SENDER GROUPING FRAME
GROUND ON CO RELAY OFFICES
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 and equipment to be used in the manufacture and installation of the sender grouping frame in panel offices. This equipment is for ground on the CO relay offices where district sender selectors or rotary links are used. Equipment included in this specification may be ordered by specifying the code and group numbers covered in part 4.

1.02 This specification is reissued for use in rotary link offices.

Capacity

1.03 The sender grouping frame is arranged for a maximum of five terminal strips which will provide connections for 100 senders. Each sender may serve several district sender selector shelves or line groups of links. Provision is made for terminating ten sets of sender selector leads per sender.

1.04 One sender grouping frame shall be furnished per sender group of 100 or less senders except that a minimum of two frames shall be provided.

Description

1.05 The sender grouping frame is a single-sided bulb-angle framework 11'-6" high and 3'-6-5/16" wide. This frame is arranged to mount a maximum of five terminal strips.

1.06 The function of the sender grouping frame is to provide a common grouping field whereby any sender, in a group of 100 or less senders, may be connected to a number of associated district sender selector shelves or groups of links. The multiple arrangement used is such that it provides a random distribution of traffic thru this equipment. With this "random distribution", the sender selector multiples are spread over each grouping field so that each sender will serve approximately the same number of multiples, and no two sender selector multiples will be served by the same 22 or 44 senders. Also, there will be a minimum of like-numbered senders duplicated on any two multiples. This sender group arrangement may be used between any subscriber or operator's dialing district sender selector shelf and the associated subscriber sender. Coin and noncoin subscriber senders cannot be placed in the same sender group.

1.07 Where there is only one group of 100 or less senders, the senders are multipled between two sender grouping frames and the two frames considered as one group, with the sender selector shelves or groups of links approximately equally divided between the two frames.

1.08 Senders in excess of 100 may be used in one group providing the group consists of two grouping frames. With this arrangement, some senders will be multipled to both grouping frames while others will appear on one grouping frame only.

1.09 Additional district sender selector multiple leads can be spread over the grouping frame without rearranging the present wires. The addition or removal of senders will cause certain sets of shelf wires to be disconnected and reconnected to some point higher up on the frame which can be reached without splicing the wires. A typical rearrangement of these leads is shown on the distribution and assignment tables listed herein.

Subdivisions of Equipment

ED-20902-01 - Frame Assembly (Less Terminal Strips)
ED-20903-01 - Terminal Strip and Associated Material

2. SUPPLEMENTARY INFORMATION

815-000-000 - Panel Systems Index
AA128.006 - List of General Equipment Requirements Sections
X-61200 - List of Engineering Requirements Sections for Offices Having Ground on the CO relays
J25501 (815-070-150) - End Guards, Aisle Pilot Lamp Supports, etc.
J29212 (815-071-151) - Sender Load Indicating Equipment
Floor Plan Data - Section 4.2 Sheet 15

3. DRAWINGS

Keysheets

ES-262532 - Panel System - Ground on the CO Relay Offices having Sender Selector 3-digit Equipment
ES-262647 - Panel System - Ground on the CO Relay Offices having Sender Selector 2 or 2-3 Digit Equipment
ES-262829 - PS-GCO - Rotary Link 3-Digit
ES-262849 - PS-GCO - Rotary Link 2 or 2-3 Digit

Framework

ED-20902-01 - Sender Grouping Frame Assembly
ED-25529-01 - Guard Rail Junction Details
ED-91172-01 - Bulb Angle

Equipment

ED-20903 01 - Sender Grouping Frame Equipment
ED-20906-01 - Distribution and Assignment Tables (S.S.)
ED-20915-01 - Distribution and Assignment Tables (R.L.)

Cabling

ED-20904-01 - Switchboard Cabling - Sender Grouping Frame

4. EQUIPMENT

ED-20902-01 - Frame Assembly (Less Terminal Strips)

Group 1 - Framework for one sender grouping frame less the terminal strips and associated mounting screws, washers, and the round rings and nuts which are mounted on terminal strips

ED-20903 01 - Terminal Strip and Associated Material

Group 1 - One terminal strip and associated fanning rings and nuts which mount on the terminal strip and the associated mounting screws and washers

5. GENERAL NOTES

5.01 The sender grouping frames shall be located in the vicinity of the district sender selector frames or rotary link frames for cabling reasons. These frames shall be placed in at least two separate locations on the floor plan, the odd frame or frames being separated from the even-numbered frame or frames.

5.02 One sender grouping frame shall be furnished for every group of 100 or less senders. If there is only one group of 100 or less senders, the two sender grouping frames shall have the senders multipled between frames and the two frames considered as one grouping field.

5.03 When 101 to 130 senders are required in one group consisting of two sender grouping frames, the senders in excess of 100 shall be connected to the grouping frame in place of multiple cable leads on the frame that would normally have the second appearance of the sender. This means that some senders will appear on one grouping frame only while other senders will appear on both grouping frames. Senders in excess of 100 cannot be used in a group consisting of only one sender grouping frame.

5.04 The switchboard cables from the sender frames (one per sender frame) should be run to the various sender grouping frames as shown on the typical assignment tables listed herein. This arrangement spreads these cables in such a way that no two adjacent sender frames will be cabled to the same sender grouping frames.

5.05 The sender frame cables shall be run down the center of the back of the grouping frame and butted near the top or bottom of the grouping terminal strip on which the cable terminates. These cables shall be run thru the round rings to the terminals on the rear of the terminal strips as shown on the switchboard cabling drawing listed herein.

