DECODER FRAME
3-DIGIT OFFICE CODE
EQUIPMENT DESIGN REQUIREMENTS
PANEL SYSTEMS

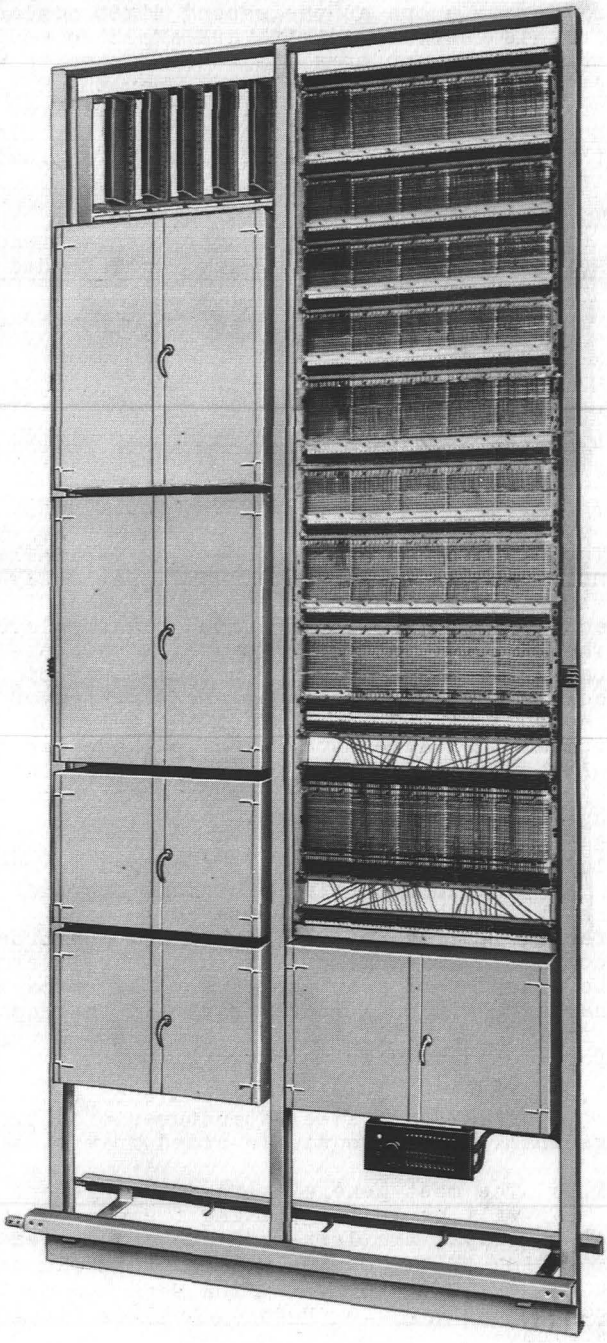

Fig. 1 - Decoder Frame - Originating
(See 1.11)

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements of the decoder frame for use in 3-digit panel offices.

1.02 This specification is reissued to:

(a) Add Note K to J28703D which provides option for contact protection.

(b) Bring it into conformity with the general Plant Series numbering Plan.

Capacity

1.03 Each decoder frame has a capacity of one decoder circuit arranged for 280 regular route relays and 20 route relays which are associated with 20 service group (SG) relays. A supplementary bay is required for each additional 300 route relays.

Description

1.04 This frame is used in conjunction with subscribers and A switchboard decoder senders, subscribers, and local tandem pulse machine-type senders which have been modified for decoder operation and 3- or 5-capacity decoder connector frames. It is a part of the decoder system of control which replaces the translators and pulse machines. As its name implies, the function of the decoder is to decode the first three digits or office code registered in the sender, to set the sender for selecting the outgoing trunk

group, and to complete its function in accordance with the class of call and the character of the outgoing trunks.

1.05 The decoder frame may be arranged to work with subscriber senders that handle direct distance dialing calls in conjunction with an auxiliary sender by adding seven new class relays and one auxiliary connector relay and replacing two existing relays in each decoder. On direct distance dialing calls, the subscriber sender will engage an auxiliary sender for codes having a zero or a one as the second digit dialed. In this case, ten digits are expected and the decoder performs its functions as though it were a tandem PCI class. When the auxiliary sender is required to multifrequency outpulse calls of less than ten digits, the arrangement is provided in the following table.

