaker groups associated with the amplifier system shall be as follows:

Microphone station number	Microphone station type	Circuit controlled
1	Officers	1MC
2	Topside	1MC
3	Topside	1MC
4	Crew	1MC
5	Engineering spaces	1MC
6	Engineering spaces	1MC

2.19 **Active circuit.** The active audio circuit shall consist of six power amplifiers. The remaining two amplifiers shall be considered as spares. They shall be used as replacement modules in the event of failure of active amplifiers. A selector switch shall permit selection of either oscillator module as the active module. The remaining oscillator module shall be used as the active module in the event of failure of the "active" module.

2.20.1 **Loudspeaker group relay.** There shall be one loudspeaker group relay for each amplifier. Provision shall be made to operate group relays in parallel if one loudspeaker group requires the output from more than one amplifier.

2.21 **Power supply switches**. Separate power switches shall be provided as follows:

Each amplifier unit.
Each amplifier-oscillator unit.
Relay unit.
Forced air cooling blower.

2.22 **Test facilities**. Facilities shall be provided for the purpose of checking the operation of any of the amplifier modules or oscillator modules as an aid to system servicing and maintenance.

2.22.1 **Voltmeter**. A voltmeter shall be provided to measure the output of a power amplifier or an oscillator module. The meter shall indicate decibels (db) for normal output.

2.22.2 **Amplifier select switch**. A switch shall be provided to permit measuring the output of any amplifier selected for test. Selection of an amplifier for test shall start the chemical alarm oscillator of the inactive oscillator module for use as a test signal input to the amplifier.

2.22.3 **Oscillator select switch**. A switch shall be provided to select and start any of the oscillators in the inactive module for use as a test signal to measure output of the oscillator module.

2.22.4 **Test condition**. Testing shall be performed with the amplifiers in active service. Priorities shall be established to prevent test procedures from interfering with normal system operation. Design of the test facility shall prevent transmission of test signals over loudspeakers when checking amplifier or oscillator module operation.

2.22.5 **Relay testing**. A test socket, indicating lamps, and a test switch to test plug-in type relays shall be provided. Capability to test a relay for operating coil continuity and for contact operation in both normal and operated conditions shall be provided.

3. **Quality assurance**. Sampling, examination, and tests shall be in accordance with A-A-59003.

4. **Packaging**. Packaging shall be in accordance with A-A-59003.

5. **Notes**.

5.1 **Intended use**. Amplifier-control group AN/S1A-115 is intended for use in shipboard general announcing systems.

5.2 **Notes**. The notes specified in A-A-59003 are applicable to this specification.

Preparing activity:
Navy - SH
(Project 6320-N048)