

SUBSCRIBER AND KEYPULSING SENDER TEST FRAME EQUIPMENT DESIGN REQUIREMENTS PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the engineering, manufacture, and installation of the subscriber and keypulsing sender test frame in panel offices.

1.02 This specification is reissued to incorporate previous appendix changes.

Capacity

1.03 The subscriber and keypulsing sender test frame has a capacity of 20 test connecting switches having access to a total of 400 senders.

Description

1.04 The frame is composed of a 2-bay, single-sided framework, 11 feet 6 inches high and 4 feet 5-1/8 inches long. The right-hand bay (facing the front) is arranged to mount relays, message registers, and a key and lamp panel with the relays enclosed in metal casings which cover both the apparatus and wiring. The left-hand bay is arranged to mount 206-type selector switches, sequence switches, and terminal strips.

1.05 The sender test frame can test 400 senders by means of the 20, 206-type selectors, each of which has access to 20 senders. However, to facilitate testing procedures, one of these frames is furnished for each 200 senders. Where two test frames are required, they are identically equipped and are multiplied together so that each has access to all senders to be tested.

1.06 The test circuit, after checking a sender, is automatically connected to the next sender and so on until a trouble is encountered, which will stop the test circuit and bring in an alarm.

1.07 When desired, particular circuits may be selected for test or repeated tests made on a sender to locate a trouble. These tests can be made on a particular circuit

until such time as a trouble is encountered or the test circuit is stopped by the one making the test.

1.08 The sender test frame is also arranged to test subscriber senders that handle direct distance dialing calls in conjunction with an auxiliary sender. In addition to the control relays, jacks, keys, and lamps required for this purpose, which are mounted

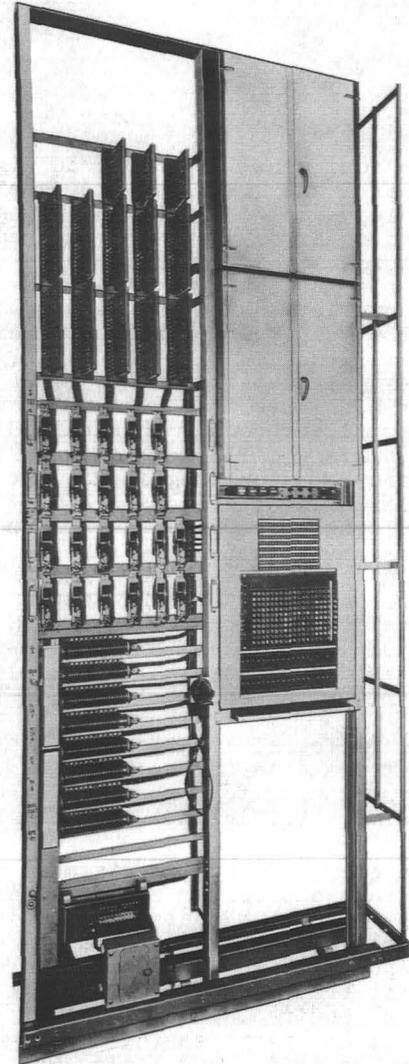


Fig. 1 - Subscriber and Keypulsing Sender Test Frame

on the sender test frame, a multifrequency adapter circuit is required. The adapter circuit consists of four principal parts as follows:

Area Code Digit Control Circuit

Multifrequency Check and Class Circuit

Auxiliary Sender, Wipeout, Timeout, and Overflow Test Circuit

Particular Auxiliary Sender Test Circuit

1.09 The equipment for area code digit control and multifrequency control circuits is of unit design and arranged to be mounted on a relay rack bay as near the sender test frame as possible. The equipment for the particular auxiliary sender test circuit is mounted on the sender test frame. The multifrequency adapter circuit works in conjunction with the subscriber sender test circuit to provide means for testing the ability of a subscriber sender and its auxiliary sender to handle direct distance dialing calls and calls to local areas where MF outpulsing is used to complete calls between offices. A multifrequency pulsing receiver circuit is permanently associated with this adapter circuit and should be mounted on the relay rack near the adapter circuit. The MF adapter circuit, in conjunction with the MF receiver, checks that the digits that are pulsed forward are the same as the digits that are dialed into the subscriber sender.