Type of Calls Handled By Auxiliary Sender	Provide Relay	Sender Leads Grounded
7 or 8 digits dialed 7 digits outpulsed	CL6	CL2, 7DG
7 digits dialed 5 digits outpulsed	CL7	CL2,7DG,SK2
7 digits dialed 4 digits outpulsed	CL8	CL2,7DG,SK3
10 digits dialed 7 digits outpulsed	CL9	CL2, SK3

The class field cross-connection terminals now designated CL-P which were previously used for the CL4 lead, are made available as additional CL-S for the added class relays. The CL4 lead was formerly used with post-payment coin senders for single slot coin box lines and since there are very few of these lines now in service, the telephone company has agreed to reassign these particular subscribers to crossbar offices, thereby releasing this class cross connection for use with direct distance dialing.

1.06 The decoder frame is arranged to mount the common relay equipment and the relays and associated cross-connecting facilities for 300 route relays. The cross-connecting arrangement is such that it can be extended to a supplementary bay or bays having additional route relays if the capacity of the originating frame is not enough for the particular territory.

1.07 Both the originating and supplementary frames are steel structures of a type generally known as single-sided frames.

1.08 The most generally used arrangement will be an originating frame consisting of two bays, the left-hand bay being used for mounting relays on 19-inch mounting plates and the right-hand bay being used for multicontact relays and cross-connecting terminal strips.

1.09 The supplementary frame accommodates either 300 or 240 route relays depending on whether a frame per J28703B or J28703C is used. Cross-connecting facilities for the route relays are also provided on either frame and they are arranged to line-up with the corresponding cross-connecting equipment on the originating frame which is located immediately to the left. Supplementary frame per J28703B provides for an additional 300 route relays whereas J28703C provides for an additional 240 route relays but this latter frame is also arranged for 27 additional class-of-service relays and 20 additional relays for zone routing plus the associated cross-connecting facilities for these relays. Either of these frames is required only where the capacity of the originating frame with respect to route relays and classes of service, etc., is exceeded. If more than 580 or 520 regular route relays are required, an additional 300 route relays and associated cross-connecting facilities per J28703B should be ordered. This additional frame will be a duplicate of the first except for numbering.

1.10 The route transfer feature is provided on an optional basis, between the code points and the route relays, to provide means for transferring the code point from one route relay to another and thereby effect a transfer in the routing of the destination under the control of a jack and plug at the trouble indicator frame.

1.11 The decoder frame, as shown in Fig. 1, is per J28703A which was rated "Mfr Disc." in J28703, Issue 5. It is replaced by J28703D which is the same except that the 229- and 230-type multicontact relays, which were mounted directly above the fuse panel and casing enclosed, have been replaced by 263- and 264-type multicontact relays which are not casing enclosed.

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
J20102 (815-030-150) - Switchboard Power Cabling
Floor Plan Data - Section 4.14, Sheet 1
Current Drain Data - SD-21300-01 - Panel Office - Battery Cutoff (Not Available for Panel Offices - Ground Cutoff)

3. DRAWINGS

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

Keysheets - Panel Systems

SD-21300-01 - Battery on CO Relay Offices
SD-21680-01 - Ground on CO Relay Offices

ES-262532 - 3-digit Sender Selector-Type Offices
ES-262829 - 3-digit Rotary Link Ground CO Relay Offices

Framework

ED-20087-01 - Assembly of Relay Casing
ED-20616-50 - Assembly of Combined Jack and Fuse Panel
ED-20689-50 - Assembly of Decoder Frame
ED-20689-51 - Assembly of Decoder Supplementary Frame

Equipment

J28703B-( ) - Decoder Frame - Supplementary - 300 Route Relays
J28703C-( ) - Decoder Supplementary Frame - 240 Route Relays
J28703D-( ) - Decoder Frame - Originating
J28703E-( ) - Decoder Peg Count Unit
J28703F-( ) - Decoder Code Point Discrimination Unit

