

13A ANNOUNCEMENT SYSTEM SD-97753-01

DESCRIPTION COMMON SYSTEMS

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A. Local	10	1. GENERAL	
B. Remote	10	1.01 This section describes the 13A Announcement System (see Fig. 1). The 13A Announcement System provides an announcement system that is completely electronic, with no routine maintenance, and has multichannel capabilities.	
POWER DOWN	10	Warning: <i>This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A com-</i>	
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NOTICE

Not for use or disclosure outside the Bell System except under written agreement

puting device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.♦

1.02 This section is reissued to:

- (a) Identify that the FML (12 sec)—UD5 module circuit pack has been rated manufacture discontinued
- (b) Add introductory information on the J1A058C recorded announcement frame used with the 13A Announcement System for the No. 1/1A Electronic Switching System (ESS) or No. 2/2B ESS (paragraphs 1.20 through 1.24)
- (c) Add description of J1A058C frame (paragraph 2.07)

- (d) Add power requirement for the J1A058C frame (paragraphs 4.03 and 4.04)
- (e) Add restriction information for the J1A058C frame (paragraphs 5.05 and 5.06)
- (f) Update Fig. 1 through 6 on cabinet design
- (g) Add Fig. 8 for the J1A058C frame
- (h) Add figures to Table of Contents
- (i) Add notice of compliance with FCC Rules
- (j) Add Common Systems to title.

Revision arrows are used to emphasize the more significant changes.

1.03 The 13A Announcement System, can fulfill the needs of most situations which require recorded announcements of varying lengths. The 13A Announcement System provides the facilities for recording locally by using a handset or by using a tape recorder with prerecorded messages. ♦Input and out-

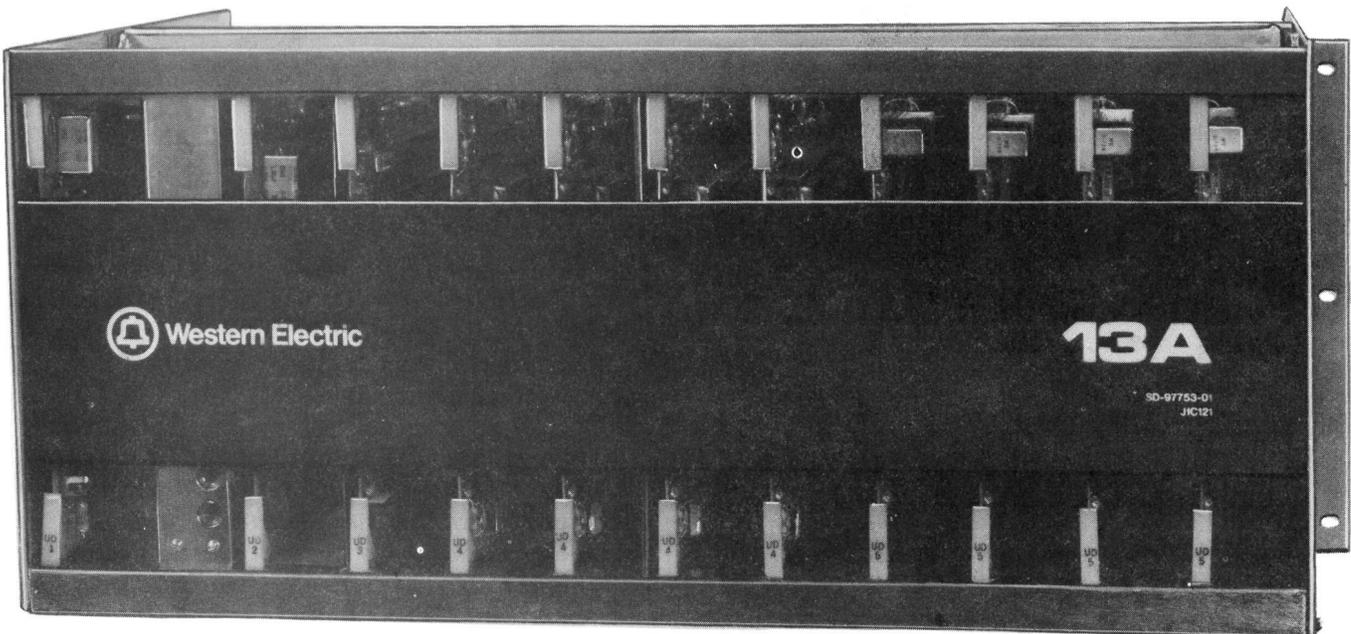


Fig. 1—♦13A Announcement System (Front Door Closed)♦

put terminals are provided for accessing and for recording by external circuitry.♦

1.04 The 13A Announcement System is completely electronic and the design is based upon digitized speech stored in a 29A magnetic bubble memory. The 29A magnetic bubble memory has the capability of providing storage for a 12-second recorded announcement.

1.05 Since the 29A magnetic bubble memory used to store the recorded announcements is a digital device, the speech is converted from analog to digital form during the recording process. Similarly, on playback it is converted from digital to analog form for announcement. Adaptive delta modulation encoding and decoding circuitry is used to accomplish this conversion. The encoding circuitry is located on the UD2 encoder driver circuit pack. The decoding circuitry and 29A magnetic bubble memory package are located on the message module circuit packs along with the output amplifier needed for driving the associated trunk circuits. UD4 message modules utilize two 29A magnetic bubble memory packages for storage of a 24-second recorded announcement.

1.06 The 29A bubble memory is a nonvolatile memory. It retains the stored information without requiring power. After a recording is made, the message module can be removed from one 13A Announcement System and installed in another ♦(see paragraph 3.06).♦ The nonvolatility feature permits centralized recording of message modules. The prerecorded message modules could then be distributed to other 13A Announcement Systems at other locations.