1.10 The preferred location for the sender test frame is in the maintenance center in close proximity to the sender make-busy frame and the trouble indicator frame.

1.11 The sender test frame is also arranged to test subscriber senders that handle calls from TOUCH-TONE sets. In addition to the control jacks, keys, and lamps required for this purpose, which are mounted on the sender test frame, a TOUCH-TONE signaling circuit is required. The signaling circuit consists of two parts as follows: Signal Generator, Steering, and Timing Unit; and a Signal Oscillator, Register, and Test Control Unit.

2. SUPPLEMENTARY INFORMATION

815-000-000 - Panel Systems Index

AA128.002 - List of Equipment Design Requirements Sections

AA128.006 - List of General Equipment Requirements Sections

J95102 (AA388.082) - Multifrequency Pulsing Receiving Equipment

Floor Plan Data - Section 4.3, Sheet 26

3. DRAWINGS

WECo J drawings listed should be ordered by referring to the prefix and base number and requesting the highest suffix dash (-) number.

Key Sheets - Panel Systems

SD-21300-01 - Battery on the Cutoff Relay Offices

SD-21680-01 - Ground on the Cutoff Relay Offices

Framework

ED-20081-01 - Sequence Switch Framework Details

ED-20087-01 - Assembly of Relay Casing

ED-20128-19 - Frame Assembly

ED-20150-01 - Framework Limits

ED-20329-01 - Anchor Bolts and Leveling Screws

ED-20509-53 - Fuse Panel Assembly

ED-20587-01 - Assembly of Key Panel Casing

ED-20660-30 - Assembly of Writing Shelf

ED-20716-50 - Key and Lamp Panel Assembly

Equipment

ED-20651-14 - Subscriber Sender Test Frame Equipment

J23306A-() - Area Code Digit Control Unit

J23306B-() - Multifrequency Check and Class Unit

J23306E-() - Area Code Digit Control Unit

J23306F-() - TOUCH-TONE Signal Generator, Steering & Timing Unit

J23306G-() - TOUCH-TONE Signal Oscillator, Register & Test Control Unit

Wiring and Cabling

ED-20140-01 - Switchboard Cabling Plan

ED-20157-01 - Frame Local Cable

ED-20253-01 - Local Power Cable

ED-20622-01 - Method of Running and Supporting Frame Battery and Ground Leads

ED-91601-01 - Horizontal Local Cable Wiring

ED-91603-01 - Local Cable Wiring for Unit Having 206-type Selectors Mounted in Line With Short Mounting Plates

4. EQUIPMENT

J23306A (A&M Only) - Subscriber and Key pulsing Sender Test Frame

Equipment - J23306A-()

Local Cable - ED-20157-01

List 1 - Framework, assembly, wiring, and common equipment for a sender test frame for testing subscriber and keypulsing senders equipped for testing subscriber senders only (less variable apparatus).

	See	
Wire	Equip	Notes
Framework, ED-20128-19, G1	1	
Key and Lamp Panel Assembly, ED-20716-50, G1	1	
Rel Casings, ED-20087-01, Item 8	2	
Key Panel Casing, ED-20587-01, Item 3	1	

	Wire	Equip	See Notes
Fuse Panel Assembly, ED-20509-53, G5		1	
Writing Shelf Assembly, ED-20660-30, G2		1	
Sub and Key pulsing Sdr Test Ckt, SD-21186-01:			A,5.01
Main Fig.	1	1	5.07
Fig. A, B, C, D, E, G, I, K, M, N, O, P, Q, R, S, T, V, Y, AB, AC, AE, AF, AG, AJ, AL, AN, AP, AQ, AS, AU, AV, AY, AZ, BB, BC, BD, BE, BG, BH, BJ, BK, BL, BM, BN, BO, CL, & CK	1	0	5.01,
Fig. L	4	0	5.07 D
Misc Ckt, SD-21235-01, Fig. 1, 2, 3, & 4	1	1	B

List 2 - Sender selector, wiring, and equipment required in addition to list 1 (banks, terminal strips, and associated local cable) for each set of four or fraction sender selector switches (80 senders). Specify one list 2 when one or more selector switches of a set of four is required (1 to 4, 5 to 8, 9 to 12, 13 to 16, 17 to 20). A maximum of five lists 2 are required per frame. (See note C.)