Wiring and Cabling

ED-20027-01 - Switchboard Cabling Plan
ED-20146-01 - Cabling Schematic for Decoder Equipment (3-Connector Capacity Frame)
ED-20622-01 - Method of Running and Supporting Frame Battery and Ground Leads
ED-20691-01 - Local Cable Decoder Frame
ED-20691-02 - Local Cable Decoder Supplementary Frame
ED-20811-01 - Switchboard Power Cable
ED-20857-01 - Cabling Schematic for Decoder Equipments (5-Connector Capacity Frame)

Circuits

SD-21249-01 - Miscellaneous Circuit
SD-21277-01 - Decoder Circuit
SD-21967-01 - Decoder Connector Circuit

4. EQUIPMENT

J28703B (A&M Only) - Decoder Frame - Supplementary - Arranged for a Maximum of 300 Route Relays

Equipment - J28703B-( )
Local Cable - ED-20691-02

List 1 - Framework, assembly, wiring, and common equipment, including 20 route relays, less variable apparatus.

	Wire	Equip
Framework, ED-20689-51,G1		1
Rel Casing, ED-20087-01, Item 33LD		1
Decoder Ckt, SD-21277-01, Route Rels, Fig. 7	60	4

List 2 - Equipment per SD-21277-01, Fig. 7 required for each additional 20 route relays.

List 3 - Equipment required in addition to list 1 to arrange the frame for the office A and office B code point discrimination features.

J28703C (A&M Only) - Decoder Frame - Supplementary - Arranged for a Maximum of 240 Route Relays, and Additional Classes of Service and Zone Routing Facilities

Equipment - J28703C-( )
Local Cable - ED-20691-02

List 1 - Framework, assembly, wiring, and common equipment, including equipment for 20 route relays, less variable apparatus.

	Wire	Equip	See Notes
Framework, ED-20689-51,G1		1	
Rel Casing, ED-20087-01, Item 33LD		1	
Decoder Ckt, SD-21277-01:			
Route Relays, Fig. 7	44	4	
Zone Route Relays, Fig. 25	20	0	
Route Relays, Fig. T or N	20	0	A
Class-of-Service Rels Fig. 19, 21, & 23	24	0	B
Class-of-Service Rel, Opr Class, Fig. 20, 22, & 24	3	0	B

List 2 - Equipment per SD-21277-01, Fig. 7 required for each additional 20 route relays.

List 3 - Equipment per SD-21277-01, Fig. 25 and Fig. T or N required for each zone routing required. (See note A.)

List 4 - Equipment required in addition to list 1 to arrange the frame for the office A and office B code point discrimination features.

Notes

A. One route relay per SD-21277-01, Fig. N or T is required for each zone relay per Fig. 25 that is equipped. It is suggested that route relays 521 to 540 be equipped for this purpose, since this group of 20 relays is located directly below the ZR relays 1 to 20.

B. The variable equipment shall be furnished for each job as covered by notes on the circuit drawing. However, wiring for this equipment is furnished in all cases.

J28703D (A&M Only) - Decoder Frame - Originating

Equipment - J28703D-( )
Local Cable - ED-20691-01

List 2 - Equipment per SD-21277-01, Fig. 7 required in addition to list 1 to equip one decoder frame for an additional group of 15 or less route relays.

List 3 - Wiring and equipment required in addition to list 1 to provide a route transfer feature when specified: (See note E, 5.07, and 5.08.)

	Wire	Equip	See Notes
Decoder Route Rel Control Ckt, SD-21277-01, Fig. 17	1	1	G,K
Decoder Route Transfer Rel Ckt, SD-21277-01, Fig. 16	5	0	F,H

List 4 - Wiring and equipment per SD-21277-01 Fig. Z required in addition to list 1 when the decoder is arranged to translate extended area codes with prefix one-one and use one route relay in common for all such codes.

List 5 - Wiring and equipment per SD-21277-01, Fig. AA required in addition to list 1 when the decoder is arranged for the diversion of restricted PBX traffic on extra charge calls.

List 6 - Wiring and equipment per SD-21277-01, Fig. AD and AE with DI wiring required in addition to list 1 when the associated subscriber senders are arranged to handle direct distance dialing.

