CIRCUIT DESCRIPTION

6

30358

CD-95814-01
ISSUE 2D
APPENDIX 3D
DWG ISSUE 5D

COMMON SYSTEMS
SECONDARY NETWORK AND
BUS CONNECTOR CIRCUIT
AUTOMATIC NUMBER IDENTIFICATION - TYPE B
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

CHANGES

D. Description of Changes

D.1 Circuit Note 102 has been revised to include operation with PBX lines arranged for Automatic Identified Outward Dialing (AIOD) service.

D.2 Circuit Note 105 has been added and Equipment Note 202 has been revised to explain the application of this circuit where AIOD service is provided and a seventh office unit is required for the AIOD class unit.

D.3 Circuit Note 101 has been changed to clarify the use of the B ground.

D.4 The resistance value shown on the circuit for the G and P inductors has been changed to 1.5 ohms; it was formerly shown, incorrectly, as 1.25 ohms.

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DEPT 2364-MRM-JEM

CD-95814-01
Issue 2-D
Appendix Issue 2-AC
Dwg. Issue 4-AC

COMMON SYSTEMS
SECONDARY NETWORK AND
BUS CONNECTOR CIRCUIT
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 This circuit is reissued to correct a trouble condition which resulted in identification failures of ring party subscribers. A change is made in the cabling arrangement of the tip and ring bus leads between the number network frame and the (TP-) bus connector relays. CAD 1 is rated "Mfr. Disc." and is replaced by CAD 9 to provide for running the tip and ring bus leads in separate cable.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2364-JLB-RJJ-MT

CIRCUIT DESCRIPTION

CD-95014-01
Issue 2-D
Appendix Issue 1-D
Dwg. Issue 3-D

COMMON SYSTEMS
SECONDARY NETWORK AND
BUS CONNECTOR CIRCUIT
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

CHANGES

B. CHANGES IN APPARATUS

	Replaced	Replaced By
Resistor V	KS-16311, L1, 511Ω	221A, 511Ω

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The above change in apparatus is made to reduce cost and is made without record since Western Electric Co.'s manufacturing information has not yet been processed to a point where a record is necessary.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-JLB-FBB-ML

COMMON SYSTEMS
SECONDARY NETWORK AND
BUS CONNECTOR CIRCUIT
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

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SECTION I - GENERAL DESCRIPTION

This circuit is designed for use in Panel, Crossbar No. 1, or Step-By-Step Offices arranged for Automatic Number Identification (ANI). ANI provides automatic identification of calling subscriber directory numbers for one and two party lines. It recognizes multiparty lines (4 or more parties), as such, but makes no further identification in these cases (an operator is called in to identify the calling subscribers directory number). The purpose of this circuit is to translate a 5800-cycle identification signal appearing on two of 200 input leads from the tip or ring bus fields of the Number Network and Primary Bus Circuit to a signal on one in each of four groups of ten outputs to the Identifier Circuit, and to provide a concentrating network between the multiparty bus field of the Primary Bus Circuit and the Identifier Circuit.

SECTION II - DETAILED DESCRIPTION

1. SECONDARY NETWORK - FS3

1.1 The secondary network represented in FS3 is a resistor-inductor network arranged in two 10x10 matrix arrays. Each matrix has 100 input leads which are connected under control of the (TP-) bus connector relays to either the tip or ring bus field of the Primary Bus Circuit when Option 4 is furnished (Panel or Crossbar No. 1 Offices with two party lines or Step-By-Step Offices with two party flat rate lines), or directly to the ring field when Option 4 is not furnished. One matrix connects to the TH(0-9)U(0-9) primary buses, and the other to the H(0-9)T(0-9) primary buses. Each connection from the Primary Bus Circuit terminates at the junction of a G inductor, H resistor, and V resistor in the secondary network. The G inductors are connected to ground, and the H and V resistors are wired to the secondary network output leads which have the same numerical designations as the connected primary bus. The output leads of each 10x10 matrix are broken so as to subdivide each matrix into 4-5x5 sections. This arrangement provides two output leads carrying similar thousands hundreds, tens, and units digit designations. Similarly designated leads are prefixed by an N or a P, depending on the 5x5 section at which they terminate, and are paired and wired through the identifier connector relays to

the Identifier Circuit where they are connected to oppositely poled windings of a center tapped transformer of an amplifier detector. Unwanted signals appearing on the output leads tend to be balanced out in the transformer, thus reducing the possibility of false identifications. Information Note 301 illustrates the relationship of the secondary network to the Primary Bus Circuit and the Identifier Circuit.

1.2 The purpose of the H and V resistors is to provide for translation of an identification signal from one input lead to the two associated output leads. Their values are such that backup of the identification signal from one output lead to another is greatly minimized. The G inductors are furnished to provide a low impedance reactive termination to ground for the primary buses. This termination maintains the output signal within acceptable limits regardless of the number of networks connected to the primary buses.