1.07 The 13A Announcement System is a multichannel system allowing one to eight channels; each channel allows the announcement of one recorded message. Circuitry for announcing a message is located on circuit packs called message modules (Fig. 2). ♦Two♦ types of message modules are available: a 3- to 12-second variable message length (VML), and a 3- to 24-second VML. ♦A 12-second fixed message length (FML), previously available, has now been rated manufacture discontinued (MD).♦ The message modules are identified as follows:

- UD4—VML (3-24 sec)
- UD5 ♦(MD)♦—FML (12 sec)
- UD6—VML (3-12 sec).

1.08 UD4 and UD6 VML modules provide the option of selecting different message lengths in 3-second increments. A thumbwheel switch located on the message module (see Fig. 3) can be rotated to the desired message length.

CIRCUIT PACK DESCRIPTION

1.09 UD1 Power Supply Circuit Pack: This circuit pack converts the -48 Vdc talk battery into all the voltages needed to operate the 13A Announcement System. Test points are provided for measuring each of the voltages. The POWER switch, POWER OFF light emitting diode (LED), the fuse, and a CURRENT LIMIT LED are located on this circuit pack. (See Fig. 4.)

1.10 UD2—Encoder-Driver Circuit Pack: This circuit pack provides two functions: (1) a balanced input with automatic level control for recording and encoding circuitry to convert the speech to the required digital format, (2) provide signals to the magnetic bubble memory for generation of rotating magnetic fields which are required for memory operation.

1.11 UD3 ♦or UD3B♦Timing and Control Circuit Pack: This circuit pack provides the system clock and all necessary control signals used by the system. It also provides two control switches and several LEDs on the front edge of the pack. (See Fig. 5.)

(a) The REQUEST RECORD switch is a pushbutton switch used to initiate local recording. The FIELD DOWN switch is also a pushbutton switch, whose function is to stop the rotating fields for the memory at a specific point. This permits interchangeability of message modules between 13A Announcement Systems.

(b) The CUT-THROUGH LED indicates the occurrence of the cut-through signal. This LED will light for 3 seconds and be extinguished for 12 seconds during normal operation of the 13A Announcement System.

(c) The REQUEST RECORD LED lights in response to operation of the REQUEST RECORD switch. The RECORD LED lights when the recording process is to be started. At this point the REQUEST RECORD LED is extinguished. The RECORD LED is extinguished at the end of the recording interval.

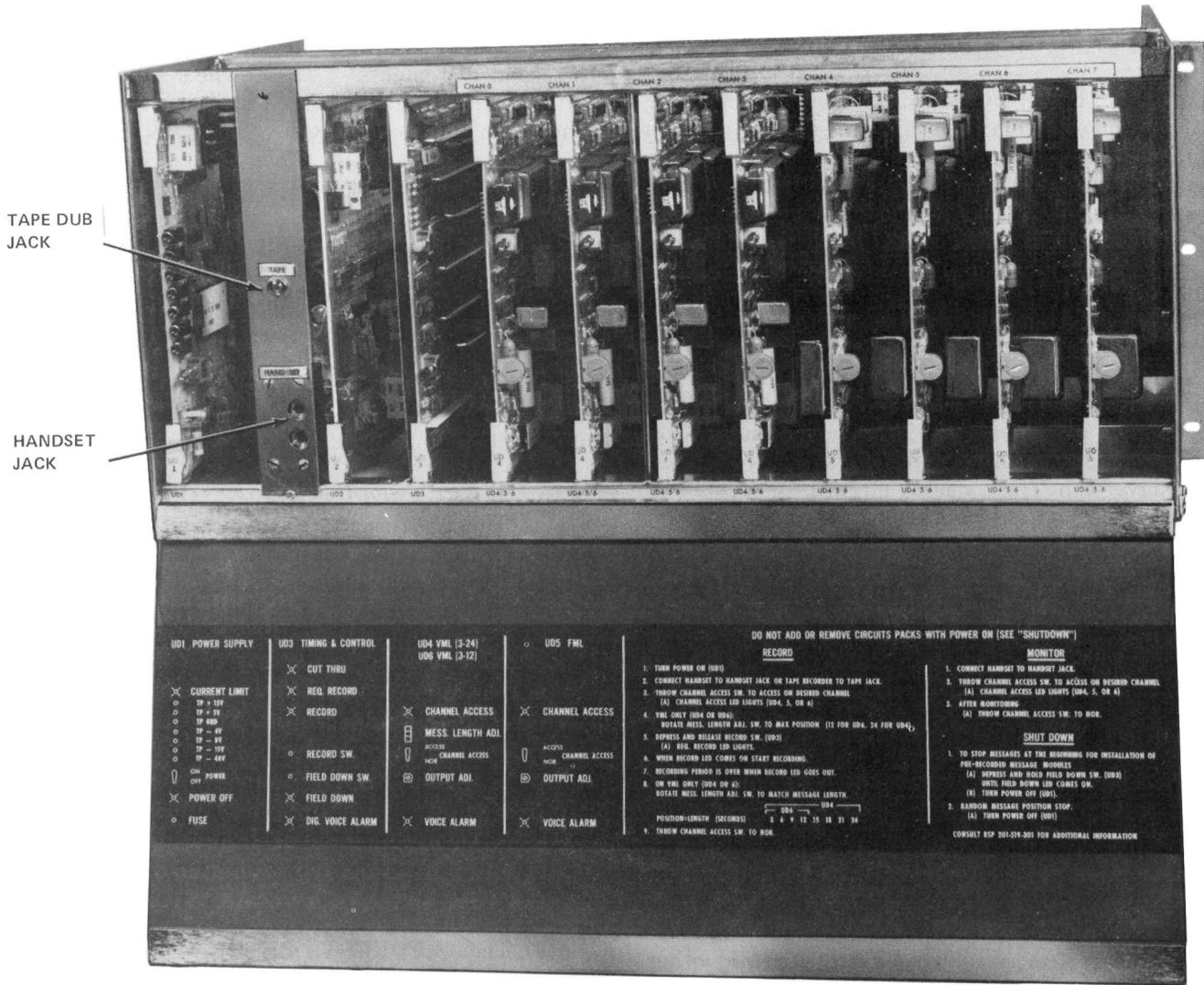


Fig. 2—13A Announcement System (Front Door Open)

(d) The FIELD DOWN LED lights in response to the operation of the FIELD DOWN switch.