5.06 The grouping terminal strips shall be equipped from the bottom-up. Senders which later may be removed shall be located at the bottom of the frame as the associated sender selector multiple leads will have to be disconnected and reconnected to sender terminals higher up on the grouping frame. When adding senders, it is desirable to locate them on the upper grouping terminal strips as certain sender selector multiple leads will have to be disconnected from sender terminals lower down on the grouping field and reconnected to the added sender terminals. An example of adding or removing five senders from the sender group is illustrated on the distribution and assignment tables listed herein.

5.07 Distribution and assignment tables for the following size sender groups have been developed and are shown on the drawings listed herein. If any other sizes are required, they shall be referred to the Bell Telephone Laboratories, Inc.

Size of Sender Group (S.S.)		
Average	Maximum	Minimum
55	60	50
65	70	61
70	75	66
75	80	71
80	85	76
85	90	81
90	95	86
95	100	91
100	100 or 130*	96

*See Paragraph 5.03

Size of Sender Group (R.L.)		
Average	Maximum	Minimum
90	95	86

5.08 The switchboard cable from each district sender selector shelf or each sender multiple terminal strip per group (code 230-CL) shall be butted near the top of the grouping frame and run down the left or right upright, thru the rectangular rings, thru the fanning strip at the top or bottom of each terminal strip, and connected to the front of the terminal strip as shown on the switchboard cable drawing listed herein. These cables shall be spread over the various grouping frames as shown on the destribution and assignment tables listed herein. When adding additional shelf cables, the added leads shall be spread in accordance with the above table in a similar manner to the original leads. No rearrangement of the original shelf leads will be necessary when adding or removing shelf cables. However, these leads will be rearranged when senders are added or removed.

5.09 The switchboard cabling to the odd and even-numbered frames shall, as far as possible, be run on separate cable racks.

5.10 No testing or monitoring equipment is affected by the introduction of the sender grouping field other than the method of locating a stuck district selector or link at the stuck connection finder frame which may require the operation of several start keys before the stuck district selector or link is found as they are now spread over a larger group of senders.

5.11 The following sender grouping frame installation procedure is recommended in order to reduce the service reaction to a minimum.

(a) Install all the new switchboard cables and connect both ends of the cables from the sender frame. The end of the sender multiple cable shall not be connected to the shelf or link unit at this time but may be connected to the grouping field on the sender grouping frame.

(b) All of the district selectors on the sender selector shelf or links farthest from the one which is cabled to the sender frame shall be made busy, providing the removal from service of these circuits will not cause too much interference with the service. Then the short multiple cable shall be disconnected and the new shelf cable connected at both ends. Restore these district selectors or links to service and proceed in the same manner. The last shelf in the old sender group to be changed should be the one which was cabled to the sender frame. This cable should be disconnected along with the last of the short multiple cables.

(c) In the smaller line groups it may be found objectionable to make twenty district selectors in one line group busy, in which case proceed as follows:

Make one half of the sender selector bank terminals test busy. Then disconnect the short multiple cable from these rows on the unit terminal strip and connect up one half of the new cable. Remove this busy condition from these terminals and proceed with the other half of the unit in the same manner. Then proceed with the other units in the same manner, leaving the unit which was connected to the sender frame until last. When working on this last unit in the group, disconnect the sender frame cable conductors along with the short multiple cable leads.

5.12 The designation cards on the district sender selector shelves or link units will have to be replaced due to the new sender assignments on each row. Refer to the distribution and assignment tables listed herein in order to obtain the sender number associated with each row on the shelf or unit.

5.13 The switchboard cabling required for each sender grouping frame is quite heavy and consideration must therefore be given to the space required on the cable rack. The code numbers of the switchboard cables ordinarily used are shown on the switchboard cabling plan listed herein.

5.14 When there is only one sender group, the odd sender frame cables shall be run to the odd sender grouping frame and the even sender frame cables to the even sender grouping frame unless otherwise specified. A multiple cable per terminal strip for the odd sender frame senders and one for the even sender frame senders shall be run between the two sender grouping frames as shown on the switchboard cabling plan listed herein.

5.15 A temporary terminal strip may be provided to connect spare senders which will not be required in the grouping field ultimately but will be required to take the place of senders temporarily removed from service. With this arrangement when one or more senders are removed from service to be worked on, the associated leads are disconnected and leads are added between these terminals and the terminals associated with the spare senders thereby keeping a full complement of senders available for service at all times. This temporary terminal strip may be any 6-point terminal strip such as the 85 terminal strip. The installer shall locate and mount this terminal strip above the regular grouping terminal strips. A typical example of when this terminal strip is required would be when modifying translator-type senders to work with decoder equipment.

5.16 A method of temporarily increasing a partial sender group may be employed by supplying an extra grouping terminal strip similar to the regular terminal strip on one frame in a sender group. This terminal strip shall be mounted above the regular terminal strips and the extra senders connected to it. One half of the sender selector leads which would normally connect to an equivalent number of regular senders shall be connected to the spare or extra senders on the temporary terminal strip, leaving enough slack in the leads so that they may, at some future time, be connected to the regular location as shown in the sender selector lead assignment tables listed herein. A typical reason for the temporary increase in the sender group would be just before and for a short time after cutover from 2-digit to 3-digit operation where it is expected that there will be a considerable number of stuck senders due to partial dialing.

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