List 3 - Equipment per SD-21186-01, "W" apparatus and wiring connected, required in addition to list 1 to equip the test frame to test key-pulsing senders.

List 4 - Equipment per SD-21186-01, "ZR" apparatus and wiring connected to equip the test frame for testing senders arranged for zone registration.

List 5 - Equipment required in addition to list 1 to equip the test frame for testing senders in offices having party letters and over 10,000 lines, and having start key operation.

List 6 - Equipment per SD-21186-01, Fig. T required in addition to list 1 to equip the test frame for testing senders not arranged for timed release.

List 7 - Equipment per SD-21186-01, Fig. G and S required in addition to list 1 to equip the test frame for testing senders arranged for timed release.

List 8 - Equipment per SD-21186-01, Fig. BG required in addition to list 1 when

sender test frame is required to test senders that are arranged to register extended area codes with prefix one-one.

List 9 - Equipment per SD-21186-01, Fig. BH required in addition to list 1 when sender test frame is required to test senders that are arranged to divert restricted PBX traffic on extra charge calls.

List 10 - Equipment per SD-21186-01, Fig. BJ, BK, BL, BN, and CK required in addition to list 1 when sender test frame is required to test subscriber senders that are arranged to handle direct distance dialing calls.

List 11 - Common equipment per SD-21971-01, Fig. 10 and SD-21186-01, Fig. BM required in addition to list 1 to arrange the sender test frame to test particular auxiliary senders. This list includes wiring for testing ten particular auxiliary senders with key equipment for testing four auxiliary senders.

List 12 - Equipment per SD-21186-01, Fig. BM, PAS key, required in addition to list 11 to test each auxiliary sender over four that is equipped.

List 13 - Equipment per SD-21186-01, Fig. BO required in addition to list 1 to provide a jack and lamp circuit for testing auxiliary senders for wipeout, timeout, and overflow or reversed trunk seizure conditions.

List 14 - Wiring and equipment per SD-21186-01, Fig. BP and BQ required in addition to list 1 to arrange the circuit to test subscriber senders that are provided with intersender timing.

List 16 - Wiring and equipment per SD-21186-01, Fig. BY required in addition to list 10 for testing senders arranged for 6-digit translation (recycle).

List 17 - Wiring and equipment per SD-21186-01, Fig. CA and CC required in addition to list 16 to test the senders for an all code compressors busy condition.

List 19 - Wiring and equipment per SD-21186-01, Fig. CG required in addition to list 1 to test subscriber senders arranged to recognize a prefix "0" and or prefix "1". (See note F.)

List 20 - Wiring and equipment per SD-21186-01, Fig. CJ required in addition to list 10 to dial area codes using B digits 0 to 9.

List 21 - Equipment and wiring per SD-21186-01, Fig. CL and "DN" wiring required in addition to list 1 to enable the test frame to test senders arranged for TOUCH-TONE calling.

List 22 - Equipment and wiring per SD-21186-01, Fig. CK required in addition to list 21 to enable the test frame to test senders arranged for TOUCH-TONE calling when list 10 has not been provided.

List 23 - Equipment per SD-21186-01, Fig. CE required in addition to list 11 for each auxiliary sender group to be tested.