Note: The FIELD DOWN switch may have to be held operated for up to 3 seconds.

(e) The DIGITAL VOICE ALARM (DVA) LED indicates that an error condition has been detected by the UD3 or UD3B.

Both UD3 and UD3B are compatible with all past and present issues of the other 13A circuit packs. Therefore, a UD3B can be used to replace a UD3. The UD3B eliminates a possible problem in the timing of

the start of recording. It also provides improvement in internal signals which may be used in future message module designs.

1.12 UD4 VML (3-24) Message Module Circuit Pack:

This circuit pack provides VML storage for 3 through 24 seconds of recorded information. The storage length is variable in 3-second increments by operation of a thumbwheel switch mounted on the circuit pack. The controls and indicators mounted along the front edge of the pack are: (a) the message length adjustment switch, (b) the CHANNEL ACCESS switch, (c) the output level adjustment potentiometer, (d) the CHANNEL ACCESS LED,

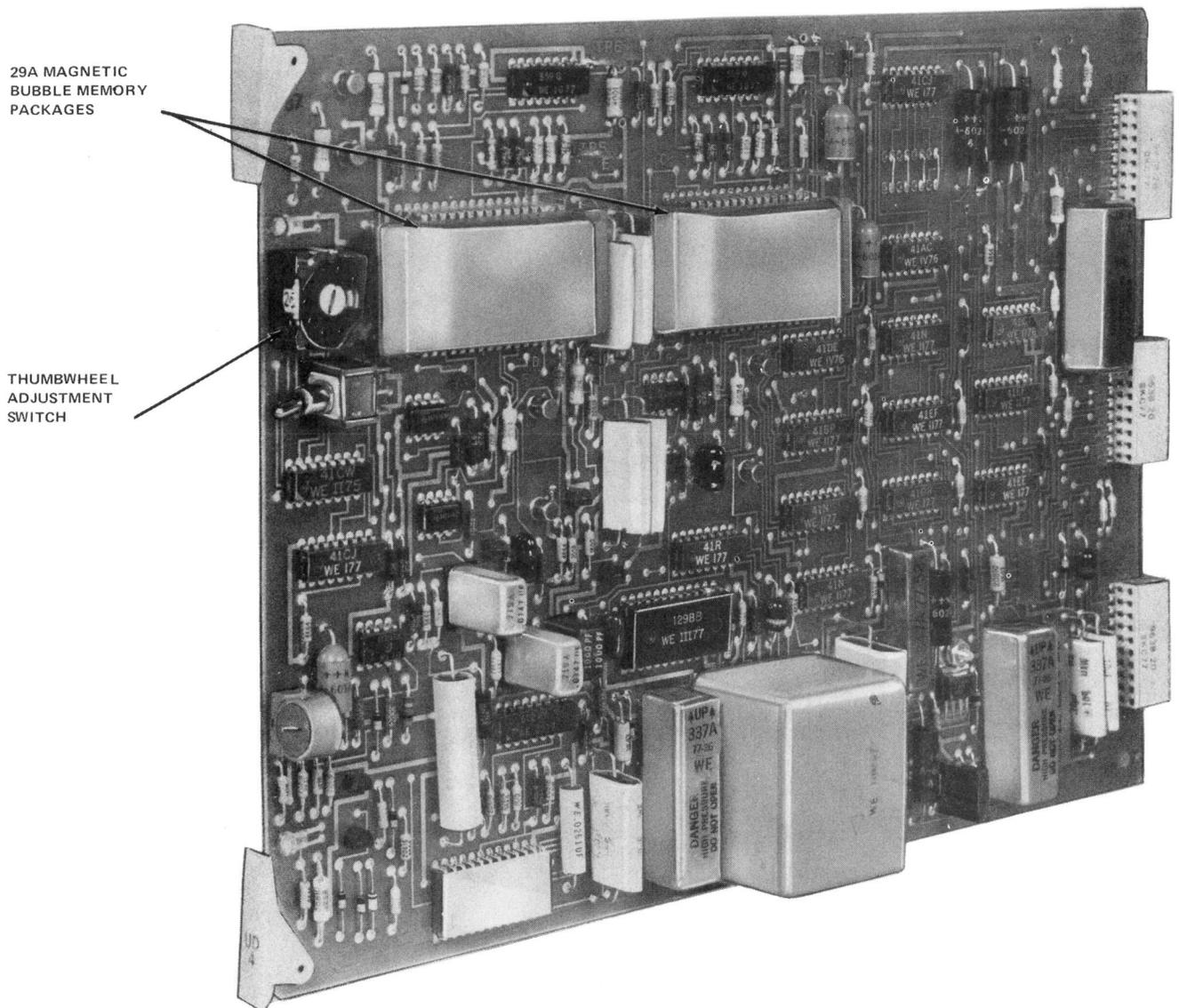


Fig. 3—VML (UD4) Message Module Circuit Pack

and (e) the VOICE ALARM LED. The pins located on the backplane for each circuit pack provide the following:

- Audio output on T1-R1, a start lead requiring a closure to ground to start the message output or to start the channel for remote recording
- Cut-through contact closure to indicate the beginning of the message
- Contact closure to indicate a voice alarm
- Channel access lead requiring a ground to place the channel in a ready to record mode for remote recording
- MU2, MU3, and MU4 leads which provide a contact closure between leads MU3 and MU4 during the announcement and open contacts during the silence period at the end of the announcement. The MU2 and MU3 combination provides the opposite state.

