CONTROLLER TROUBLE INDICATOR FRAME EQUIPMENT DESIGN REQUIREMENTS NO. 1 CROSSBAR SYSTEM

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 controller trouble indicator frame in No. 1 crossbar offices. Equipment included in this specification may be ordered by specifying the code and list numbers covered in part 4.

1.02 This specification is reissued:

(a) To bring J23251B into agreement with circuit changes made on SD-25452-01, Issue 14D, SD-25453-01, Issue 5D, and SD-25522-01, Issue 2D which permit an increase in capacity of 8 auxiliary subscriber sender link frames.

(b) To change the rating of J23251A from "A&M Only" to "Mfr Disc.".

Capacity

1.03 The controller trouble indicator frame accommodates the maintenance equipment required to function with the subscriber sender link, line link, and associated equipment of two originating marker groups. Provision has been made for the following maximum quantities of equipment.

Subscriber Sender Link Frames	40
Auxiliary Subscriber Sender Link Frames	8
Subscriber Sender Link Emergency Controllers	2
Sender Selector Units	40
Line Link Frames	160

Description

1.04 The primary function of the controller trouble indicator frame is to facilitate the location of trouble in the subscriber or auxiliary subscriber sender link frame controllers by recording information relative to the progress of any call which is not completed in the allotted time. In addition, lamps are provided to indicate that an alarm condition exists on a subscriber sender link controller or line link controller; that an emergency controller is functioning with a particular sender link frame; and when dialing districts are used, to indicate waiting calls on any dialing district group.

1.05 In offices arranged for automatic message accounting, line vertical number checking equipment is provided which can be associated with any subscriber sender link and controller to verify the line vertical number of each call handled by the controller. When the line vertical number checking equipment is not associated with a particular controller, it functions as part of the trouble indicator to indicate the line vertical involved when the trouble indicator frame is seized under a trouble condition.

1.06 The controller trouble indicator frame is a single-sided steel structure 11'-6" high and 2'-8-1/8" long. The frame accommodates one double-row 50-capacity fuse panel and eight terminal strips arranged in two rows of four each at the top. Twenty 30-1/2" channel-type mounting plates are located beneath the terminal strips under a relay casing on the front of the frame. A sheet metal key and lamp panel 1'-6" high arranged for three 8-1/2" panels is located below the relay casing. This panel accommodates the various keys, lamps, and jacks required for the subscriber sender link and line link equipment for two originating marker groups.

1.07 When the controller trouble indicator frame is arranged to accommodate auxiliary subscriber sender link frames a ninth terminal strip is added in space adjacent to the fuse panel.

1.08 A ticket receptacle and writing shelf is mounted under the key and lamp panel. Thirteen additional 30-1/2″ channel-type mounting plates are located under a relay casing on the front of the frame below the writing shelf. This relay equipment is provided only when equipment for a second marker group is desired.

1.09 Connections between the controller trouble indicator frame and associated frames are made by means of switchboard cables which are terminated on the terminal strips at the top of the frame.

1.10 The recommended location for this frame is in the maintenance center.

2. SUPPLEMENTARY INFORMATION

816-000-000 — No. 1 Crossbar System Index

J22457 (816-104-100) — Automatic Message Accounting Equipment — General

J25551 (AA240.002) (816-040-150) (817-060-150) — End Guards, Aisle Pilot Lamp and DPTS Supports, Fuse Record Book and Holder, and Spare Fuse Mountings

J25552 (AA240.003) (816-017-150) (817-037-150) — Frame Lighting and Appliance Outlets

Floor Plan Data — Section 9.3, Sheet 14
Section 9.9, Sheet 3

3. DRAWINGS

Keysheet

SD-25000-01 — Crossbar System No. 1

Framework

ED-25020-01 — Miscellaneous Mounting Details and Cable Brackets

ED-25025-01 — Fuse Panel Assembly

ED-25506-01 — Pigeonholes and Writing Shelf Assembly

ED-90002-01 — Flush Panels

ED-90382-01 — Key Mountings

ED-90978-01 — Casing Assembly

ED-91710-01 — Frame Assembly

ED-91722-01 — Jack Key and Lamp Panel Assembly

Equipment

ED-26224-01 — Controller Trouble Indicator-Frame Equipment — Automatic Message Accounting

Wiring and Cabling

ED-25346-01 — Method of Running Power Feeders

ED-25645-01 — Controller Trouble Indicator-Frame Local Cable

ED-25646-01 — Controller Trouble Indicator-Frame Switchboard Cabling Details

4. EQUIPMENT

J23251B (AT&TCo Std) — Controller Trouble Indicator Frame — Arranged for Automatic Message Accounting

Equipment — ED-26224-01
Local Cable — ED-25645-01

List 1 — Framework, assembly, wiring, and common equipment for one controller trouble indicator frame associated with subscriber sender link and line link equipment. (See note A.)