2. BUS CONNECTOR AND BUS CONNECTOR CHECK CIRCUIT - FS1 AND FS2

2.1 The bus connector circuit shown in FS1 (Option 4) provides a means for connecting the secondary network to either the tip or ring primary bus field. For tip party identifications, the Identifier places direct ground on leads TP(A-D)(0-5), thereby operating the (TP-) bus connector relays. The (TP-) relays in operating transfer the secondary network to the tip field of the Primary Bus Circuit. The (TP-) relays release upon removal of ground from the TP(A-D) leads by the Identifier. For ring party identifactions, the TP(A-D)(0-5) leads are not grounded, the (TP-) relays remain normal, and the secondary network is connected to the ring field of the Primary Bus Circuit through back contacts of the (TP-) relays. When Option 4 is not furnished, the secondary network is wired directly to the ring field of the Primary Bus Circuit.

2.2 The bus connector check circuit shown in FS2 provides a check signal to the Identifier which indicates that all of the (TP-) relays are in the same operated or normal condition when Option 4 is provided. When Option 4 is not provided, the check circuit is wired such that the identifier receives a continuity check in both the (TP-) operated and (TP-) normal paths. When service observing is provided (Option Z), the check path includes the tip party transfer relay in the Service Observing Network Circuit.

3. MULTIPARTY NETWORK - FS4

The multiparty network shown in FS4 is a resistor-inductor network arranged to concentrate ten multiparty leads (PY-) from the Primary Bus Circuit to two multiparty leads (NPY and PPY) to the Identifier through the identifier connector relays. The (P-) inductors provide a low impedance reactive termination for the (PY-) leads from the Primary Bus Circuit. This termination maintains the output signal within acceptable limits regardless of the number of networks connected to one (PY-) lead in the Primary Bus Circuit. The (PY-) resistors are provided to simulate the same output impedance and signal attenuation as that of the secondary network. The multiparty network is provided only in offices having lines with four or more parties (Option 3).

4. IDENTIFIER CONNECTOR - FS5

The TH(A-D), H(A-D), T(A-D), and U(A-D) identifier connector relays shown in FS5 operate from resistance battery in the Identifier to ground in the Identifier. The office steering relays in the Identifier place battery on the OTH-, OH-, OT-, and OU- leads of the particular office it wishes to identify in. The digit steering control relays in the Identifier connect ground to either the TH, H, T, or U lead, depending on the digit group it wishes to scan. Operation of the TH(A-D), H(A-D), T(A-D), and U(A-D) relays connect the THN (0-9) and THP(0-9), HN(0-9) and HP(0-9), TN(0-9), and TP(0-9), and UN(0-9) and UP(0-9) leads, respectively, to the N(0-9) and P(0-9) leads to the Identifier. Operation of the THD or HD relays also connects the NPY and PPY leads from the multiparty network to the NPY and PPY leads to the Identifier when Option 3 is provided.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.1 None

2. FUNCTIONAL DESIGNATIONS

Relay	Meaning	Main Function
TH(A-D)	Thousands(A-D)	Connect thousands outputs to Identifier
H(A-D)	Hundreds(A-D)	Connect hundreds outputs to Identifier
T(A-D)	Tens(A-D)	Connect tens outputs to Identifier
U(A-D)	Units(A-D)	Connect units outputs to Identifier
TP(0-19)	Tip Party Transfer	Connect Secondary Network input leads to either the tip or ring primary bus field.

3. FUNCTIONS

3.1 To provide means for connecting the secondary network input leads to either the tip or ring bus field of the Number Network and Primary Bus Circuit upon receipt of a party indication signal from the Identifier Circuit.

3.2 To translate a 5800 cycle identification signal appearing on 2 of 200 input leads from the tip or ring bus field of the Number Network and Primary Bus Circuit to a signal on one in each of four groups of 10 outputs to the Identifier Circuit.

3.3 To provide means for connecting its thousands, hundreds, tens, and units output leads to the Identifier in sequential order.

3.4 To concentrate 10 multiparty input leads from the Number Network and Primary Bus Circuit to 2 Multiparty output leads to the Identifier Circuit.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet the connecting information thereon is to be followed.

4.1 Number Network and Primary Bus Circuit - SD-95813-01

4.2 Identifier Circuit - SD-95810-01

4.3 Miscellaneous Circuit For Identifier Frame - SD-95819-01

4.4 Service Observing Network Circuit - SD-95829-01

5. ALARM INFORMATION

5.1 None

6. MANUFACTURING TEST REQUIREMENTS

6.1 None

7. TAKING EQUIPMENT OUT OF SERVICE

7.1 General precautions - when working on the identifier connector dry reed relay contacts a low-impedance 528-type head set should never be used. A high-impedance head set, such as the 509-type, should be used for testing these contacts. If any other device is used, it should not draw current in excess of 0.5 ampere, and preferably not in excess of 0.1 ampere.

7.2 Before testing relays (TP-), the (MB) relay in identifier 0 should be blocked nonoperated, then both identifiers should be made busy by inserting plugs in the I-B jacks in the misc. ckt. for trouble ticketer frame. Failure to block relay (MB) will result in a "Both identifiers made busy" alarm.

Caution: The above should be done only in periods of light traffic, as the automatic identification facility is taken out of service and all traffic must be operator identified while both identifiers are made busy.

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DEPT. 2335-WLW-FBB-AE