List 7 - Wiring and equipment per SD-21277-01, Fig. AF required in addition to list 1 when timing control for the all-decoders-busy alarm is furnished.

List 8 - Framework, assembly, wiring, and common equipment, including 15 route relays, for one decoder frame, originating bay.

	Wire	Equip	See Notes
Framework, ED-20689-50,G3		1	
Multicontact Rel Mtg, P-428581		2	
Jack, Fuse Panel ED-20616-50,G1		1	
Decoder Ckt, SD-21277-01:			
Main Fig. & Fig. D, F, J, L, V, X, Y, & AM	1	1	A
Route Relays, Fig. 7	56	3	
Local or Remote Control Zone Reg, Fig. B & M	1	0	A
Remote Control Zone Reg, Fig. I & S	1	0	A
Service Group Relays, Fig. 8	20	0	A
Class-of-Service Relays Opr Class, Fig. 9	1	0	A
Aux Class-of-Service Rel, Fig. 12	8	0	A
Aux Class-of-Service Rels Opr Class, Fig. 13	1	0	A
Decoder Connector Ckt SD-21967-01:			
Common Connector Ckt Relay, Fig. 8	1	0	A
Misc Ckt, SD-21249-01:			
Fuse Alarm, Fig. 1	1	1	
Tel Jacks, Fig. 2	1	1	
Test Battery, Fig. 3	1	0	C
Test Battery, Fig. 4	1	1	
Time Alarm, Fig. 5	1	1	
Remote Control Jack, Fig. 6	1	1	
Test Battery Supply, Fig. 7	1	0	D
Spare Jack, Fig. 8	1	1	
Test Cut-off Relay SD-21277-01, Fig. BB	1	1	

List 9 - Wiring and equipment per SD-21277-01, Fig. AK, required in addition to list 8 to provide registration of second trial indication from subscriber sender.

List 11 - Wiring and equipment per SD-21277-01, Fig. AQ, AP, AS, and "DZ" and "EB" options and SD-21967-01, Fig. 8, "J" options only required in addition to lists 6, 8, and 9 to provide for 6-digit translation (sender recycle).

List 12 - Wiring and equipment per SD-21277-01, Fig. AR required in addition to list 11 for the compressed code foreign area route which does not require 3-digit translation or for unused compressed codes.

List 13 - Equipment required in addition to list 8 for individual peg counts on code points which use the same route relay. (See note J.)

List 14 - Wiring and equipment per SD-21277-01, Fig. AT required in addition to list 1 or 8 to provide office A and office B code point discrimination.

List 15 - Equipment required in addition to list 8 to arrange the frame for the office A and office B code point discrimination feature.

List 16 - Equipment and wiring per SD-21277-01, Fig. 26 and "EG" option required in addition to lists 6 and 8 to provide for prefix zero and/or prefix one toll routing.

List 17 - Equipment and wiring per SD-21277-01, Fig. AX and "EN" option required in addition to list 8 to provide 11X service codes.

List 18 - Equipment per SD-21277-01, Fig. BB, required in addition to lists 8 and 11 when 6-digit translation is required and list 6 is not specified.

List 19 - Equipment and wiring per SD-21277-01, Fig. 27 required in addition to list 8 when prefix screening control is required.

Notes

A. The frame local cable shall contain all standard wiring options for the figures included in list 1. Optional apparatus shall be furnished in accordance with notes on the circuit drawings.

B. The common connector relays DA1, DA2, DB, and DST and the connector busy relay CBR, per decoder connector circuit SD-21967-01, Fig. 8 shall be equipped in all cases. The connector busy relays CBS, CBT, CBU, and CBV per decoder connector circuit SD-21967-01, Fig. 8 shall be furnished in accordance with the circuit notes.

C. The wiring for test battery for connection to the supplementary frame per SD-21249-01, Fig. 3 shall be provided in all cases. The associated connecting blocks are located on the supplementary frame when furnished.

D. The fuse and resistors for the test battery supply circuit SD-21249-01, Fig. 7 shall be located on the miscellaneous fuse board.

E. When list 3 is specified, the additional wiring required for the route transfer feature shall be superimposed on the regular local cable per list 1. The L fuse and ground on the fuse panel is only required with list 3.

