Western Electric Company, Inc.,
Engineering Department,
New York.

METHOD OF OPERATION

LINE CIRCUIT

Long PBX Extension Lines And Long PBX Trunks To Central Office - Arranged To extend Dialing Range Equipment Located In Intermediate Central Office - Panel Machine Switching System

This appendix was prepared from issue 5 of drawing T-502985.

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 None.

B. CHANGES IN APPARATUS

B.1 Relay E6113 added.

B.2 1/2 No. 54-B repeating coil was 1/2 No. 25-S or 1 No. 26-H repeating coil.

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 None.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Battery was formerly shown connected to the outer end of the 45 ohm winding of the E1461 relay. Battery is now shown connected to the outer end of the 45 ohm winding of the E1461 relay through the 650 ohm and 1.8 ohm windings of the E6113 relay in series, the 650 ohm winding being normally short-circuited to battery on the break contact of the E6113 relay.

DEVELOPMENT

1. PURPOSE OF CIRCUIT

1.1 No change.

2. WORKING LIMITS

2.1 No change.

OPERATION

3. PRINCIPAL FUNCTIONS

3.1 No change.

4. CONNECTING CIRCUITS

4.1 Impulse repeater alarm circuit added.

DETAILED DESCRIPTION

Sentence 4 of paragraph 5 shall be replaced by the following sentences:-

5. When the plug of the front cord is inserted in the jack and the talking key operated machine ringing is tripped, the 186-A relay and 178-BN relay are released and the E1461 relay is operated, through the normal contact and primary winding of E6113 relay. The E6113 relay, however, does not operate under normal circuit conditions.

Paragraph 8 shall be added as follows:-

8. The E6113 relay protects the E1461 relay against excessive heating in case the "R" lead should become grounded. The 650 ohm winding of the E6113 relay is normally short-circuited and the relay is adjusted to non-operate on its 1.8 ohm winding when the normal transmitter battery current is flowing. If the current flow exceeds the safe maximum current for the E1461 relay the E6113 relay operates removing the shunt from the 650 ohm winding and also operating the fuse alarm circuit.

CIRCUIT REQUIREMENTS

THE READJUST REQUIREMENTS SHOWN BELOW ARE FOR MAINTENANCE USE ONLY

MECHANICAL REQUIREMENTS

Relay	Spec. Number	Sketch Number	Cont. Pres.	Arm. Travel
E6113	X-70037	2/1	10	.015

DIRECT CURRENT FLOW REQUIREMENTS

Test Wdg.	Test for	Test Amps.	Read. Amps.
P	O	.283	.269
	NO	.172	.182
P/S	O	.014	.013

CIRCUIT PREPARATION

TEST CLIP DATA

Block	Conn. Grd.	Test Set Prep.	Test Note
(178-BN) O	RU(E6113)	G	1
(178-BN) O	RU(E6113)	G	1
(178-BN) O	RU(E6113)	G	2

TEST NOTES:

1. Connect direct battery to RL winding lug of the E6113 relay.

2. Insulate spring 1 of the E6113 relay.

ENG. -REK-IG CHK'D-LAK-CHMcC APPROVED-W. E. VIOL-CWP

Western Electric Company, Inc.,
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Issue 1 - ET-502985
December 26, 1922.

METHOD OF OPERATION
LINE CIRCUIT

Long P.B.X. Extension Line -- And Long P.B.X. Trunks -- To Central office -- Arranged to Extend Dialing Range -- Equipment Located in Intermediate Central office -- Power Driven Machine Switching System.

This Method of Operation was prepared from issue 1 of drawing T-502985.

DEVELOPMENT

1. PURPOSE OF CIRCUIT This circuit is used for increasing the range of dialing transmission and supervision in P.B.X. line and trunk circuits.

2. WORKING LIMITS This circuit has an external circuit loop of maximum 950 ohms.

3. PRINCIPAL FUNCTIONS The principal functions of this circuit are as follows:

3.1 To disconnect the repeating coil from the circuit and to complete the metallic circuit during ringing.

3.2 To relay dial impulses.

3.3 To provide supervision on the line.

4. CONNECTING CIRCUITS This circuit is used with:

4.1 P.B.X. line and cord circuits.

4.2 Central office line cord and trunk circuits.

DETAILED DESCRIPTION

5. When this circuit is used to increase the dialing range of a trunk between a mechanical office and a P.B.X. and the terminals of this line are seized by a final selector, ringing current from the incoming selector operates the 186-A relay. The 186-A relay operated operates the 178-BN relay. The 178-BN relay operated closes the tip of the P.B.X. to ground and the ring of the line through to the P.B.X. switchboard during the ringing period causing a relay to operate and the trunk line lamp to light. When the plug of the front cord is inserted in the jack and the talking key operated, machine ringing is tripped, the 186-A relay and the 178-BN relay are released and the E1461 relay is operated. The operation of the E1461 relay closes the circuit through the repeating coil.

6. When this circuit is used as a long line extension the operation of the ringing key at the P.B.X. switchboard operates the 186-A relay and causes the circuit to function as described in paragraph 5 except that the tip of the line is connected through instead of being grounded. When the receiver is removed from the switchhook the E1461 relay operates closing the talking circuit.

7. When the dial is operated on an incoming call from either an extension station or P.B.X. station the E1461 relay operates and releases under control of the dial pulses. The 178-BN relay is made slow to operate preventing its operation should the 186-A relay be operated during the dialing period.

CIRCUIT REQUIREMENTS

Issue 1 BT-502985

December 26, 1922.

READJUST VALUES ARE FOR
MAINTENANCE PURPOSES ONLY

SEE SPECIFICATION X-70087 FOR EXPLANATION OF FORM.

APPARATUS SPEC.NO. APPARATUS SPEC.NO. APPARATUS SPEC.NO.

RELAYS		MECHANICAL REQ.					DIRECT CURRENT FLOW REQ.					CIRCUIT PREPARATION		TEST SET	SEE TEST NOTE	REMARKS
CODE	DESIG.	SPEC. NUMBER	SKETCH NUMBER	CONT. PRESS.	ARM. TRVL	TEST WDG.	TEST FOR	AFTER SOAK	TEST AMPS.	READJ AMPS.	S.S. POS.	BLOCK	TEST CLIP DATA CONN.BAT.	CONN.GRD.			
178-BN	-	X-70069	F	-	-	O			.032	.030				2(186-A)	G		A
						NO			.019	.020				2(186-A)	G		A
186-A	-	X-70097	-	-	-	O			.0083	.0075			Wdg(186-A)	Wdg(186-A)	B/G		B
						NO			.0038	.004			Wdg(186-A)	Wdg(186-A)	B/G		B
E1461	-	X-70037	1	Spl.	.015	O			.030	.0285			LL(E1461)	RL(E1461)	M	1	C
						NO			.020	.021			LL(E1461)	RL(E1461)	M		C

TEST NOTE:

1. The LT spring shall have at least 20 grams tension against the spoolhead. No definite tensions specified for the other springs. The armature need not touch the core when operated.

REMARKS:

A Req. to insure A.C. control.
B Req. to insure A.C. operation.
C. Req. to insure fast operation.

ENG.--DFJ-MM. CHK'D.--HTW-WHL. APPROVED: J.L. DOW, G.M.L.