DISTRICT FRAMES
COIN AND FLAT, INDIVIDUAL AND TWO-PARTY MESSAGE RATE
GROUND ON CO RELAY
EQUIPMENT DESIGN REQUIREMENTS
PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary specifications, keysheets, drawings, equipment explanations and circuit descriptions, listed herein, covers the equipment design requirements for the framework, equipment and circuits to be used in the manufacture and installation of the district frames for use in panel offices having ground on the cut-off relay. These frames are arranged for flat rate, individual message rate, two-party message rate and coin with or without zone and overtime registration, semimechanical, local and "A" operator's dialing service. The district multiple may be graded or non-graded as required.

1.02 This specification does not cover the modification of existing district frames for zone and overtime registration. In addition no provision has been made for new two party sender selector type district frames or sender selector and line switch type district frames arranged for zone and overtime registration. If the Telephone Company orders new frames of this type they shall be referred to the Bell Telephone Laboratories for recommendation.

1.03 This specification is reissued to rate code J27503H "Mfr Disc."

Capacity

1.04 The district frame has a capacity of 60 selectors and 450 outgoing trunk circuits.

Description

1.05 The subscribers district frame is one of a chain of frames in the Panel System which is used exclusively for originating traffic. It is a steel structure of a type known as a double sided frame, designed for mounting panel type banks, selectors, sequence switches, and associated relays, repeating coils, condensers and miscellaneous apparatus.

1.06 The flat rate, message rate individual, local tandem "A" operator's dialing, message rate party and "A" position district frames consist of five bays, namely, a center bay for mounting the banks, friction roll drives, clutches, brush rods, commutators, etc., two sequence switch bays and two relay bays. The sequence switch bays are adjacent to the center bay, one at the right and one at the left. The relay bays are at the two ends of the frame.

1.07 The coin district frame for link offices is a standard five bay selector frame as described above and in addition has a bay bolted to each of the relay bays for mounting the coin control apparatus consisting of power driven selectors and their associated relay equipment.

1.08 The district frames arranged for zone and overtime registration have auxiliary bays bolted on each end containing the timing equipment individual to the districts.

Subdivision of Framework and Equipment

The equipment covered by this specification is divided into the following units:

J27503A — F & IMR District Frame
J27503B — Coin District Frame (Link)
J27503C — 2 Pty MR District Frame (Link)
J27503G — Coin District Frame with Multiple Registration

2. SUPPLEMENTARY INFORMATION

815-000-000 — Panel Systems Index
AA128.006 — List of General Engineering Requirement Specifications

X-61200 — List of Engineering Requirement Specifications (Grd on CO relay)
J20101 — Cabling of Panel Type Banks
J20102 (815-030-150) — Switchboard Power Cabling
J29202 (815-007-151) — Modification of Existing Offices for Zone and Overtime Registration (Local Control)
J29203 (815-007-150) — Modification of Existing Offices for Overtime Coin Collection
J29207 (815-007-155) — Modification of Existing Panel Offices for Extended Subscriber Loop Ranges
J29209 (815-006-154) — Modification of Flat Rate, Message Rate Individual, and Message Rate Party Equipment for Non-Zone Overtime and Remote Control Zone Registration
Floor Plan Data — Section 4.12, Sheets 4 and 7

3. DRAWINGS

Keysheets — Panel Systems

ES-262532 — Keysheet — 3 Digit Sender Selector
ES-262647 — Keysheet — 2 & 2-3 Digit Sender Selector
ES-262829 — Keysheet — 3 Digit } Rotary Link Grd on CO Relay
ES-262849 — Keysheet — 2 and 2-3 Digit } Rotary Link Grd on CO Relay
ES-262826 — Keysheet — 3 Digit — Rotary Link Bat on CO Relay
SD-21680-01 — Keysheet — Panel Link — Grd on CO Relay

Framework

ED-20177-01 — Assembly of Frame
ED-20177-02 — Assembly Details
ED-20177-03 — Assembly of Auxiliary Bays
ED-20509-01 — Assembly of Fuse Panels
ED-20624-01 — Assembly of Jack Panel
ED-20628-02 — Assembly of Jack Panel (Coin)
ED-20081-01 — Sequence Switch Framework Details
ED-20293-01 — Framework Limits for Double Sided Frames
ED-20150-01 — Framework Limits for Single Sided Frames
ED-20446-01 — Length of Connecting Shafts
ED-20672-01 — Guard Rail Supports

Equipment

ED-20178-01 — Equipment of Frame
ED-20267-01 — Equipment Details
ED-20267-02 — Equipment Details — Zone and Overtime Registration
ED-90411-01 — Designation Cards