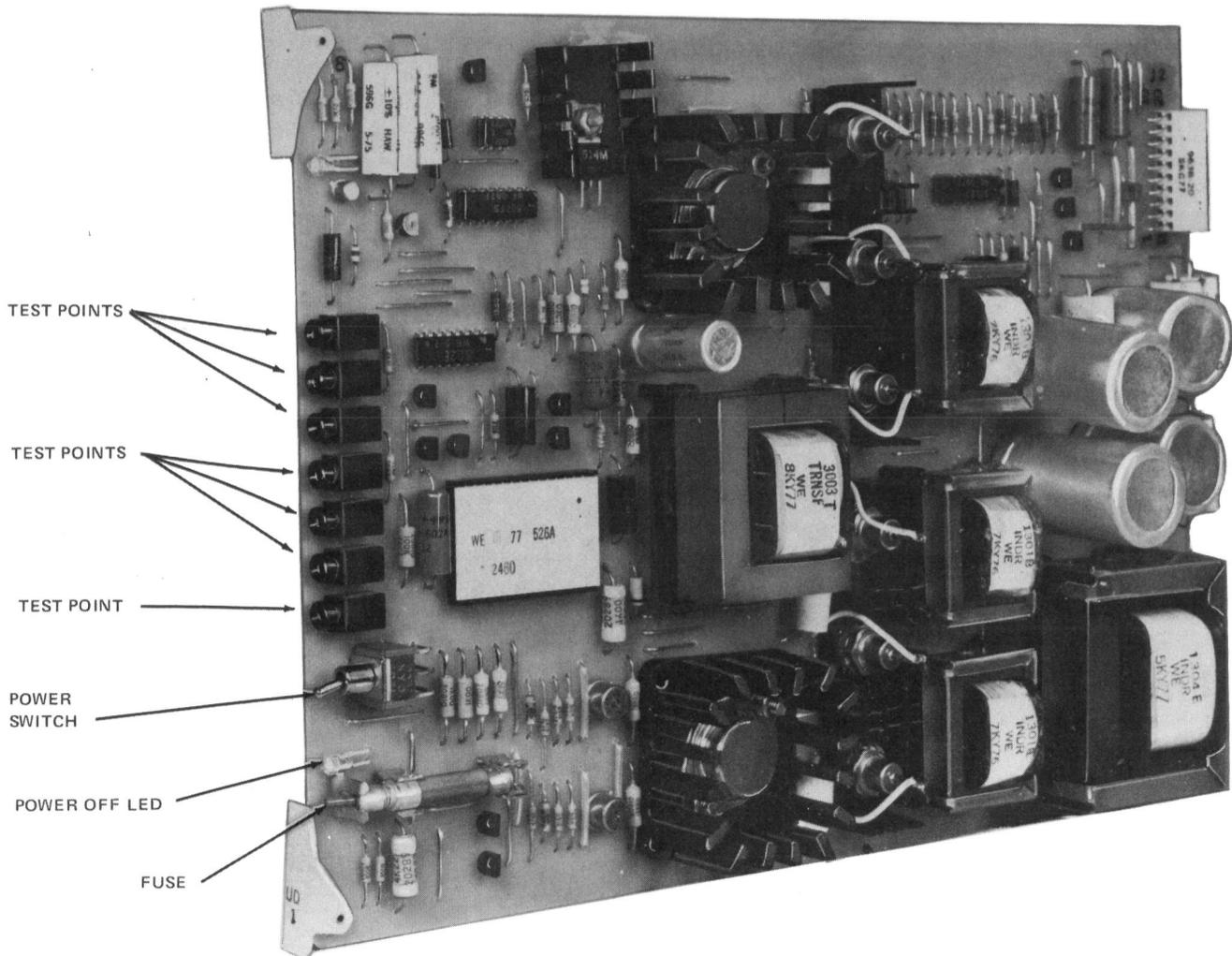


Fig. 4—Power Supply (UDI) Circuit Pack

1.13 UD5 FML Message Module Circuit Pack (MD): This circuit pack provides FML storage for 12 seconds of recorded information. The CHANNEL ACCESS switch, the output adjustment potentiometer, the CHANNEL ACCESS LED, and the VOICE ALARM LED are all located along the front edge of the circuit pack. The pins located on the backplane for each circuit pack provide the following: (a) audio output on T1-R1, (b) a cut-through contact closure to indicate the beginning of the message, (c) a contact closure to indicate a voice alarm, and (d) a channel access lead requiring a ground to

put the channel in a ready to record mode for remote recording.

1.14 UD6 VML (3-12) Message Module Circuit Pack: This circuit pack provides VML storage for 3 to 12 seconds of recorded information. Except for the length of storage, the circuit pack function is the same as the UD4.

