CIRCUIT DESCRIPTION

CD-65942-01
ISSUE 3B
APPENDIX 2D
DWG ISSUE 8D

PBX SYSTEMS
NO. 756A
AUXILIARY RELAY CIRCUIT
FOR DIRECT STATION SELECTION
FROM STATIONS

CHANGES

D. Description of Changes

D.1 The rating of this circuit is changed from AT&TCo Standard to A&M Only.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 3224-WVS-RVL

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PBX SYSTEMS
NO. 756A
AUXILIARY RELAY CIRCUIT
FOR DIRECT STATION SELECTION
FROM STATIONS

CHANGES

B. Changes in Apparatus

B.1

Superseded	Superseded By
K- Relay AK4, Fig. 3, X Option	K- Relay AK49, Fig. 3, W Option

D. Description of Changes

D.1 On sheets 2, 3, 5, 7 and 8, Option X is designated and rated Manufacture Discontinued. Option W is added to provide a new relay code for relay K- whereby all of the contacts in the operate and holding paths to line relay L in the register are EMB. This change eliminates the possibility of momentarily opening the circuit path long enough to falsely release relay L in the register under marginal conditions.

D.2 On sheets 2 and 3, wiring option V is added to provide lead K as a locking path to ground for operated K- relays. This change reduces the probability of call blocking and contact arcing when the DSS key is operated momentarily and restored to normal before the call is completed.

D.3 On sheet 2, the working limits information is clarified by adding a reference to relay SC and equipment note 201 is removed.

D.4 On sheet 1, the title is changed to delete references to No. 759A Dial Communications System which was re-designated Switching System No. 400.

D.5 On sheet 6, SC1 and SC2 are revised to indicate that the DSS key should be held operated until dial tone is removed and to make minor additions and corrections.

D.6 On sheets 8, 9 and 10, CAD Figs. 8 and 9 for 759A are deleted, CAD Figs. 3 and 4 are rated "A&M Only" and replaced by new CAD Figs. 8 and 9 respectively. Wiring of diodes is revised to eliminate criss-crossing.

D.7 On sheets 8, 9 and 10, CAD Figs. 1, 5, 6 and 7, option V is added.

F. Changes in CD Section

F.1 Under SECTION I - GENERAL DESCRIPTION, 1. GENERAL METHOD OF OPERATION, change parapgraph 1.01 to read:

1.01 The purpose of this circuit is to provide a means whereby a station arranged for direct station selection may originate a call by lifting the handset, listening for dial tone and operating a key corresponding to the number of the station being called until dial tone is removed.

F.2 Under SECTION II - DETAILED DESCRIPTION, 1. ESTABLISHING A DIRECT STATION SELECTION CALL, change paragraph 1.04 to read:

1.04 (d) Prepares its own locking path to ground under control of relay PRO,1.

F.3 Change paragraph 1.06 to add:

1.06 (e) Completes the locking path to ground for operated K- relays.

F.4 Change paragraph 1.10 to read:

1.10 When relay PRO,1 releases, the locking path for operated K- relays is opened, the associated relays DSCO,1 and SC- release which removes ground from leads T- and U- to the register.

F.5 Add paragraph 1.14 as follows:

1.14 When dial tone is removed, the DSS key is restored to normal which releases the K- relay.

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F.6 Under SECTION III - REFERENCE DATA, 1. WORKING LIMITS, change paragraph 1.01 to read:

1.01 Lines

The maximum resistance of the circuit path for satisfactory operation of relay SC- is 125 ohms.

F.7 Under SECTION IV - CONNECTING CIRCUITS, change paragraph 4.01 to delete:

4.01 (a) No. 759A Line, Link and Connector Circuit - SD-66744-01.

(b) No. 759A Dial Pulse Register Circuit - SD-66775-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

(WECo 2120HW-RHB-WHK)
DEPT 5337-LAH

PBX SYSTEMS
NO. 759A DIAL COMMUNICATION SYSTEM
AND NO. 756A
AUXILIARY RELAY CIRCUIT
FOR DIRECT STATION SELECTION
FROM STATIONS

TABLE OF CONTENTS

SECTION I - GENERAL DESCRIPTION

1. GENERAL METHOD OF OPERATION

1.01 The purpose of this circuit is to provide a means whereby a station arranged for direct station selection may originate a call by lifting the handset, listening for dial tone, and momentarily operating a key corresponding to the number of the station or trunk being called.

1.02 Each line arranged for direct station selection will have a relay K and a relay SC associated with it.

1.03 The telephone set, in addition to the usual dial, will be equipped with a DSS key for each station or trunk it is desired to reach by this method. Each key will be wired to reach a particular two digit directory number by appropriate connections of diodes T and U.

1.04 The PBX switching equipment is arranged for direct station selection by stations by associating relays RC, PR, and DSC with each dial pulse register.

1.05 To originate a call by direct station selection, the handset should be lifted from its cradle and the PBX switching equipment will connect a dial pulse register to the line in the usual manner.

1.06 After dial tone is heard, a DSS key should be operated. The key, in operating, will operate relay K which, in operating, will signal the register over the tip conductor that a DSS call is being originated.

1.07 The register will then operate relay SC over the tip conductor. Relay SC, in operating, will connect through the tens and units digit leads to the register.

1.08 The tens and units digit leads corresponding to the operated key will be grounded and operate the appropriate tens and units digit register relays in the register.

1.09 Relay SC, in operating, will also signal the register that the digit information is being passed and it should call the marker to complete the connection in the usual manner.

1.10 When relay K operates, relay RC, associated with the connected register, will release allowing relay PR to operate which operates relay SC over the tip conductor and relay DSC in the local circuit.

