

6

COMMON SYSTEMS
DUAL CHANNEL RECEIVER CIRCUIT
700 AND 1100 CYCLES PER SECOND

CHANGES

D. Description of Changes

D.1 A change in Note 102 is made to permit
the use of this circuit in the Panel
System.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5241-RAM-RBC--JNC

COMMON SYSTEMS
DUAL CHANNEL RECEIVER CIRCUIT
700 AND 1100 CYCLES PER SECOND

CHANGES

D. Description of Changes

D.1 Addition of CAD Fig. 6 to provide usage information with the No. 4 overseas operator bridged access intraoffice trunk circuit.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5242-RRK-RBC-JF

COMMON SYSTEMS
DUAL CHANNEL RECEIVER CIRCUIT
700 AND 1100 CYCLES PER SECOND

CHANGES

B. Changes in Apparatus

| <u>B.1</u> | <u>Superseded</u> | <u>Superseded By</u> |
|------------|-------------------|----------------------|
| | <u>Capacitor</u> | <u>Capacitor</u> |
| | T A1, KS-14477,25 | S A1, 601C |
| | T A2, KS-14477,25 | S A2, 601C |

D. Description of Changes

D.1 Component assemblies CA1 and CA2, ED-94859-()642, are designated option T and rated "Mfr Disc." and are replaced by ED-94859-()G134 designated Standard option S.

D.1.1 This is necessary because the codes of capacitors A1 and A2 are changed.

D.2 Note 102 is changed to specify the use of this circuit in the No. 1 Crossbar System.

F. Changes in CD Section

F.1 Under CONNECTING CIRCUITS add:

3.6 No. 1 Crossbar Trunk Circuit (Typical), SD-27814-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5611-MEL-MFF-PB

COMMON SYSTEMS
 DUAL CHANNEL RECEIVER CIRCUIT
 700 AND 1100 CYCLES PER SECOND

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| TABLE OF CONTENTS | PAGE |
| <u>SECTION I - GENERAL DESCRIPTION</u> | 1 |
| 1. PURPOSE OF CIRCUIT | 1 |
| 2. GENERAL SEQUENCE OF CIRCUIT OPERATION | 1 |
| <u>SECTION II - DETAILED DESCRIPTION</u> | 1 |
| 1. GENERAL | 1 |
| 2. OPERATION OF RELAY (P1) | 1 |
| 3. OPERATION OF RELAY (P2) | 1 |
| 4. AMPLIFIER STAGES | 1 |
| 5. SWITCHING STAGES | 2 |
| <u>SECTION III - REFERENCE DATA</u> | 2 |
| 1. FUNCTIONS | 2 |
| 2. WORKING LIMITS | 2 |
| 3. CONNECTING CIRCUITS | 2 |
| 4. CIRCUIT ADJUSTMENT | 2 |
| <u>SECTION IV - REASONS FOR REISSUE</u> | 3 |

SECTION II - DETAILED DESCRIPTION

1. GENERAL

This circuit is enabled by the connected circuit. The ac signals between -16 dbm and -3 dbm are received and cause the circuit to operate in accordance with the following table:

| RECEIVED AC SIGNALS | CIRCUIT CONDITION | CIRCUIT ACTION |
|---------------------|-------------------|-----------------------------|
| None | Idle | None |
| 700 and 1100 cps | Coin Collect | Grounds leads "P1" and "P2" |
| 700 cps | Rering | Grounds lead "P1" |
| 1100 cps | Coin Return | Grounds lead "P2" |

When the AC signals are removed relays P1 and/or P2 release.

2. OPERATION OF RELAY P1

When this circuit is enabled by the connected circuit, and a 700 cps signal is received, relay P1 will operate. The 700 cps signal is attenuated approximately 3 db by filter F1; frequencies near 1100 cps are attenuated approximately 35 db. The filter output signal is amplified by transistor amplifier A1 to drive transistor B1 into saturation. When transistor B1 is saturated its collector voltage will increase and relay P1 will operate. When relay P1 operates it will ground lead "P1".

3. OPERATION OF RELAY P2

When this circuit is enabled by the connected circuit and a 1100 cps signal is received, relay P2 will operate. The 1100 cps signal is attenuated approximately 3 db by filter F2; frequencies near 700 cps are attenuated approximately 35 db. The filter output signal is amplified by the transistor amplifier A2 to drive transistor B2 into saturation. When transistor B2 is saturated its collector voltage will increase and relay P2 will operate. When relay P2 operates it will ground lead "P2".