1.15 Each message module can provide an announcement to 500 trunk circuits simultaneously provided that good distribution design rules

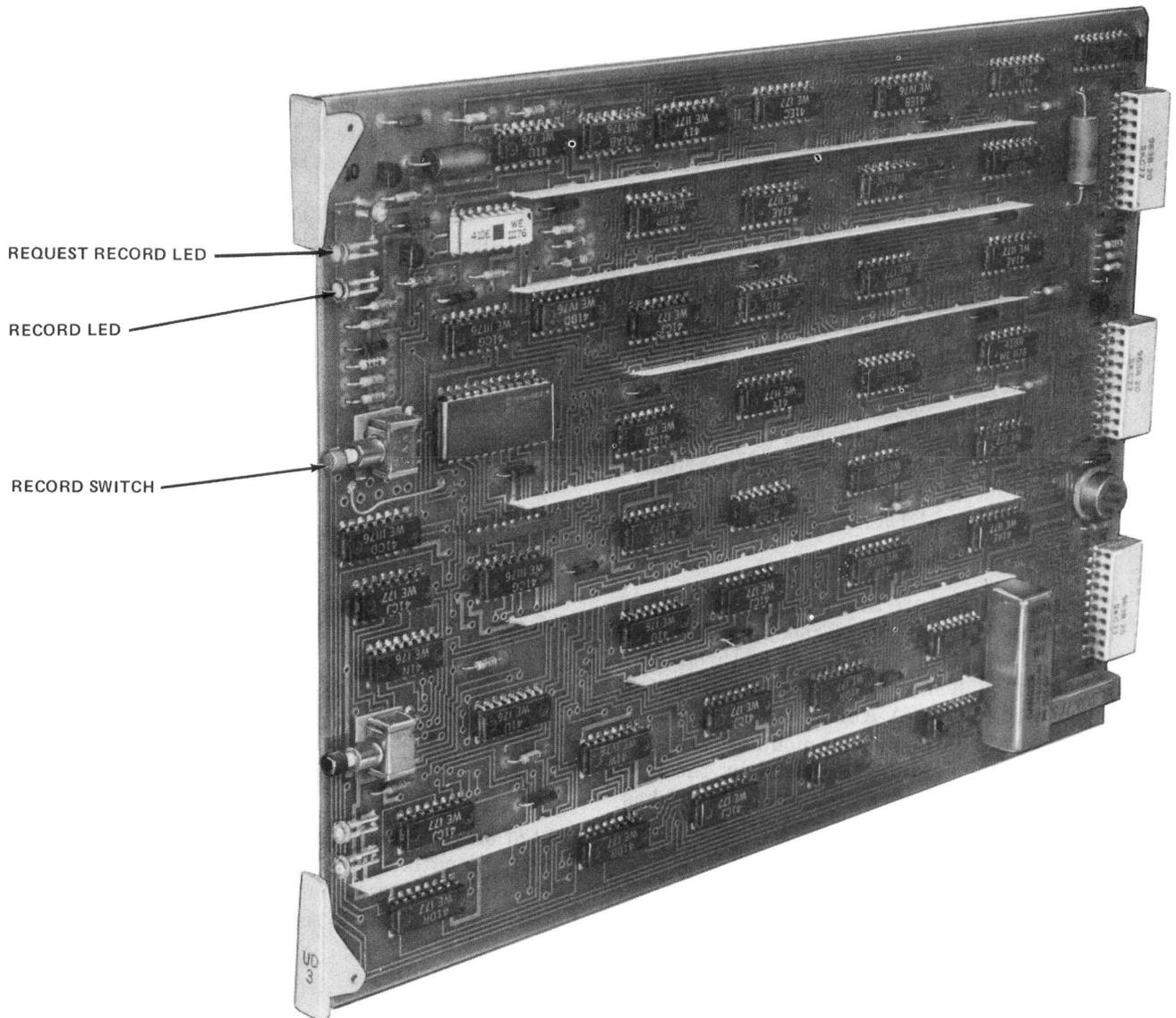


Fig. 5—Timing and Control (UD3B) Circuit Pack

are followed. (See SD-97753-01, Circuit note 107.) Each announcement is protected by a dedicated voice alarm circuit. If, for any reason, the announcement level falls below an acceptable level, a voice alarm will be initiated. A voice alarm is also initiated for any power failure situation. The voice alarm is a contact closure to the office alarm circuit.

1.16 The 13A Announcement System has a variety of mounting brackets that allow for installation of the unit on all standard frames commonly found in ESS and electromechanical central offices.

1.17 The 13A Announcement System is equipment coded and the circuit packs are apparatus coded. The basic equipment code is J1C121A-1; list numbers are provided to allow equipping the system as desired. List 1 provides the following:

- Shelf assembly
- Backplane
- Patching cord for tape dubbing

- Front door
- Power supply circuit pack (UD1)
- Encoder driver circuit pack (UD2)
- Timing and control circuit pack (UD3 or UD3B)●

Lists 2 through 4 provide a selection of mounting brackets for mounting the 13A Announcement System on various equipment frames. The remaining Lists 40 through 67 provide for equipping the 13A Announcement System with the various FML and VML message module options that are available.

1.18 The 2-digit list number refers to the type of message module and the position it occupies. For example, a List 40 is a UD4 message module in channel 0, a List 52 is a UD5 message module in the channel 2 position.

1.19 The options that are available were designed to emulate the features of specific announcement systems. Lists 40 through 47 and 60 through 67 (VML message modules) were designed to mimic the features provided by the 7A Announcement System. Lists 50 through 57 (FML message modules) were designed to mimic the features provided by the KS-12068, L6 Recorder/Reproducer. However, ●UD5 has been manufacture discontinued, and UD4 or UD6 message modules are compatible with all interconnecting circuits.

J1A058C RECORDED ANNOUNCEMENT FRAME

1.20 ●The J1A058C recorded announcement (RA) frame is equipped with one 13A Announcement System control circuit for the No. 1/1A ESS or No. 2/2B ESS interface and isolation distribution resistors for fanout to service circuits.

1.21 The J1A058C RA frame is physically capable of being equipped to use from one to eight VML modules in the 13A Announcement System. However, due to No. 1/1A and No. 2/2B ESS program restrictions, it presently may be equipped only with from one to six VML module units. When used in a No. 2/2B ESS office, the equipped VML message module units are restricted to a fixed twelve (12) seconds. The restriction to six channels is to maintain compatibility with the existing software for the present J1A058C RA frame, which is designed for six channels.