Notes

- A. Wiring similar to the "D" wiring shown for the TA lamp and resistor shall be furnished for four multiple lamps from other test frames.
- B. One 24-volt battery and high-resistance ground supply per SD-21235-01, Fig. 7 shall be provided in each office for the sender test frame.
- C. As part of list 2, furnish two 158-type terminal strips and four 26-type banks for each 80 senders or fraction thereof as required, and furnish one 206-type selector, resistor, and capacitor for each 20 equipped senders to be tested. The wiring included in this list is the leads between the two terminal strips and the four 26-type banks.
- D. The necessary number of GR keys shall be provided as covered by circuit notes.
- E. The dial, revertive, and keypulsing interruptions shall be obtained from dial pulsing, revertive pulsing, and keypulsing relay interrupter units located on the relay rack.
- F. When the prefix "0" is required, list 10 must also be provided.

J23306B (A&M Only) - Area Code Digit Control Unit

Equipment - J23306B-()
Local Cable - ED-91601-01

List 1 - Framework, assembly, wiring, and equipment for one area code digit control unit for use with test frames arranged for area code jacks.

J23306D - Unassigned

J23306E (A&M Only) - Multifrequency Check and Class Unit

Equipment - J23306E-()
Local Cable - ED-91603-01

List 1 - Framework, assembly, wiring, and common equipment for one multifrequency check and class unit.

	Wire	Equip	Notes
Unit Mtg Bars, P-424416		2	
MF Adapter Ckt, SD-21971-01:			
MF Adapter and Class Ckt, Fig. 3 & 4 Each	1	1	
Remote Control Jack, Fig. 8	1	1	A

List 2 - Equipment and wiring per SD-21971-01, Fig. 7, "E" and "T" options required in addition to list 1 to provide auxiliary sender wipe-out, time-out, and overflow test features for use with sender test circuit SD-20013-01 or ES-239493. (See note B.)

List 3 - Equipment and wiring per SD-21971-01, Fig. 9 and "F" option required in addition to list 1 to provide auxiliary sender wipe-out, time-out, and overflow test features for use with sender test circuit SD-21026-01, SD-21026-02, or SD-21186-01.

List 4 - Equipment and wiring per SD-21971-01, Fig. 3 "ZF" option, required in addition to list 1 to provide a prefix "0" test feature.

List 5 - Equipment and wiring per SD-21971-01, Fig. 9, "ZH" option, required in addition to list 3 to provide for an automatic No Auxiliary Senders Available test.

List 6 - Equipment and wiring per SD-21971-01, Fig. 3, "ZJ" option, required in addition to list 1 to provide for lighting a trunk closure failure lamp on MF test calls.

Notes

- A. A remote control jack, RC, is provided on the multifrequency check and class unit. This jack is a multiple of the B, C, or D jack depending on the particular sender test frame with which the MF adapter circuit SD-21971-01 is associated. The B, C, and D jacks are shown on miscellaneous circuit SD-21234-01 for the subscriber and keypulsing sender frame.

B. This list was part of list 1.

J23306F (A&M Only) - Area Code Digit Control Unit

Equipment - J23306F-()

List 1 - Framework, assembly, wiring, and equipment per SD-21971-01, Fig. 2 and 11 for one area code digit control unit for use with subscriber sender test frames arranged for area code rotary switches. (See 5.05.)

J23306G (A&M Only) - TOUCH-TONE Signal Generator and Test Control Unit

Equipment - J23306G-()

List 1 - Framework, assembly, equipment, and surface wiring per SD-21985-01, Fig. 2 for one TOUCH-TONE signal generator and test control unit for use with sender test frame arranged to test subscriber senders for TOUCH-TONE signaling. (See note A.)

Note

A. This unit should be located on a miscellaneous relay rack as near the sender test frame as possible and located immediately adjacent to J23306H unit whenever possible.

J23306H (A&M Only) - TOUCH-TONE Signal Oscillator and Control Unit

Equipment - J23306H-()

List 1 - Framework, assembly, equipment, and surface wiring per SD-21985-01, Fig. 1 for one TOUCH-TONE signal oscillator and control unit for use with sender test frame arranged to test subscriber senders for TOUCH-TONE signaling. (See note A.)