Wiring and Cabling

ED-20781-01 — Local Cable — 1 and 2 Pty.
ED-20781-02 — Local Cable — Coin
ED-20782-01 — Local Cable — 1 and 2 Pty. — Zone and Overtime
ED-20782-02 — Local Cable — Coin — Overtime Collection
ED-20192-01 — Switchboard Cabling Plan
ED-20192-02 — Switchboard Cabling Details
ES-225550 — Schematic Layout (Send. Sel.)
ES-299914 — Schematic Layout (Rotary Link)
ES-420200 — Schematic Layout (Panel Link)
ED-20623-01 — Method of Running and Supporting Frame Battery and Ground Leads
ED-20740-01 — Cabling Schematic Between District and Line Finder Frames
ED-20287-01 — Wiring and Cabling of Traffic Register
ED-20289-01 — Grounding Scheme for Make Busy Trunks
ED-20336-01 — Slip Multiple between Frames — Non-Graded
ED-20292-01 — Schematic of Cabling of 208 Selectors
ED-20598-01 — Wiring of Districts to District Timing Frame
ED-20808-01 — Outgoing Trunk Multiple
ED-20811-01 — Switchboard Power Cabling

4. EQUIPMENT

J27503A (A&M Only) — Flat and Individual Message Rate District Frame

Equipment — ED-20178-01, Item 1 (Note 5.02)
Equipment Details — ED-20267-01
Local Cable — ED-20781-01, Item 1

List 1 — Assembly, wiring and equipment for one flat and individual message rate district frame or coin district frame for sender selector offices using 16-1/2" mounting plates.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 1	–	1	
Assembly Details ED-20177-02, Item 1	–	2	
Fuse Panel Assembly ED-20509-01, Item 38	–	2	
Jack Panel Assembly ED-20624-01	–	2	5.07
District Selector Circuit	60	As Spec.	5.03
Testing and Talking Jack Circuits	4	4	
Test Battery Supply Circuits	1	1	
Fuse Alarm Circuits	2	2	
Motor Stop Alarm Circuits	2	2	
Time Alarm Circuits	2	2	
Group Register Circuits	1	1 per group	
Group Busy Register Circuit	1	1 per group	
Overflow Register Circuit	1	1 per group	
District Release Circuit SD-21824-01	2	As Spec.	5.10

List 2 — Wiring and equipment for SD-21221-01, two Fig. 29 required in addition to list 1 when announcement is used on overflow calls.

J27503B (A&M Only)—Coin District Frame

Equipment — ED-20178-01, Item 4 (Note 5.02)
Equipment Details — ED-20267-01
Local Cable — ED-20781-02, Item 4

List 1 — Assembly, wiring and equipment for one coin district frame using 19″ mounting plates (link equipment).

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 4	–	1	
Assembly Details ED-20177-02, Item 4	–	2	
Jack Panel Assembly ED-20624-01	–	2	5.07
Jack Panel Assembly ED-20628-02	–	2	
Fuse Panel Assembly ED-20509-01, Item 38	–	2	
District Selector Ckt.	60	As Spec.	5.03-5.05
Coin Control Ckt.	10	As Spec.	5.08
Testing and Talking Jack Circuits	4	4	
Test Battery Supply Circuits	1	1	
Fuse Alarm Circuits	2	2	
Motor Stop Alarm Circuits	2	2	
Time Alarm Circuits	2	2	
Group Register Circuits	1	1 per group	
Group Busy Register Circuit	1	1 per group	
Overflow Register Circuit	1	1 per group	
District Release Circuit SD-21824-01	2	As Spec.	5.10

List 2 — Wiring and equipment per SD-21221-01, two Fig. 29 required in addition to list 1 when announcement is used on overflow calls.

J27503C (A&M Only) — 2 Party Message Rate District Frame

Equipment — ED-20178-01, Item 3 (Note 5.02)
Equipment Details — ED-20267-01
Local Cable — ED-20781-01, Item 3

List 1 — Assembly, wiring and equipment for one two party district frame using 23″ mounting plates (link equipment).

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01, Item 3	–	1	
Assembly Details ED-20177-02, Item 3	–	2	
Jack Panel Assembly ED-20624-01	–	2	5.07
Fuse Panel Assembly ED-20509-01, Item 38	–	2	
District Selector Ckt.	60	As Spec.	5.03-5.06
Testing and Talking Jack Circuits	4	4	
Test Battery Supply Circuits	1	1	
Fuse Alarm Circuits	2	2	
Motor Stop Alarm Circuits	2	2	
Time Alarm Circuits	2	2	
Group Register Circuits	1	1 per group	

	WIRE	EQUIP	SEE NOTE
Group Busy Register Circuit	1	1 per group	
Overflow Register Circuit	1	1 per group	
District Release Circuit SD-21824-01	2	As Spec.	5.10

List 2 — Wiring and equipment per SD-21221-01, two Fig. 29 required in addition to list 1 when announcement is used on overflow calls.