1.22 Recordings may be made at the RA frame by use of a G-type handset plugged into jacks provided or by a tape player connected to the tape input. The tape input also allows recording of professionally prepared prerecorded messages on the 13A Announcement System. The J1A058C RA frame does not provide for remote recording.

1.23 The RA frame, equipped with the 13A Announcement System, provides distribution resistors to 120 service circuits per channel for each of the six channels. The RA frame limits the total distribution resistors to 720 service circuits per frame. Options in the J1A058C RA frame offer the flexibility of initially equipping the RA frame with only the number of the message modules and distribution resistors required. Therefore, the RA frame may be initially equipped with only one message module with 40 distributor resistors in the 13A Announcement System. The No. 2/2B ESS systems require that channel zero (0) always be the first channel equipped.

1.24 The new RA frame equipped with the 13A Announcement System will offer options for two types of recorded VML module units. One offers a variable recorded message length of 3- to 12-seconds maximum (UD6 circuit pack). The seconds type offers a VML of 3- to 24-seconds maximum (UD4 circuit pack). The UD4 and UD6 VML modules provide the option of selecting different message lengths in 3-second increments. A thumbwheel switch located on the message module can be rotated to the desired length. The RA frame can be equipped with either type of message module unit or a combination of both types to meet service requirements.●

2. DESCRIPTION

2.01 The 13A Announcement System measures 21-3/8 inches long, 9-1/2 inches high, and 12 inches deep. A variety of mounting brackets allow for installation of the unit on all standard frames commonly found in ESS and electromechanical central offices.

2.02 Interconnection of circuit packs to input-output (I/O) terminals and between circuit packs is accomplished via a printed wiring backplane (see Fig. 6). Connection from the 13A Announcement System to interconnecting circuits is via a field of .045 inch square wire wrap pins on the backplane. The power lead connections are screw terminals.

2.03 The versatility of the 13A Announcement Systems allows for a recording system that has up

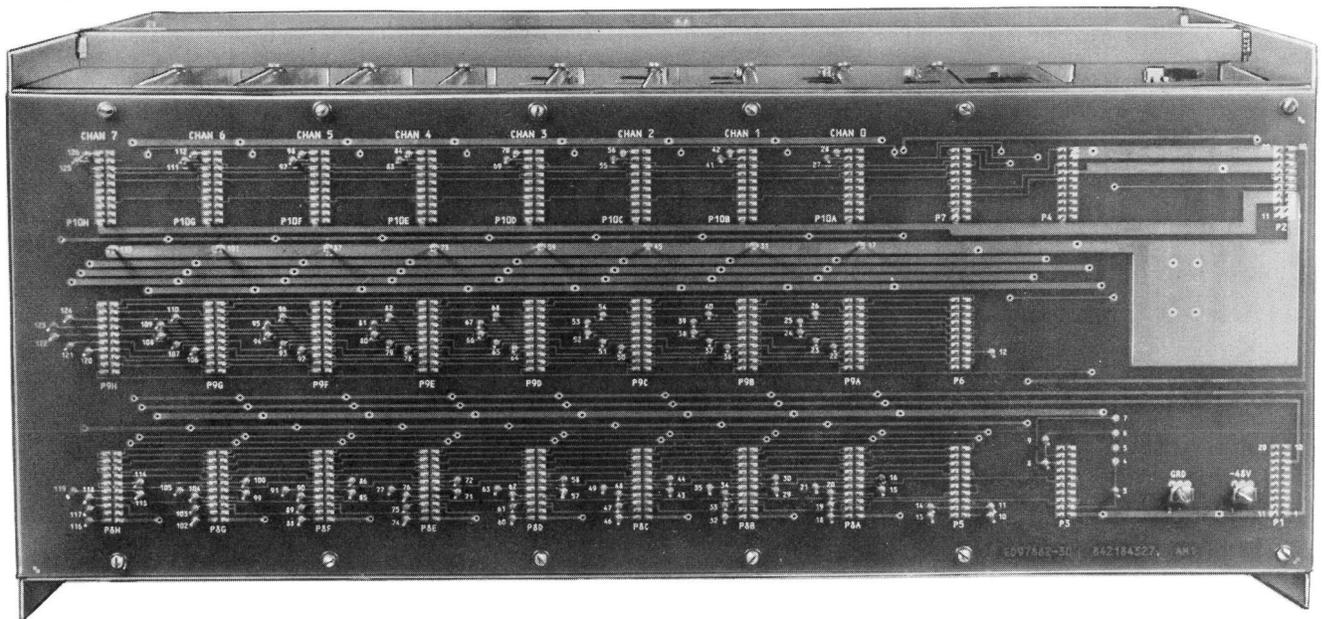


Fig. 6—Printed Wiring Backplane

to eight channels. Additional channel capacity is accomplished by inserting message modules into the available positions.

2.04 All local controls and indicators are mounted on the circuit packs with the exception of a TAPE input jack and a HANDSET jack. These two jacks are located on a front plate on the shelf assembly.

2.05 Operating procedures for recording, monitoring, and shutting power down are printed on the inside of the front door (see Fig. 2).

2.06 Figure 7 shows the physical arrangement of the circuit packs in the 13A Announcement System.

2.07 The physical layout of the J1A058C RA frame is shown in Figure 8. The frame is a standard 2-foot 2-inch single bay frame. The drawing shows a fully equipped RA frame with the 13A Announcement System.