Note

A. This unit should be located on a miscellaneous relay rack as near the sender test frame as possible and located immediately adjacent to J23306G unit whenever possible.

5. GENERAL NOTES

Equipment

5.01 The sender test frame shall be wired for the ultimate of the frame, except

as covered in J23306A, Note A. Variable apparatus shall be furnished as required for each particular job as covered by the lists herein and notes on the circuit drawing.

5.02 Where two subscriber test frames are furnished, they shall be equipped and wired identically and multiplied together so that each frame will have access to all the senders to be tested. If the two test frames are adjacent, they may be driven with one motor.

5.03 The sender test frame is arranged to mount 20 sender selector switches which shall be equipped as required and arranged in groups corresponding to the sender groups. The highest numbered selectors, that is, 19 and 20 (as required) shall be used in all cases for the keypulsing senders where these senders are to be furnished either initially or ultimately. The next highest numbered selectors, that is, 15, 16, 17, and 18 (as required) shall be used in all cases for the coin senders when this class of sender is furnished at the same time as keypulsing senders. However, if no keypulsing senders are to be furnished, either initially or ultimately, the coin senders may be placed on the highest numbered selectors.

5.04 No motor stop alarm circuit is provided for this frame since it is not in continuous operation and is not used for subscriber service.

5.05 Auxiliary sender test units per J23306B or J23306F and J23306E together with one multifrequency pulsing receiving unit per J95102B and its associated miscellaneous equipment shall be located on a relay rack bay as near the subscriber sender test frame as possible.

5.06 If the 130-volt plate battery supply, that is required for the multifrequency pulsing receiving unit associated with this test frame, is not available in the office, a rectifier, such as J86265B or as specified by the telephone company, shall be furnished for this purpose.

Wiring and Cabling

5.07 Wiring shall be included in the local cable for all circuit options and the optional wiring shall be connected as required for the particular job.

5.08 A local cable, consisting of the leads between each pair of sender terminal strips and the associated four sender

selector banks, shall be furnished for each 80 senders or fraction thereof. A maximum of five of these local cables shall be furnished as required.

5.09 The local cable shall be composed of No. 22 gauge type "DACL" wire.

5.10 The switchboard cables from the sender frames shall be terminated on the terminal strips associated with the sender selector banks. The leads from the keypulsing, coin, and noncoin senders shall be terminated on terminal strips, associated with different selector banks as covered herein. Since any combination of keypulsing, coin, or noncoin senders may be mounted on a sender frame, they shall be cabled from the sender frame to the sender test frame in the same cable, and formed over the terminal strips in the most direct manner.

5.11 When the sender frame is arranged for six senders, one 24CL or other suitable cable shall be furnished between each sender frame and the sender test frame. This leaves the last two terminals spare on every fourth sender selector switch at the sender test frame. Should it become necessary to use these terminals because the balance of the switches are fully equipped, one 74CL cable shall be installed between the senders involved and

the terminals in question. When the sender frame is arranged for ten senders, one 16CL or other suitable cable shall be furnished between each sender frame and the sender test frame.

5.12 Where two sender test frames are furnished, 24CL cable shall be installed between the two frames in order to give both test circuits access to all the senders in the office. The cables from the sender frames shall be split in groups, one of which will run to first test frame and multiple to the second, and the other which will run to the second and multiple to the first test frame as shown on ED-20140-01.

5.13 TOUCH-TONE Signaling test units per J23306G and H shall be located on a relay rack bay as near the subscriber sender test frame as possible.

List of "A&M Only" and "Mfr Disc." Equipment

The following equipment has been replaced as indicated. Where "A&M Only" items appear, the issue numbers shown are those of the issue in which the rating was first applied.

<u>Equipment</u>	<u>Rating</u>	<u>Details</u>	
		<u>Last Shown in Issue</u>	<u>Replacing Equipment</u>
J23306A,L15	Mfr Disc.	6	-
L18	Mfr Disc.	7	J23306A,L23
J23306C	Mfr Disc.	5	J23306E

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