

CROSSBAR SYSTEMS  
NO. 3  
TRAFFIC AND PLANT REGISTER  
CIRCUIT

## CHANGES

B. Changes in ApparatusB.1 Added

PLA - AG22 Relay, App Fig. 5

PLA - 185A Network, App Fig. 5

PLA1 - 185A Network, App Fig. 5

D. Description of Changes

- D.1 FS4 has been revised to show the addition of S option.
- D.2 Circuit Notes 101, 102, 104, and 105 have been revised.
- D.3 Cross-Connection Note 401 is rated Mfr Disc. and replaced by Note 402.
- D.4 Circuit requirements for the PLA relay have been added.
- D.5 CADs 1 and 2 have been revised.
- D.6 CADs 3 and 4 have been rated Mfr Disc.
- D.7 CADs 5 through 11 have been added.

F. Changes in CD Sections

- F.1 In SECTION II, change 3.02 to read:  
3.02 Relays PL and PLA are fast-operated and slow-release and lengthens the short incoming pulse to a value greater than the maximum operate time of the register used for traffic registration. The open-circuited secondary winding permits relay PL and PLA to be fast operating. When the ground pulse from the operating circuit is removed relay PL or PLA will

start to release. However, the secondary winding, which is short-circuited by a make-contact of PL or PLA increases the release time to approximately 144 milliseconds minimum. Relays PL and PLA require a maximum pulse of 6.7 milliseconds to guarantee register operation.

F.2 In SECTION II, 5.02, change the reference to "... provided per office ..." to read "... provided per marker ..."

F.3 In SECTION II, change 5.03 to read:

5.03 One register for DP calls and one register for TT calls are provided per marker. These registers are scored by a marker when it establishes a channel between a calling customer line and a trunk of any type on the trunk link frame. One register per marker is also provided for a total of all originating calls.

F.4 In SECTION II, 5.05, change the reference to "... provided per office ..." to read "... provided per marker ..."

F.5 In SECTION II, 5.08, change the reference to "One register per office ..." to read "One register per marker ..."

F.6 In SECTION II, 5.09, change the reference to "One register per office ..." to read "One register per marker ..."

F.7 In SECTION II, 5.10, change the reference to "One register per office ..." to read "One register per marker ..."

F.8 In SECTION II, 6.02, change the reference to "One register per office is provided for total office overflow ..." to read "One register per marker is provided for office overflow ..."

F.9 In SECTION III, 2.01 Relays, add PLA under Designation and Pulse Lengthening Auxiliary under Meaning.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5245-GFC

