CROSSBAR SYSTEMS
NO. 5
INCOMING REGISTER MARKER
CONNECTOR CIRCUIT
REGISTER PART
FOR DP, MF, RP, AND FSP INCOMING REGISTERS
AND CAMA SENDERS

8

CHANGES

D. Description of Changes

D.1 A modification is made to provide an additional option ZH for the THT2 and THT3 leads to accommodate operation with independent features in incoming registers and CAMA senders. Option ZG presently provides these leads through the IRMC-RP to both incoming registers and CAMA senders. As a result, where these leads are required by incoming registers arranged for more than 2000 trunk numbers or tandem switching applications, and CAMA senders are not arranged for flexible storage of the trunk number (do not require connection to these leads), no terminating points for these leads are provided on the CAMA sender frame. In the revised arrangement, new option ZH, rated after-date Standard, provides for connection of the THT2 and THT3 leads to the CAMA senders, and option ZG, to incoming registers, only where equipped with the corresponding feature above.

D.2 The LT3 lead, option ZD is rerated from Mfr Disc. to after-date Standard for application in offices where the PLN digit 8 access code indication is required from the incoming register.

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DEPT 5243-RKW-ABVL-CB

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CHANGES

D. Description of Changes

D.1 A change is made to provide new leads (THT2 and THT3) required for increasing the trunk number capacity of wire spring offices from 2000 to 4000 trunk numbers.

(a) The THT2 and THT3 leads provide the paths necessary for an incoming MF or DP register to indicate to the completing marker a third or fourth thousands digit of a trunk number.

D.2 Minor CAD corrections are made to delete the PC and PC1 lead indications to CAMA sender frames. The PC and PC1 lead indications are only associated with incoming register frames.

D.3 Changes are made to provide for a new incoming register frame which is designed to mount four MF incoming registers and the associated connector relays.

(a) This change is associated with the design of a transistorized MF receiver.

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DEPT 5141-REL-RBC-JF

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CHANGES

D. DESCRIPTION OF CHANGES

D.1 Minor CAD changes are made to provide "A" ground at the RS relay in the preference chain for connectors serving incoming registers which handle wideband calls, and a CAMA sender is assigned to the first position in the incoming register marker connector. This change is made on a "D no-record" basis to agree with WECo manufacturing drawings.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 5611

KWH-MFF-SS

CROSSBAR SYSTEMS
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SECTION I - GENERAL DESCRIPTION

1. GENERAL METHOD OF OPERATION

1.01 An incoming register requiring a marker to complete its call gains access to a marker through the incoming register marker connector, register part, then through an incoming register marker connector, marker part, and then to the marker. One incoming register marker connector, register part, is paired with an incoming register marker connector, marker part. The register part has a number of registers associated with it, while the marker part has access to all the combined or completing markers in the marker group, no less than two and no more than twelve. The connection between the incoming register marker connector, register part, and marker part, is held as long as the connected register requires the marker and during this time the other registers associated with this connector may not gain access to a marker.

1.02 The incoming register marker connector, register part, and the incoming register marker connector, marker part, mentioned above are also used to connect the CAMA sender to the marker. The register part has a number of CAMA senders associated with it while the marker part, as described above, has access to all the combined or completing markers.

1.03 Each incoming register marker connector, register part, is provided with one set of relays per either FS1, FS2 or FS3, and FS4 per DP, MF, RP, or FSP incoming registers or CAMA sender. These relays are the RA, RB, RC, RD, RE, RF, and RS relays. The RA, RB, RC, RD, RE, and RF relays are 30 contact wire spring multicontact relays, and provide paths for the passage of information from the incoming register or CAMA sender through the incoming register marker connector, register part, to the marker part and thence to the marker.

1.04 The RS relays are provided, one per register or CAMA sender, wired in a preference chain with the other relays associated with the other registers and CAMA senders in the connector. The function of the RS relays is to provide preference among the registers and CAMA senders which are competing for the same connector. The RS relays also close a path for the SPL lead from the incoming register to the preference control circuit for the marker connector. This lead is used on calls from trunks requiring the special markers, such as no-test, no-hunt, and test-desk trunk. When this lead is grounded, all markers, except the special markers, are made busy to the connector in which the register requiring the special marker is located.

SECTION II - DETAILED DESCRIPTION

1. OPERATION OF THE RS RELAY

1.01 When a register or CAMA sender requires the services of a marker,

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it closes battery to its ST lead toward the incoming register marker connector, register part. This closure, if the connector is idle, operates the RS relay associated with the register or CAMA sender, which may, in turn, operate the connector multicontact relays to close a path to the marker from the register or CAMA sender.

1.02 The RC relay of FS3 (last) is assigned first preference in the RS chain and, therefore, has ground connected to its winding. The operating ground for the RS relays is FS1 (first) and FS2 (intermediate) comes through normal contacts of the RS relay in FS3, and/or FS2. Thus, we see that the RS relay in FS3 may operate at any time and, that, while it is operated, no other RS relays in the chain may become operated.

1.03 Should the RS relay in FS1 be operated, followed by operation of the RS in FS3, the RS in FS2 which is adjacent to FS1 in the preference chain would operate from the locking ground extended from FS1.

1.04 Should the RS in FS2 be operated, there would be no ground to operate the RS in FS1.

1.05 Thus, if an intermediate RS relay is operated no RS relay following it in the preference chain may operate, while an RS relay preceding it may operate.