3. OPERATION

RECORDING

A. Local

3.01 The input, either from a handset or a tape recorder, is routed to the encoder driver circuit pack (UD2) which converts the speech to digital form and is routed along a common bus on the backplane. The channel or channels to be recorded access the bus via the CHANNEL ACCESS switch. System control signals between the common circuit packs (UD1, UD2, and UD3) and the message modules control the record process. Indicators are provided for channel access, request record, and record.

B. Remote

3.02 System signals are provided from the backplane to indicate the record state. The input to the 13A Announcement System from the backplane parallels the HANDSET input jack on the front of the shelf assembly.

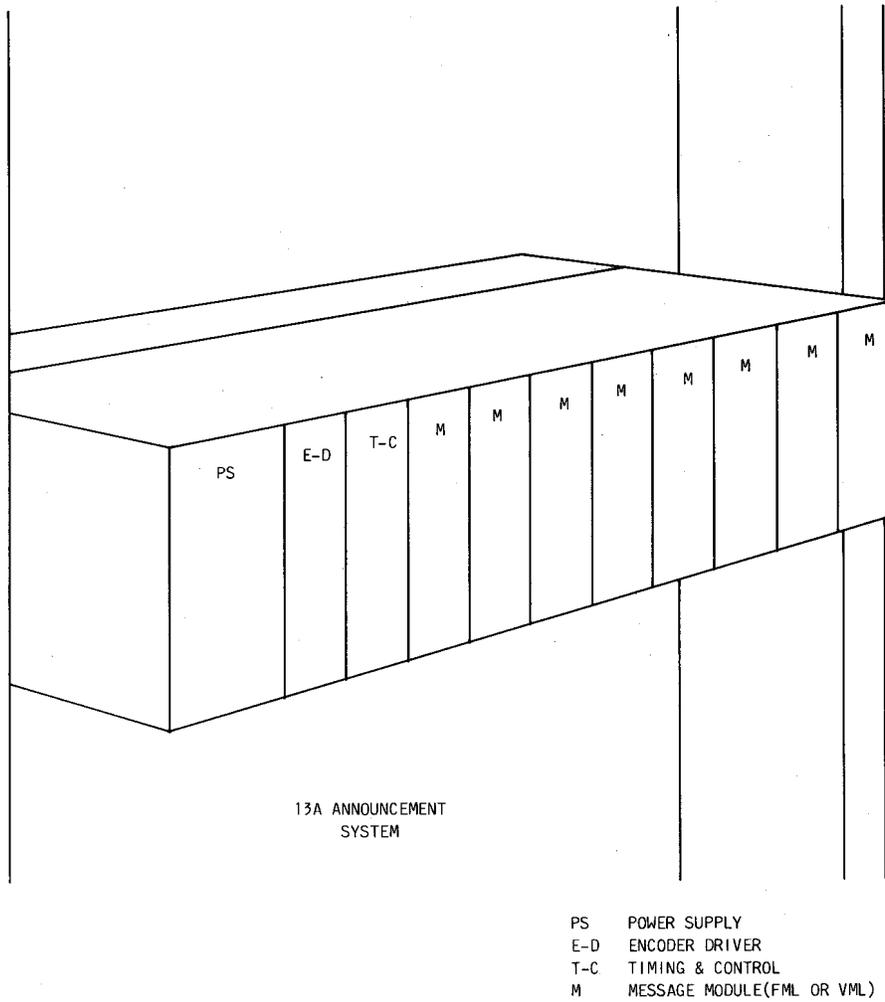


Fig. 7—Physical Arrangement of 13A Announcement System

PLAYBACK

A. Local

3.03 The audio output from a channel is routed to the HANDSET jack via a common bus on the backplane. The CHANNEL ACCESS switch connects the desired channel to the common bus. In the case of the UD4 or UD6, the CHANNEL ACCESS switch also provides the start signal required to start the announcement.

B. Remote

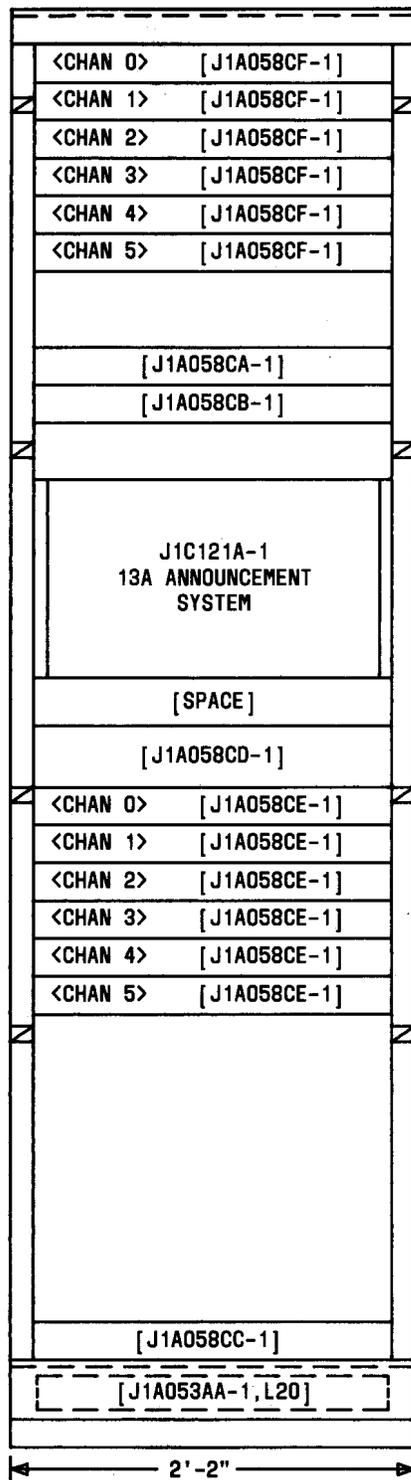
3.04 The normal output of the channels on T1 and R1 is provided continuously for the UD5 FML

circuit pack. The cut-through signal provides system information for non barge-in type of service. The output of the UD4 or UD6 VML message modules is not available at the T1 and R1 pins until a start signal is provided by the user system.