	WIRE	EQUIP	SEE NOTES
Framework ED-91710-01, G1		1	
Fuse Panel ED-25025-01, Item 4		1	
Front Casing ED-90978-01, G3020		1	
Jk., Key, and Lamp Panel ED-91722-01, G2		1	
Pigeonholes and Writing Shelf ED-25506-01, G1		1	

	WIRE	EQUIP	SEE NOTES
Trouble Ind. Ckt. SD-25452-01:			
Cont. Rels. Fig. 1 or 15	1	0	B
Aux. Release Rel. Fig. 3 or 16	1	0	B,F
Lamp Rel. & Lamp for Leads Norm. Free of Bat. & Grd. Conn.			
Fig. 4, SGP0-SGP39 Rels. & Lamps Only	40	0	D
Fig. 4, SLF0-SLF19 & EMO Rels. & Lamps Only	21	0	
Lamp Rel. & Lamp for Leads Assoc. with Bat. Conn. Rels.:			
Fig. 5, S0-S9 Rels. & Lamps Only	10	10	
Fig. 5, SG0-SG9 Rels. & Lamps Only	10	10	
Fig. 5, OC, OH, GH, SL, AB, TC, ON, H, RL, & LLH Rels. & Lamps	10	10	
Lamp Rel. & Lamp for Leads Assoc. with Grd. Conn. Rels.:			
Fig. 6, D0-D9 & DS Rels. & Lamps	11	11	
Lamp Rel. & Lamp for Indicating Link Dbl. Conn. Fig. 7	1	1	
Lamp Rel. & Lamp for Indicating Selected Dist. Grp. & Subgrp. Fig. 8	5	5	
Line Link Frame Rel. Fig. 9	100	0	E
Line Link Frame Lamp:			
Fig. 10, TENS Lamps Only	10	0	H
Fig. 10, UNITS Lamps Only	10	10	H
Lockout, Lamp, & Rel. Ckt. Fig. 14 or 18	21	0	B,C
Register Rels. Fig. 17	5	0	
Lamp Relay and Lamp for Indicating Rotary or TOUCH-TONE Dialed Call, Fig. 19	2	0	
Trouble Ind. Misc. Ckt. SD-25453-01:			
Fuse Alm. Ckt. Fig. 1	1	1	
Frame Line Ckt. Fig. 2	1	1	
Frame Test Bat. Fig. 3	1	1	
Spare Jk. Ckt. Fig. 4	1	1	
Trouble Ind. Make Busy Jk. Fig. 5	21	21	
Trouble Alm. for SSL Frame Fig. 6	1	1	
Link Alm. Lamp:			
Fig. 7 (Line Link)	100	0	E
Fig. 7 (SSLK)	21	0	
Emerg. Frame Lamp Fig. 8	20	0	
Calls Waiting Lamp Fig. 9	20	0	G
Load Indication for SSL Fig. 10	1	1	
Common Hold Jk. Ckt. SD-25522-01:			
Figs. 1 and 2	1	0	
Fig.. 3	2	0	

List 2 — Assembly, wiring, and equipment required in addition to list 1 when controller trouble indicator frame is associated with a second group of subscriber sender link and line link equipment. (See note A.)

	WIRE	EQUIP	SEE NOTES
Front Casing ED-90978-01, G3013		1	
Trouble Ind. Ckt. SD-25452-01:			
Aux. Release Rel. Fig. 3 or 16	2	0	B,F
Lamp Rel. & Lamp for Leads Norm. Free of Bat. & Grd. Conn.:			
Fig. 4, SLF100-SLF119 & EM100 Rels. & Lamps Only	21	0	
Line Link Frame Rel. Fig. 9	60	0	E
Line Link Frame Lamps			
Fig. 10, TENS Lamps Only	6	0	H

	WIRE	EQUIP	SEE NOTE
Lockout, Lamp, & Relay Ckt. Fig. 14 or 18	21	0	C
Trouble Ind. Misc. Ckt. SD-25453-01:			
Trouble Ind. Make Busy Jack Fig. 5	21	21	
Link Alm. Lamps:			
Fig. 7 (Line Link)	60	0	E
Fig. 7 (SSLK)	21	0	
Emerg. Frame Lamp Fig. 8	20	0	
Calls Waiting Lamp Fig. 9	20	0	G
Load Indication for SSL Fig. 10	1	1	
Common Hold Jk. Ckt. SD-25522-01, Fig. 3	2	0	

List 3 — Equipment per SD-25452-01, Fig. 1, required in addition to list 1 for message register operation. (See note B.)

List 4 — Equipment required in addition to list 1 for automatic message accounting. (See note B.)