J27503G (A&M Only)—Coin Frame with Multiple Registration

Equipment — ED-20178-01, Item 9 (Note 5.02)
Equipment Details — ED-20267-02
Local Cable — ED-20783-02, Item 9

List 1 — Assembly, wiring and equipment for one coin district frame arranged for overtime coin collection using 19" mounting plates.

	WIRE	EQUIP	SEE NOTE
Assembly ED-20177-01 & -03, Item 9	–	1	
Assembly Details ED-20177-02, Item 4	–	2	
Jack Panel Assembly ED-20624-01	–	2	5.07
Jack Panel Assembly ED-20628-02	–	2	
Fuse Panel Assembly ED-20509-01, Item 38	–	2	
District Selector Ckt.	60	As Spec.	5.03-5.05
Coin Control Ckt.	10	As Spec.	5.08
Testing and Talking Jack Circuits	4	4	
Test Battery Supply Circuits	1	1	
Fuse Alarm Circuits	2	2	
Motor Stop Alarm Circuits	2	2	
Time Alarm Circuits	2	2	
Group Register Circuits	1	1 per group	
Group Busy Register Circuit	1	1 per group	
Overflow Register Circuit	1	1 per group	
District Release Circuit SD-21824-01	2	As Spec.	5.10

List 2 — Wiring and equipment per SD-21221-01, two Fig. 29 required in addition to list 1 when announcement is used on overflow calls.

5. GENERAL NOTES

General

5.01 Unless otherwise specified by the Telephone Company, the district frames shall be fully equipped with multiple banks.

5.02 Drive and Motor equipment shall not be furnished as a part of this subdivision, but should be furnished separately, as required.

5.03 The frames shall be equipped with selector circuits as required.

5.04 Where this frame is not fully equipped with flat rate, message rate individual or sender selector coin district circuit, it may be wired and equipped with "A" operator's dialing district circuit or local district circuit as required.

5.05 Where the ultimate equipment shows that this frame is not going to be required for coin district service, it may be wired and equipped for either flat rate — message rate individual circuit or operator's dialing district circuit as required.

5.06 Where the ulimate equipment shows that this frame is not going to be required for message rate party service, it may be wired and equipped for either flat rate — message rate individual circuit or operator's dialing district circuit as required.

5.07 The jack panel shall be fully equipped with MB jacks for the district selector circuits even though "wiring only" is provided for the circuits.

5.08 When new coin district frames are added in an office, the existing coin control circuits shall be modified to replace the LT relays with S63 relays and the test set changed to test the new relays.

5.09 The "A" position district selectors shall be assigned so that the odd numbered cords of any one "A" position will connect to

selectors on one side of the associated district frame and the even numbered cords to selectors on the other side of the frame. The maximum number of cords per position is twenty. With this arrangement the ten odd numbered cords will connect to the front of the frame and the ten even to the rear. With fifteen cords per position the odd numbered cords of the 1st and 3rd position of the frame will appear on the front of the frame. 10, 12 and 15 cords per position may be furnished when specified.

5.10 Figures on the district release circuit shall be furnished as required. The wiring for the front and rear of the frame shall be universal so that the wiring for this circuit will be the same on both sides of the frame.

District Multiple

5.11 The district multiple consists of five panel type banks of 100 sets of terminals each which constitute the outgoing paths to the office or incoming selectors in the same building or to trunks to other exchanges. Each bank is divided from bottom up into 10 groups, 8 groups consisting of 11 sets of terminals and 2 groups of 6 sets of terminals. The top set of terminals in each group is for "overflow" purposes. The bank is not divided mechanically and these groups exist only from a wiring standpoint as covered in the wiring specification.

5.12 When more than the above 5 or 10 trunks are required to any destination, two or more adjacent groups in the same bank may be combined by grounding the sleeve of the intermediate overflow terminals so as to test as busy trunks. The district selectors will thus hunt over the trunks in all these combined groups in the same manner as though they were one large group. With this provision, the district multiple may be arranged in any desired combination from 40 groups of ten trunks each and 10 groups of five trunks each, down to 5 groups of ninety trunks each.

5.13 If the district multiple is not graded, all trunks shall be slipped between frames in layers of five with one layer reversed to equalize the average trunk hunting time.

5.14 When the traffic requires that the district multiple be graded, a group of trunks is divided into two general divisions, namely: individual and common. Individual trunks are located on the lower numbered terminals of a trunk group assignment and are multipled through a subgroup or portion of the district frames. The common trunks are located immediately above the individual trunks and are common to all the district selectors involved.