F. Equip one Fig. 16 for each route to be transferred singly or for each two routes when they are to be transferred in pairs.

G. The RCA relay (AB apparatus) shall be furnished only when there are three to five RT relays equipped.

H. Cross connections for the route transfer feature per list 3 shall be made in accordance with the notes on SD-21277-01.

J. The equipment consists of a 191A terminal strip and mounting details mounted on the bottom of the right bay below the fuse panel.

K. Specify LX, LY and LZ options as required to provide for contact protection.

J28703E (A&M Only) - Decoder Peg Count Unit

Equipment - J28703E-( )

List 1 - Assembly, and wiring for one peg count unit for 20 peg count indications per SD-21277-01, ten Fig. AO. (See note A.)

Note

A. Each decoder frame may be arranged for four of these units to be mounted on miscellaneous relay rack and cabled to the decoder for cross connections, as shown in the CAD figures. The associated decoder frame number and the tens numbers of the PC indications 0,1; 2,3;4,5; or 6,7 shall be stamped on the unit.

J28703F (A&M Only) - Decoder Code Point Discrimination Unit

Equipment - J28703F-( )

List 1 - Assembly, wiring and common equipment per SD-21277-01, Fig. AU arranged for a maximum of 15 office A and office B code point discriminations but equipped for three offices.

List 2 - Wiring and equipment per SD-21277-01, Fig. AU required in addition to list 1 for office A and office B code point discrimination for three offices.

5. GENERAL NOTES

5.01 A maximum of six decoders can be used in a group to serve the senders in one or more office units. A minimum of three decoders should always be furnished to serve the senders in one group.

5.02 Where space is reserved at the right of each decoder frame for future decoder supplementary frames, each decoder frame shall be regarded as an isolated frame and end guards furnished on both ends of each frame.

5.03 The multiple leads from the odd-numbered decoder frames shall be run in cable to the lowest numbered decoder connector frame and multipled through the other decoder connector frames while those from the even-numbered decoder frames shall be run in cable to the highest numbered decoder connector frame and multipled through the rest. In following this arrangement, the

cables from the odd- and even-numbered decoder frames shall be routed over separate cable racks between line-ups of frames and these cable racks shall not be adjacent. This arrangement is followed in order to prevent putting out of service more senders than are served by a single decoder connector frame in the event that a frame was put out of service. Because of this arrangement and the lack of space for turning the multiple, individual multiple cables for each decoder are desirable.

5.04 Decoder multiple cables to the decoder connectors are terminated on terminal strips at the top of the 3-capacity connector frame used with decoder senders and on multicontact relays in the A connector for the 5-capacity connector frames used with modified pulse machine-type senders. When it is desired to add additional connectors to an existing group of 5-capacity connector frames, the decoder multiple to the added connectors may be extended from the decoder frames instead of from the multicontact relays on the last 5-capacity connector frame.

5.05 The 24-volt battery and high-resistance ground for the test battery supply shall be provided per office for decoder frames.

5.06 A decoder peg count register and key shall be furnished per decoder and mounted on the traffic register rack.

5.07 When modifying existing equipment for the route transfer feature per SD-21277-01, Fig. 16 and 17, it shall be installed in a similar manner to that specified for J28703D, list 3 except that it may be found more desirable to modify the existing 191-A terminal strip to provide the additional punchings between the present punchings and the fanning strip in order to avoid unsoldering and resoldering the present terminals. The existing mounting lugs will also have to be replaced as shown on ED-20180-01, Fig. 7.

5.08 The switchboard cable conductors to the trouble indicator frame for the control jack leads shall be included in the cable for the nonmultipled leads where possible. When modifying existing equipment, it may be necessary to provide an additional switchboard cable for these leads.

5.09 When new decoder frames, equipped with 287 and 288 relays are ordered, No. 24 gauge, type C wire shall be used for the local cable wiring to these relays.

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
J28703A	Mfr Disc.	5	J28703D
J28703B	A&M Only	7	-
J28703C	A&M Only	7	-
J28703D	A&M Only	7	-
L1	Mfr Disc.	8	J28703D,L8
L10	Mfr Disc.	8	-
J28703E	A&M Only	8	-
J28703F	A&M Only	8	-

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