	EQUIP
Trouble Ind. Ckt. SD-25452-01:	
Cont. Rels. Fig. 15	1
Register Rels. Fig. 17	5

List 5 — Equipment per SD-25453-01, Fig. 8, required in addition to list 1 or 2 for each subscriber sender link frame.

List 6 — Equipment required in addition to list 1 or 2 for each subscriber sender link controller-message register operation. (See note B.)

	EQUIP
Trouble Ind. Ckt. SD-25452-01:	
Fig. 4 (SLF- or EM- Rel. & Lamps Only)	1
Fig. 18	1
Trouble Ind. Ckt. SD-25453-01:	
Fig. 7	1

List 7 — Equipment required in addition to list 1 or 2 for each subscriber sender link controller-automatic message accounting. (See note B.)

	EQUIP
Trouble Ind. Ckt. SD-25452-01	
Fig. 4 (SLF- or EM- Rel. & Lamps Only)	1
Fig. 14	1
Trouble Ind. Ckt. SD-25453-01:	
Fig. 7	1

List 8 — Equipment required in addition to list 1 or 2 for each line link frame.

	EQUIP
Trouble Ind. Ckt. SD-25452-01	
Line Link Frame Rel. Fig. 9	1
Trouble Ind. Misc. Ckt. SD-25453-01:	
Line Alm. Lamp Fig. 7 (LLK)	1

List 9 — Equipment per SD-25452-01, Fig. 3, required in addition to lists 1 and 3 when more than nine subscriber sender link controllers are furnished in marker group O — message register operation. (See notes B and F.)

List 10 — Equipment per SD-25452-01, Fig. 16, required in addition to lists 1 and 4 when more than nine subscriber sender link controllers are furnished in marker group O — automatic message accounting. (See notes B and F.)

List 11 — Equipment per SD-25452-01, Fig. 3, required in addition to list 2 for each 12 or less subscriber sender link controllers in marker group 100 — message register operation. (See notes B and F.)

List 12 — Equipment per SD-25452-01, Fig. 16, required in addition to list 2 for each 12 or less subscriber sender link controllers in marker group 100 — automatic message accounting. (See notes B and F.)

List 13 — Equipment per SD-25452-01, Fig. 4, SGP- relay and lamp, required in addition to list 1 for each sender selector unit furnished. (See note D.)

List 14 — Equipment per SD-25452-01, Fig. 10, LLT lamp, required in addition to list 1 or 2 for each line link frame "tens" indication desired. (See note H.)

List 15 — Equipment per SD-25453-01, Fig. 9, required in addition to list 1 or 2 for each of district junctor group 6-7 or 8-9 of a subscriber sender link frame arranged for dialing or interoffice district junctors. (See note G.)

List 16 — Equipment per SD-25522-01, Figs. 1 and 2, required in addition to list 1 when common hold jack feature is desired.

List 17 — Equipment per SD-25522-01, Fig. 3, required in addition to lists 1, 2, and 17 for each ten controllers in a marker group.

List 18 — Equipment per SD-25452-01, Fig. 19, RD and TD relays and lamps, required in addition to list 1 when associated subscriber sender link and controller circuits are arranged for TOUCH-TONE calling in partially converted offices.

List 19 — Wiring and equipment required to provide for each added auxiliary subscriber sender link frame — message register operation. (See notes I and J.)

	WIRE	EQUIP
Trouble Indicator Circuit, SD-25452-01		
Fig. 4 (SLF0 Rel and Lamp Only)		1
Fig. 18 (Lockout, Lamp and Rel Ckt)		1
Trouble Indicator Misc Ckt, SD-25453-01		
Fig. 5 (Tbl Ind Make Busy Jack)		1
Fig. 7 (SS LK Alm Lp)		1
Fig. 8 (Emergency Frame Lamp)		1

List 20 — Wiring and Equipment required to provide for each added auxiliary subscriber sender link frame — automatic message accounting. (See notes I and J.)

	WIRE	EQUIP
Trouble Ind Ckt, SD-25452-01		
Fig. 4 (SLF — Rel and Lamp Ckt)		1
Fig. 14 (Lockout, Lamp and Rel Ckt)		1
Trouble Ind Misc Ckt, SD-25453-01		
Fig. 5 (Tbl Ind Make Busy Jk)		1
Fig. 7 (SS Lk Alm Lp)		1
Fig. 8 (Emergency Frame Lp)		1

Notes

A. Lists 1 and 2 shall include wiring for all options and for the maximum quantities of equipment. Unless otherwise indicated herein, equipment shall be provided on the frame only as required to meet job requirements.