1.06 It will be seen that the break contacts of the RS relay which constitute the RS1 and RS2 leads are wired in parallel. This insures against dirty contacts in the operate path of the RS relays, which would disable the connector either completely or in part.

2. OPERATION OF CONNECTOR RELAYS

2.01 When an RS relay operates, ground is applied to the RA lead from the normal contacts of the TC and TC1 relay in the marker connector preference control circuit, through normal contact of preceding RS relays. This ground causes the multicontact relays associated with this lead to operate. The RA and RC relays close ground from the RS operated to the other multicontact relays in the connector, causing them to operate. The battery for the multicontact relays is supplied from the register or CAMA sender, over the CBS lead.

2.02 When the multicontact relays have operated, battery on the ST lead (see FS1) is extended to the incoming register marker connector circuit, marker part. This battery causes the MS relay in that circuit to operate, which, in turn, causes the multicontact connector relays in that circuit to operate.

2.03 The operation of the connector relays in the marker part circuit causes the operation of the TC and TC1 relays in the marker connector preference control circuit. This operation removes the ground from the RA and RB lead to FS1, FS2, or FS3. The connector relays operated from the RA and RB leads are held through contacts of the RA, RC and RS operated, to ground.

2.04 In this way, the operation of the register part connector relays is permitted only when the marker part relays are normal.

2.05 Should several RS relays be operated, the multicontact relays associated with FS1 or FS2 nearest to FS1 in the chain of transfer contacts constituting the RA and RB leads between RS relays would operate.

2.06 Thus, we see that only one set of multicontact relays may be operated at one time.

2.07 After the RS relay has released, if any other RS relays are locked up and waiting, their multicontact relays will be operated in sequence starting with the set nearest FS1, and operating one set at a time, in order, from FS1 toward FS3, until all waiting registers or CAMA senders have been served.

2.08 The RA and RB leads are made up of break contacts of the RS relays. These contacts are wired in parallel to insure against dirty contacts in the operate path of the connector multicontact relays.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

Designation	Meaning
RA, RB, RC, RD, RE and RF	Connector Relays
RS	Preference Relay

3. FUNCTIONS

3.01 To provide means for connecting an incoming register or CAMA sender to an incoming register marker connector, marker part.

3.02 To permit only one call to be served by the connector at one time.

3.03 To provide means to serve simultaneous calls in one connector in sequence.

3.04 To provide incoming register peg count indications.

3.05 To provide means for connecting an incoming trunk circuit to an incoming register marker connector, marker part.

3.06 To provide means for connecting to the master test frame jack, lamp, and key circuit to control the progress and identification lamp.

3.07 To close leads to the preference control circuit for marker connectors as an indication that a marker is required by an incoming register or CAMA sender, and that the marker connector register part has completed its function.

3.08 To close a lead to the master test frame connector circuit to leave a record of the number of the register or CAMA sender involved when a trouble record is required or to close a lead to the office test frame trouble indicator and connector circuit to leave a record of the number of the register involved when a trouble record is required.

3.09 To hold the connector relays operated after the TC and TC1 relays in the preference control circuit have operated.

3.10 To insure proper operation by providing multiple back contacts of the RS relay in the RA and RB leads, and RS1 and RS2 leads.

4. CONNECTING CIRCUITS

DP Incoming Register Circuit - SD-26041-01

MF Incoming Register Circuit - SD-26042-01

Preference Control Circuit for Marker Connector - SD-26029-01

Incoming Register Link Circuit - SD-26048-01

Incoming Register Marker Connector, Marker Part - SD-26025-01

Master Test Frame Connector Connector Circuit - SD-28805-01

Master Test Frame, Jack, Key, and Lamp Circuit - SD-25762-01

Master Test Frame Plant Register Circuit - SD-25793-01

Traffic Register Circuit - SD-28892-01

Marker Connector Circuit - SD-25586-01

CAMA Sender Circuit - SD-26056-01

Revertive Pulse Incoming Register - SD-26043-01

FSP Incoming Register - SD-27625-01

Office Test Frame Trouble Indicator and Connector Circuit - SD-27634-01

5. TAKING EQUIPMENT OUT OF SERVICE

5.01 Individual registers or CAMA senders may be made busy from the master test frame jack, lamp, and key circuit.

5.02 To make the entire incoming register marker connector circuit, register part busy, all the registers and CAMA senders served by the connector must be made busy.

6. PRECAUTIONS TO BE OBSERVED WHEN WORKING ON APPARATUS

6.01 When working on an individual RS relay, care must be exercised not to open the chain circuits through contacts of this relay or interference will occur. To avoid such interference, it is advisable to make all registers and CAMA senders in the connector busy when working on an RS relay, or confine such work to light-traffic periods.

6.02 When working on the RA, RB, RC, RD RE, or RF relays, care must be exercised to avoid crossing contacts on these relays, and to prevent accidental application of battery or ground to these contacts, in order to avoid interference with other registers and CAMA senders in the connector.

SECTION IV - REASONS FOR REISSUE

D. Description of Changes

D.1 Minor wiring changes are made to arrange this circuit to function in a marker group arranged for wideband service.

(a) Existing wiring (lead SPL to the preference control circuit) is assigned feature option ZE; and new wiring (ground on the RS chain for lead SPL to the incoming register) is assigned feature Option ZF. These options are mutually exclusive.

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