1.11 Relays PR and DSC for both registers are interwired so that only relays PR and DSC associated with one register may be operated at one time. The purpose of this is to prevent interference between two simultaneous DSS calls.

SECTION II - DETAILED DESCRIPTION

1. ESTABLISHING A DIRECT STATION SELECTION CALL

1.01 When a station equipped for DSS removes the handset to originate a call, the station switchhook contacts complete the operate path of the associated line relay in the line circuit and the marker sets up a dial tone connection to the register.

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1.02 When the marker functions to operate register hold magnets HM8 and HM9, both relay L in the register and relay RCO,1 will operate under the control of relays K and PRO,1.

1.03 After hearing dial tone the associated DSS key for the called station should be depressed. This key in operating grounds the associated lead T and U for the called station and operates relay K.

1.04 Relay K operated:

(a) Transfers the winding of relay L in the register to the tip side of the station telephone set to provide a holding path for relay K.

(b) Removes battery from relay RCO,1 thus releasing it.

(c) Prepares the operate path for relay SC.

1.05 With relay RCO,1 released and relay ON in the register operated battery on lead PR operates relay PRO,1.

1.06 Relay PRO,1 operated:

(a) Connects positive 48 volt battery to the tip side of the line under control of relay K and diode SC which operates relay SC.

(b) Opens the operating path of relay RCO,1.

(c) Extends register ground under control of relay PRO,1 to operate relay DSCO,1.

(d) Opens the operating path of relay PRO,1 associated with the other register to prevent both relays DSCO,1 from operating simultaneously, thus allowing only one call to be processed by the register if two stations originate a call at the same time.

1.07 Relay SC, in operating, extends the ground on the tens and units leads to contacts of relay DSCO,1.

1.08 Relay DSCO,1 operated:

(a) Ground leads T- and U- to operate the associated relays TD- and UD- in the register.

(b) Under control of relays DSCO,1 and SC extends ground over lead UD2 to operate relay UD in the register.

(c) Under the control of relay DSCO,1 prevents the operation of relay PRO,1 associated with the other register.

1.09 Relay UD, in the register, operated, operates relay DC in the register and opens the operating circuit of relay PRO,1 thus releasing it.

1.10 When relay PRO,1 releases, the associated relays DSCO,1 and SC release which removes ground from leads T- and U- to the register.

1.11 When relays PRO,1 and DSCO,1 release they prepare an operating path for the associated PRO,1 in the other register.

1.12 Relay PRO,1 released, restores the operating path for relay RCO,1.

1.13 When relay DC in the register operates, the marker is called to complete the call in the regular manner.

2. MISCELLANEOUS

2.01 When relay K operates, relay L in the register will be held operated under control of relay K.

2.02 Holding ground for relay L is from relay K on lead R, through the telephone set, to lead T, and crosses to lead R towards the register which will confine unbalance on tip and ring conductors and minimizes crosstalk between relay K and switching equipment.

2.03 If negative battery was used in operating relay SC, station interference would occur. Accidental operation of a DSS key or a legitimate call being made at the same time would result in incorrect tens and units recorded in the register giving the wrong number; therefore positive battery is used.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 Lines

The maximum external loop resistance for satisfactory operation of relay SC is 125 ohms.

1.02 Voltage Limits

Minimum	Maximum
-45	-52
+40	+60

2. FUNCTIONAL DESIGNATIONS

2.01 The functional meaning for the relays of the auxiliary relay circuit are given in the following table.

Designation	Meaning
DSCO,1	Direct Station Connector
K	Key
PRO,1	Priority
RCO,1	Register Control
SC	Station Connector

3. FUNCTIONS

3.01 The auxiliary relay circuit is designed to perform the following functions:

(a) To connect a calling station line to a dial pulse register and permit a station to complete a call by direct station selection.

(b) To extend ground over the units dialed leads to operate the units dialed relay UD in the register.

(c) To extend a ground on the tens and units leads to the register circuit to operate associated tens dialed and units digit dialed relays.

(d) To give priority to a register and allow only one direct station selection type of call to be processed in the PBX at one time.

(e) To prevent interference between stations originating direct station selection calls simultaneously.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a keysheet, the connecting information thereon is to be followed:

BELL TELEPHONE LABORATORIES, INCORPORATED

(WESCO 2123HW-MED-WHK)
DEPT 6337-LAH

(a) No. 759A Line, Link and Connector Circuit - SD-66744-01.

(b) No. 759A Dial Pulse Register Circuit - SD-66775-01.

(c) No. 756A Line, Link and Marker Circuit - SD-65741-01.

(d) No. 756A Dial Pulse Register Circuit - SD-65742-01.

5. MANUFACTURING TEST REQUIREMENTS

5.01 The auxiliary relay circuit shall be capable of performing all the functions specified in this circuit description, and meeting all the requirements of the Circuit Requirement table.

6. ALARM INFORMATION

6.01 Fuse Alarm:

(a) An operated fuse supplying the auxiliary relay circuit is indicated by an alarm at the plant service center, if alarm transmitting features are provided, and in any case, by a visual signal locally. Replace the operated fuse to silence the alarm and extinguished the visual alarm signal.

SECTION IV - REASONS FOR REISSUE

B. Changes in Apparatus

B.1 Added

Resistance lamp 13N, App. Fig. 1, Option Y

D. Description of Changes

D.1 Option Z is designated and rated Manufacture Discontinued. Option Y is added to limit the excessive current from the +48 volt supply caused by a trouble ground on the tip side of a station line when connected to a register when using Station D.S.S.

D.2 The +48 volt fuse shown in the 756A PBX Alarm Transfer and Test Circuit is changed from a 70E type to a 70P type (slow blow) concurrent with this issue.

D.3 Circuit Notes 101 and 104 are changed to reflect the added options.