POWER DOWN

3.05 The 13A Announcement System contains the required circuits to allow power down via the POWER switch or a power failure in the -48 Vdc supply without erasing the recorded announcements.

3.06 The FIELD DOWN switch located on the UD3 or UD3B circuit pack is used to provide a synchronized halt to the rotating fields in the 29A



FRONT VIEW

J1A058C RECORDED ANNOUNCEMENT FRAME

Fig. 8—J1A058C Recorded Announcement Frame

magnetic bubble memory packages. This circuit feature provides for adding prerecorded message modules to an already installed 13A Announcement System. The control is universal. A message module circuit pack can be recorded for one 13A Announcement System, be powered down using the field down procedure, and removed to be installed in any other 13A Announcement System that was also powered down using the field down procedure allowing each announcement to be synchronized.

ALARMS

3.07 The only signal to the user system is via the voice alarm contact closure provided by each channel. The primary function of this closure is to indicate a failure of the audio output for that channel. All other 13A Announcement System failures will manifest themselves as voice alarm failures. The indicators on the circuit packs provide additional information helpful in diagnosing the problem.

3.08 A blown fuse will provide the extended indicator and also will cause the POWER OFF LED on the UD1 circuit pack to be lighted. An excessive current condition that is insufficient to blow the fuse will cause the CURRENT LIMIT LED on the UD1 circuit pack to be lighted.

3.09 The DIGITAL VOICE ALARM LED is an indication of a malfunction in the digital portion of the circuit. An error in the stored digital information, or an error in the digital control circuit, or message modules which are not synchronized will produce a digital voice alarm. The circuit makes an attempt to recheck the digital control signals. When a reset cannot be accomplished, the voice alarm for each channel is triggered so that all channels will indicate a voice alarm. See Section 201-519-301 for procedures to help isolate the cause of the alarm.

4. POWER REQUIREMENTS

4.01 The only power required for the operation of the 13A Announcement System is -48 Vdc. The -48 Vdc must be provided by talk battery through a separate dedicated filter located in the frame containing the 13A Announcement System.

4.02 The current drain on the -48 Vdc supply is 1.7 amperes.

4.03 The only power required for the J1A058C frame equipped with the 13A Announcement

System is -48V dc at maximum current drain of 3.67 amperes.

4.04 Power circuits in the RA frame are protected by indicating type 70 fuses. Each announcement is protected by a dedicated voice alarm circuit. If, for any reason, the announcement level falls below an acceptable level, a voice alarm will be initiated. Failure of a fuse will cause fuse and voice alarms to the No. 1/1A ESS or No. 2/2B ESS system via scan points.

5. RESTRICTIONS

5.01 Only three restrictions apply with the use of the 13A Announcement System. Two of those restrictions concern interconnecting cables and the other restriction is with the -48 Vdc power supply.

5.02 To minimize transmission loss, the output impedance of the transformer coupled playback amplifiers is designed to be very low. The loop resistance of the cable, which connects the playback amplifier outputs to the point where distribution is made to the multiple announcement trunk connections, increases the output impedance of the output amplifiers. The effect of loop resistance on loss of output of this cable is listed in the circuit notes of SD-97753-01.

5.03 It is also essential that noise on the -48 Vdc power provided to the 13A Announcement System be kept to an absolute minimum. The -48 Vdc must be provided through a separate dedicated filter located in the frame containing the 13A Announcement System.

5.04 All wire connections to the 13A Announcement System should be twisted pairs.

5.05 The J1A058C RA frame, equipped with the 13A Announcement System, is designed to be located in the No. 1/1A ESS or No. 2/2B ESS central office. The maximum loop resistance between the 13A playback amplifiers and the distribution resistors must be 0.5 ohms or less. It is essential that noise radiation on the -48Vdc input to the RA frames be kept to a minimum. The RA frame should not be located adjacent to frames that may have unusual electrical noise radiation properties such as the ring and tone plant, signal distributors, and miscellaneous trunk frames housing non No. 1/1A ESS or No. 2/2B ESS standard circuits.

5.06 The RA frame must not be operated in a No. 2/2B ESS office without channel zero (0)

equipped and all equipped channels adjusted to a message length of 12 seconds.♦

6. MAINTENANCE AND TESTING

6.01 Since the 13A Announcement System is completely electronic, maintenance that is normally required for lubrication, adjustments, or parts replacement has been eliminated. No routine periodic maintenance has to be performed.

6.02 The indicators (LEDs) mounted on the circuit packs can be used for diagnostics in the testing procedures if the unit should malfunction. Local controls provide the facilities to make test recordings without interrupting service. Since the only adjustment to be made is the output level, repair of a malfunctioning unit is accomplished by replacing circuit packs. See Section 201-519-301 for testing procedures.

6.03 Test points are available on UD1 power supply to test for the presence of the correct voltages (see Fig. 4). When the 13A Announcement System is originally installed or a new UD1 power supply circuit pack is installed, the test points should be checked for the proper voltages.

7. LIST OF REFERENCES

7.01 The following list of documentation will be useful for further description of the 13A Announcement System:

SECTION	TITLE
Section 201-519-301	13A Announcement System Operating, Testing, and Trouble Analysis Procedures
Section 780-450-128	13A Announcement System (Replacement for 7A In Electromechanical Systems)
Section 801-603-163	13A Announcement System Equipment Design Requirements
SD-97753-01	Common Systems 13A Announcement System Circuit for Recording and Reproducing Dial Facilities Management Announcements
CD-97753-01	13A Announcement System Circuit Description.