

5

CROSSBAR SYSTEMS  
NO. 5  
ORIGINATING REGISTER MARKER  
CONNECTOR CIRCUIT  
REGISTER PART

CHANGES

D. Description of Changes

- D.1 Option ZF is provided after-date Standard  
for twelve-digit calling capability.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5611-DLK-RBC-DK

CROSSBAR SYSTEMS  
NO. 5  
ORIGINATING REGISTER MARKER  
CONNECTOR CIRCUIT  
REGISTER PART

CHANGES

D. Description of Changes

D.1 Circuit Note 112 is changed to add  
IDDD to option G to allow lead FVD  
to serve IDDD.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5611-DIK-MFF-BA

CROSSBAR SYSTEMS  
 NO. 5  
 ORIGINATING REGISTER MARKER  
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SECTION I - GENERAL DESCRIPTION

1. GENERAL METHOD OF OPERATION

1.01 An originating register requiring the services of a marker to complete its call gains access to a marker through the originating register marker connector, register part, thence through an originating register marker connector, marker part, and thence through to the marker. One originating register marker connector, register part, is paired with one originating 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 completing or combined markers in the marker group, no less than two, and no more than twelve. The connection, through the originating 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 Each originating register marker connector, register part, is provided with one set of relays per FS1, FS2 or FS3, per originating register. These relays are the RA, RB, RC, RD, RE, and RF relays and an RS relay. The RA, RB, RC, RD, RE, and RF relays are each 30-contact wire-spring multicontact relays, and serve to provide paths for the passage of information from the originating register through the originating register marker connector, register part to the marker part, and, then, to the marker.

1.03 The RS relays one per register are provided and wired in a preference chain with the other RS relays associated with the other registers in the connector. The function of the RS relays is to provide preference among the registers which are competing for the same connector.

SECTION II - DETAILED DESCRIPTION

1. OPERATION OF THE RS RELAYS

1.01 When a register requires the services of a marker it closes battery to its ST lead toward the originating register marker connector, register end. This closure may operate the RS relay associated with the register, which may, in turn, operate the connector multicontact relays to close a path to the marker from the register.

1.02 The RS relay of FS3 (last register) is assigned first preference in the RS chain and, therefore, has ground connected to its winding. The operating ground for the RS relays in FS1 (first register) and FS2 (intermediate register) 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 chair, 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 any RS relay preceding to may operate.

1.06 It will be seen that the RS1 and RS2 leads are composed of break contacts of the RS relays, wired in multiple. This insures against malfunction of the connector due to dirty contacts in these leads.

2. OPERATION OF CONNECTOR RELAYS

2.01 When an RS relay operates, ground is applied to the RA relay from the normal contacts of the TC and TC1 relays in the marker connector preference control circuit, through normal contacts of preceding RS relays. This ground causes the RA relay to operate. The operation of the RA closes 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, over the CBS and CBS1 leads.

2.02 When the multicontact relays, which are operated by the RA, have operated, the battery on the ST lead (see Part 1.) is extended to the preference control circuit for marker connector over the STA and STB leads. This battery causes the MS relay in that circuit to operate, which, in turn, causes the multicontact connector relays in the originating register marker connector circuit, marker part, 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 leads to FS1, FS2, or FS3. The RA relay is held operated through its own contacts to the RS operated to ground.

2.04 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.

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

2.06 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 have been served.

2.07 The RA and RB leads consist of break contacts of the RS relays wired in multiple. This insures against dirty contacts disabling the connector, either completely or in part.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

<u>Designation</u>	<u>Meaning</u>
RA, RB, RC, RD, RE, and RF	Register connector relays.
RS	Register preference relay.

3. FUNCTIONS

3.01 To provide means for connecting an originating register to an originating register marker connector, register end.

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 a path to light a progress and identification lamp associated with the position of the register in the connector.

3.05 To close certain leads to the preference control circuit for marker connectors, indicating to that circuit that an originating register requires a marker and that the originating register marker connector, register part, has completed its functions.

3.06 To provide a path to the master test frame connector circuit or office test frame trouble indicator and connector circuit to record the register number in the event a trouble record is required.

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

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

3.09 To provide a means for the originating register to direct the selection of a wideband marker.

4. CONNECTING CIRCUITS

Marker Connector Circuit - SD-25586-01

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

Master Test Frame Connector Circuit - SD-25805-01

Traffic Register Circuit - SD-25892-01

Originating Register Marker Connector, Marker Part - SD-26023-01

Marker Connector Preference Control Circuit - SD-26029-01

Originating Register Circuit - SD-26040-01

Originating Register Circuit (4-Wire) - SD-26044-01

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

5. TAKING EQUIPMENT OUT OF SERVICE

Relays RS, RA, RB, RC, RD, RE, and RF

5.01 To remove these relays from service, its associated originating register must be made busy at the master test frame jack, lamp, and key circuit.

6. PRECAUTIONS TO BE OBSERVED WHEN WORKING ON APPARATUS

Relay RS

6.01 When working on the RS relay, care must be exercised to avoid opening the chain circuits through the transfer contacts of the relay. If this precaution is not observed, other registers served by the connector will be interfered with.

6.02 If possible, when working on this relay, all the registers served by the connector should be made busy, or the work should be performed during periods of light traffic.

Relays RA, RB, RC, RD, RE, and RF

6.03 When working on these relays, care should be exercised to avoid crossing the contacts of the relay with battery or ground or with each other.

SECTION IV - REASONS FOR REISSUE

D. Description of Circuit Changes

D.1 Changes are made to provide for this circuit operation in a marker group arranged for wideband service.

(a) This involves the addition of a new chain of existing RS preference relay contacts, under feature Option ZD. This chain will provide a path to operate the SPLP relay in the preference control circuit to direct the selection of a wideband marker.

(b) Lead PK1 is also added, under feature Option ZD, to provide a path over which the originating register indicates to the marker that a call is wideband.

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