B. The controller trouble indicator frame shall be wired universally for Figs. 1 and 15, Figs. 3 and 16, and Fig. 14 and 18, and equipped as required with lists 3, 6, 9, and 11 for message register operation, or with lists 4, 7, 10, and 12 for automatic message accounting.

C. The emergency subscriber sender link controller, EM0 or EM100 when latter is furnished, shall always be considered as the last controller and thus connected to equipment per SD-25452-01, Fig. 14 or 18. This requires the provision of universal wiring at the position occupied by the FP EM G0 relay so that it can be wired either as intermediate or last lockout circuit depending upon the number of marker groups involved.

D. Wiring is provided for 40 sender selector units. These sender selector units may be associated with the subscriber senders of one or two marker groups.

E. Wiring is provided in list 1 for 100 line link frames and in list 2 for 60 line link frames. These circuits may be equipped as required. In cases where the number of line link frames associated with the first marker group is less than 100, the balance of the unused circuits under list 1 may be assigned to line link frames of the second marker group. The LL relays shall be numbered to correspond to the frame numbers of the associated line link frames.

F. The auxiliary release relay per SD-25452-01, Fig. 3 or 16 (list 9 or 10), as required, shall be furnished in addition to list 1 when more than nine controllers are furnished in marker group O. Auxiliary relay per SD-25452-01, Fig. 3 or 16 (list 11 or 12), as required, shall be furnished in addition to list 2 for each 12 or less controllers furnished in marker group 100.

G. The calls waiting lamp per SD-25453-01, Fig. 9 (list 15), shall be furnished only for those regular or auxiliary subscriber sender link frames arranged for operation with dial-operators or interoffice district circuits. A maximum of two lamps may be required per subscriber sender link frame arranged for this traffic.

H. A decimal arrangement is provided for the line link frame indicating lamps. Lamps LLU0-LLU9 are provided for the "units" designations of the associated frames and lamps LLT0-LLT15 are provided for the "tens" designations of the associated frames. The LLT lamps shall be provided as required to correspond to the "tens" designations of the associated line link frames.

I. Wiring and equipment per SD-25452-01 Fig. 3 or 16, "K" option only, is required with the first list 19 or 20 respectively.

J. Wiring and equipment per SD-25522-01 Fig. 1 and 3, "Z" option only, is required when auxiliary district frames are added in offices equipped with the common hold jack feature.

5. GENERAL NOTES

Equipment

5.01 On existing jobs where the controller trouble indicator is to be provided, changes as covered on issue 24-D of line link and controller circuit SD-25003-01 and issue 25-D of subscriber sender link and controller circuit SD-25004-01 shall be applied concurrently or prior to the installation of this frame. When the common hold jack feature is equipped, additional changes per issue 26-D of SD-25004-01 are required.

5.02 A portion of the jack mounting, containing the TIB-EMO & 100 and ET-EMO & 100 jacks, is reserved as a receptacle for unused 322A make busy plugs. A receptacle for the 298A common hold jack circuit plug is provided adjacent to the H jack. The necessary plugs shall be provided as specified by the Telephone Company.

5.03 Except for the jack mounting on which the TEL and A and B jacks are mounted, all jack and lamp sockets shall be provided in strips of 20 regardless of the number used. Unused lamp positions shall not be equipped with lamps or lamp caps.

5.04 With the exception of certain common equipment and equipment associated with line link frames and sender selector equipment of two marker groups, whose use is covered in notes D, E, and H, all equipment associated with the link frames of a second marker group is contained in a relay casing below the writing shelf.

5.05 Two fuses C0 and C100 shall be provided on the fuse panel associated with SD-25453-01, Fig. 9. The C0 fuse shall be associated with the 20 circuits wired in list 1 and the C100 fuse with the 20 circuits wired in list 2.

Wiring

Local Cable

5.06 Where this frame is furnished for initial operation with the link frames of one marker group and it subsequently becomes necessary to provide for its association with a second marker group, the local cable per list 2 shall be provided and superimposed on the local cable per list 1. Where this frame is furnished initially for operation with two marker groups, the wiring for list 2 shall be included in the local cable furnished under list 1.

5.07 No. 22 type "C" wire shall be used in the frame local cable for battery and ground leads.

5.08 No. 24 type "C" wire shall be used in the frame local cable for all other wiring.

Switchboard Cabling

5.09 The code numbers of the switchboard cables ordinarily to be used in cabling the various circuits are shown on the switchboard cabling detail drawing. In general, 24 type "CL" cable and 20 type "AM" wire shall be used. The circuits should, however, be checked to insure that the proper codes are specified to meet the latest circuit requirements. The cross-connecting

information on the various circuits indicates what leads are to be grouped in the same cables.

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

The following equipment has been replaced as indicated. Where "A&M Only" item 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
J23251A	Mfr Disc.	4	J23251B

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