5.15 Under normal traffic conditions a district selector will not reach the common group of trunks, unless all the individual trunks appearing in a group of trunks become busy. To obtain flexibility in assigning individual and common trunks each group of trunks is divided into four classes from a wiring standpoint, namely: individual, convertible, convertible partial common and common trunks.

5.16 The individual trunks shall be slipped between frames in layers of five with the bottom layer reversed. The convertible trunks shall be cabled to the distributing frame in the same subgroups as the individual trunks and made common between subgroups by jumper wires or used as individual trunks in accordance with the traffic requirements. The number of individual trunks are increased or decreased by changing the jumper wires of the convertible trunks at the distributing frame. The convertible trunks shall be wired straight, that is without slip.

5.17 The common trunks shall be wired straight between frames with a reversal in the short multiple cable only where the individual trunks are subgrouped. The partial commons however are wired straight through without any slip or reversal. These trunks shall be located between the regular convertible common and the convertible individual trunks. They permit changing the size of graded groups in small steps without affecting the regular convertible trunks and thus reduce the amount of plant work involved.

5.18 Graded multiple or non-graded multiple shall be furnished in accordance with the Telephone Company's traffic information and equipped in accordance with the information covered on the drawings listed in section 3.

6. WIRING

Local

Local Cable

6.01 The local cables shall be wired to care for the ultimate equipment when the ultimate arrangement is given or can be determined.

6.02 Frames equipped for both dialing or local and regular district circuits shall have both circuits formed in one local cable.

Local Power Cable

6.03 The miscellaneous leads between the two sides of a frame, from frame to frame in the same group, or from the frames to the fuse boards, alarm boards, etc. shall be made up into a local power cable which shall be terminated on the distributing power terminal strip at one central point in order to secure the maximum switchboard cable economies. Where this cannot be done, due to floor plan conditions or manufacturing limitations, two or more grouping points shall be provided.

Test Selector

6.04 District selector circuit #1 and #2 on each district frame shall in all cases be wired for use in connection with routine testing equipment in addition to the regular selector wiring.

6.05 An operator's dialing district selector cannot operate as a test selector since the "A" operator has no means of knowing when it is being used for testing purposes. The dialing district selectors should, therefore, if possible, be located at the right end of the bank bay, that is, as the highest numbered selectors, so that subscribers districts may be located on the lowest numbered selectors. Selector #1 or 2 can then be used in regular traffic when not in use with the testing apparatus. When it is necessary to equip the lowest numbered selectors as dialing district selectors the selectors assigned as test selectors shall be used exclusively for testing purposes and shall not be cross connected at the distributing frame to the "A" switchboard.

Cabling

General

6.06 The code numbers of the switchboard cables ordinarily used in cabling the various circuits are shown on the switchboard cabling drawing.

To Line Finder Frame

6.07 The district selectors shall be cabled from the selector terminal strips on the district frame directly to the apparatus terminals of the commutators and clutches of the line finder selectors. The method of cabling and a list of switchboard cables to use for the various conditions encountered are shown on the line finder district cabling schematic drawing.

To Subscriber's Links

6.08 The cabling between the district selectors and the district multiple banks on the subscriber's link frame shall be in groups corresponding to the groups of the line finders.

District Multiple

6.09 The outgoing trunk multiple shall be cabled to the trunk or main distributing frame as specified by the Telephone Company.

6.10 Spare district multiple and spare overflow shall be made busy at the distributing frame. If there is a complete district multiple bank spare and not cabled, the sleeve terminals shall not be grounded but left open. This is the same as if the bank had not been furnished.

From District Timing Frame

6.11 A switchboard cable shall be provided per side of the district frames arranged for zone and overtime registration to the district timing frame. These cables shall contain the leads supplying interrupted ground pulses to the districts for timing subscriber's calls.

6.12 The allotment of these leads at the District timing frame to prevent simultaneous operation of the timing sequence switches per side of the district frame is covered by a schematic listed under section 3.

Miscellaneous

6.13 Cables consisting of #20 B.B.E. wire shall be used for the battery, ground and tone leads from the distributing power terminal strip to the various fuse boards.

6.14 The cabling between the distributing power terminal strip and the points of termination of the various circuits shall be run in the largest switchboard cable consistent with the grouping of the leads and the point of termination. Cables shall be #22 gauge wire, except ground, tone and battery leads requiring larger gauge wire.

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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.

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J27503D	Mfr Disc.	2	—
J27503E	Mfr Disc.	1	J27501C
J27503F	Mfr Disc.	2	—
J27503H	Mfr Disc.	2	—