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

The purpose of this circuit is to cause the connected circuit to collect coins, return coins, or rering when 700 and 1100 cps, 1100 cps, or 700 cps signals, respectively, are received.

2. GENERAL SEQUENCE OF CIRCUIT OPERATION

When the operator operates a coin collect, coin return, or ringing key at the switchboard the connected circuit will enable this circuit. This circuit will receive 700 and 1100 cps, 1100 cps, or 700 cps signals, which will cause relays P1 and P2, relay P2 alone, or relay P1 alone to operate respectively.

4. AMPLIFIER STAGES

The amplifier for the 700 cycle channel consists of transistor A1, resistors A1, B1, C1, D1, and E1; and capacitors A1 and B1. The amplifier for the 1100 cycle channel consists of transistor A2; resistors A2, B2, C2, D2, and E2; and capacitors A2 and B2. Varistors A, B, C, and D prevent transient surges from adversely affecting the 700 and 1100 cps channels. Since the 700 cycle amplifier is the same as the 1100 cycle amplifier, only it will be described in detail. Resistor D1 is a voltage divider that provides a -24 volt supply. Resistors A1, B1, and C1 establish the base to emitter operating bias and resistor E1 is the load resistor. Capacitor A1 is a bypass capacitor, and capacitor B1 is a coupling capacitor.

5. SWITCHING STAGES

The switching stage for the 700 cycle channel consists of transistor B1, relay P1, diode A1, capacitor C1, potentiometer A1, thermistor A1, and resistors F1, H1, and G1. The switching stage for the 1100 cycle channel consists of transistor B2, relay P2, diode A2, capacitor C2, potentiometer A2, thermistor A2 and resistors F2, H2, and G2.

Since the 700 and 1100 cycle switching stages are the same, only the 700 cycle stage will be described in detail.

Resistor F1 is a voltage divider which provides -24 volts to operate relay P1. Relay P1 provides the required load resistance for transistor B1. Thermistor A1 and potentiometer A1 together are part of the base biasing network. They also accomplish two other functions; the thermistor adjusts for variations in temperature, and the potentiometer may be adjusted for variations in transistor current gains.

Resistor H1 is used to produce a voltage which will alternately forward bias and back bias diode A1. During the negative swing of the amplified signal diode A1 is forward biased. Capacitor C1 will then charge to a negative voltage, which will forward bias the transistor causing it to saturate. During the positive swing of the amplified signal diode A1 is back biased, and before capacitor C1 is discharged sufficiently to cut-off the transistor, diode A1 is again forward biased. The emitter resistance G1 provides a reverse bias for transistor B1 to prevent thermal runaway.

SECTION III - REFERENCE DATA1. FUNCTIONS

- 1.1 To provide the required operating potentials when lead "A" is connected to lead "B".
- 1.2 To operate relay P1 when a -16 dbm 700 signal is applied to the input jack IN.
- 1.3 To operate relay P2 when a -16 dbm 1100 cps signal is applied to the input jack IN.
- 1.4 To ground lead "P1" when relay P1 operates.
- 1.5 To ground lead "P2" when relay P2 operates.

2. WORKING LIMITS

- 2.1 The maximum input signal will be -3 dbm.
- 2.2 The minimum input signal will be -16 dbm.

3. CONNECTING CIRCUITS

- 3.1 Trunk Circuit (Typical) - SD-26099-01.
- 3.2 Trunk Circuit (Typical) - SD-26123-01.
- 3.3 4-Wire Terminating Circuit (Typical) - SD-96463-01.
- 3.4 Emergency Line Circuit - SD-26128-01.
- 3.5 Crossbar Tandem Office Trunk Automatic Test Circuit - SD-25960-01.

4. CIRCUIT ADJUSTMENT4.1 General

The overall sensitivity of the circuit shall be controlled by adjusting potentiometers A1 and A2.

4.2 Adjusting the 700 Cycle Channel

With a -16 dbm 700 cycle input signal at jack IN the collector voltage of transistor B1, measured between TP1 and circuit ground, shall be set in accordance with Information Notes 302 and 303 by adjusting potentiometer A1.