WE DEPT 25820-RET-GWC-BT



4

CROSSBAR SYSTEMS  
NO. 3  
TRAFFIC AND PLANT REGISTER  
CIRCUIT

TABLE OF CONTENTS	PAGE	TABLE OF CONTENTS (Cont)	PAGE
<u>SECTION I - GENERAL DESCRIPTION.</u> . . .	1	TOTAL MATCHING LOSS. . . . .	3
<u>1. PURPOSE OF CIRCUIT</u> . . . . .	1	ORIGINATING REGISTER BUSY. . . . .	3
<u>SECTION II - DETAILED DESCRIPTION.</u> . .	2	<u>7. PLANT REGISTERS.</u> . . . . .	3
<u>1. TRAFFIC REGISTERS AND MAGNETIC COUNTER CIRCUIT.</u> . . . . .	2	INCOMING REGISTER LINK RELEASE . .	3
<u>2. PLANT REGISTER CIRCUIT</u> . . . . .	2	MUTILATED DIGIT. . . . .	3
<u>3. PULSE LENGTHENING CIRCUIT.</u> . . . .	2	VERIFICATION TEST. . . . .	3
<u>4. PULSE HOLDING CIRCUIT.</u> . . . . .	2	PERMANENT SIGNAL GROUND. . . . .	3
<u>5. PEG COUNT REGISTERS.</u> . . . . .	2	GROUND TEST FAILURE. . . . .	4
OUTGOING TRUNK GROUP . . . . .	2	DIAL TONE CALL FAILURE . . . . .	4
MARKER TOTAL SEIZURES. . . . .	2	COMPLETING TROUBLE RECORD FIRST TRIAL FAILURE. . . . .	4
TOTAL ORIGINATING. . . . .	2	COMPLETING SECOND TRIAL FAILURE. .	4
INCOMING CALLS TO BUSY LINES . . . .	2	AUTOMATIC IDENTIFICATION FAILURE ON ANI CALL AFTER SECOND TRIAL .	4
OUTGOING SENDERS . . . . .	2	SENDER TIME OUT OR TRUNK GUARD TEST FAILURE . . . . .	4
PERMANENT SIGNAL . . . . .	2	<u>SECTION III - REFERENCE DATA</u> . . . .	4
ALL INTERCEPT. . . . .	2	<u>1. WORKING LIMITS</u> . . . . .	4
TOTAL CHANNEL. . . . .	2	<u>2. FUNCTIONAL DESIGNATIONS.</u> . . . .	4
SAMPLE CHANNEL . . . . .	3	<u>3. FUNCTIONS.</u> . . . . .	4
ANI PEG COUNT. . . . .	3	<u>4. CONNECTING CIRCUITS.</u> . . . . .	4
ABANDON PARTIAL DIAL . . . . .	3	<u>5. MANUFACTURING TESTING REQUIREMENTS.</u> . . . . .	4
INCOMING REGISTER (DIAL PULSE AND MULTIFREQUENCY). . . . .	3	<u>SECTION I - GENERAL DESCRIPTION</u>	
<u>6. OVERFLOW REGISTERS</u> . . . . .	3	<u>1. PURPOSE OF CIRCUIT</u>	
OUTGOING TRUNK GROUPS. . . . .	3	1.01 This circuit provides plant registers and traffic registers to record usage peg counts, failure peg counts, and overflow counts for the common control circuits in the crossbar No. 3 office such as markers, originating registers, and incoming registers. These counts serve both to guide maintenance efforts and also to indicate the overall performance of an office	
TOTAL OFFICE . . . . .	3		
INCOMING MATCHING LOSS . . . . .	3		
ALL SENDERS BUSY . . . . .	3		

SECTION II - DETAILED DESCRIPTION1. TRAFFIC REGISTER AND MAGNETIC COUNTER CIRCUIT

1.01 The FS1 and FS2 provide 4-wheel and 5-wheel registers, respectively, which advance one count each time a connecting circuit applies a ground pulse of a minimum 25 milliseconds duration.

1.02 The traffic registers and magnetic counters may be cross connected to either a PC or OF punching for either peg count or overflow registration, respectively.

2. PLANT REGISTER CIRCUIT - FS3

2.01 The FS3 provides a 4-wheel register which advances one count each time a connecting circuit applies a ground pulse of minimum 25 milliseconds duration.

3. PULSE LENGTHENING CIRCUIT - FS4

3.01 Whenever a traffic register is to be operated by a ground pulse signal of less than 25 milliseconds in duration, this figure must be used.

3.02 Relay PL is fast-operated and slow-release and lengthens the short incoming pulse to a value greater than the maximum operate time of the plant registers. The open circuited secondary winding permits relay PL to be fast operating. When the ground pulse from the operating circuit is removed relay PL will start to release. However the secondary winding, which is short-circuited by a make-contact of PL, increases the release time to approximately 144 milliseconds minimum. Relay PL requires a minimum pulse of 3.5 milliseconds to guarantee register operation.

4. PULSE HOLDING CIRCUIT - FS5

4.01 The FS5 provides a pulse holding relay PH to reduce multiple scoring on a single link release failure.

5. PEG COUNT REGISTERSOUTGOING TRUNK GROUP

5.01 Registers are furnished and connected as required for each intraoffice, outgoing, revertive call, dial tone, and permanent signal trunk groups. These registers will operate the marker route relays.

MARKER TOTAL SEIZURES

5.02 Registers are provided per office, one for dial tone seizures and one for completing seizures. These registers should score on respective seizures of the marker.

TOTAL ORIGINATING

5.03 One register for DP calls and one register for TT calls is provided per office. These registers are scored by the marker when it establishes a channel between a calling customer line and a trunk of any type on the trunk link frame.

INCOMING CALLS TO BUSY LINE

5.04 One register per office is provided and will be scored by the marker on terminating attempts to busy lines.

OUTGOING SENDERS

5.05 Registers are provided per office, one for dial pulse and one for multi-frequency. These registers are scored by the marker when it selects a respective sender for pulsing.

PERMANENT SIGNAL

5.06 One register per office is provided and will be scored by the marker when it has received a permanent signal from the originating register.

ALL INTERCEPT

5.07 One register per office is provided for all intercept peg counts, these include blank number, trouble and regular intercept, these registers will operate from the marker and score all the terminating calls offered to the intercepting route from the line link frame. This includes calls which find all intercepting trunks busy.

TOTAL CHANNEL

5.08 One register per office is provided and will score when the marker selects a channel between a line switch and trunk switch on originating, terminating, and switched calls including test calls. On intraoffice calls and on calls requiring two trips through the line switch and trunk switch, the register should score twice.

## SAMPLE CHANNEL

5.09 One register per office is provided and will score when the marker sets up a channel over the 0 and 4 link between a line appearance on the line link frame and a trunk of any type on the trunk link frame. This includes originating, terminating and test calls. On intraoffice calls and on calls requiring two channels through the line link and trunk link frames, the register scores twice.

## ANI PEG COUNT

5.10 One register per office is provided and will score whenever the marker receives a line to number translation from the line number translator circuit.

## ABANDONED PARTIAL DIAL

5.11 One register per office is provided for abandoned partial dial, this is a total peg count combining dial pulse and TOUCH-TONE®. This register will be operated by the originating register circuits on calls abandoned after the dialing of one or more digits and before being given a trunk routing.

## INCOMING REGISTER (DIAL PULSE AND MULTIFREQUENCY)

5.12 Registers are provided one per office for incoming dial pulse peg count and one per office for multifrequency peg counts. Traffic registers furnished for these functions will operate from the incoming register circuit, when seized by an incoming trunk. The peg count for total incoming register operation may be obtained by adding the dial pulse and the multifrequency peg counts together.

## 6. OVERFLOW REGISTERS

### OUTGOING TRUNK GROUPS

6.01 Registers are furnished and connected as required for each intraoffice, outgoing, revertive call, dial tone, and permanent signal trunk groups. These registers will operate from the marker route relays.

### TOTAL OFFICE

6.02 One register per office is provided for total office overflow and scores

whenever a customer originated call except a permanent signal does not complete. This register requires the use of the pulse lengthening circuit.

## INCOMING MATCHING LOSS

6.03 One register per office is provided and is operated by the marker on incoming calls in case of failure to match on incoming calls.

## ALL SENDERS BUSY

6.04 One register per office is provided and scores each time a marker fails to find an idle sender in a group.

## TOTAL MATCHING LOSS

6.05 One register per office is provided and is operated by the marker on any seizure encountering an all channels busy condition.

## ORIGINATING REGISTER BUSY

6.06 One register per office is provided and is operated by the alarm circuit when all the originating registers become busy for a minimum of approximately 9.6 to 11.4 seconds.

## 7. PLANT REGISTERS

### INCOMING REGISTER LINK RELEASE

7.01 One register per office is provided and is operated by the marker each time trouble is encountered in the incoming register link.

### MUTILATED DIGIT

7.02 One register per office is provided and pegs each time the marker detects a failure in the number by checking the called number from the register circuit except permanent signal calls.

### VERIFICATION TEST

7.03 One register per office is provided and pegs each time the marker takes a trouble record for nuisance call recording, test frame request, or a service or verification request.

### PERMANENT SIGNAL GROUND

7.04 One register per office is provided and scores each time a marker detects

a permanent signal caused by a trouble condition.

#### GROUND TEST FAILURE

7.05 One register per office is provided and is operated by the marker each time a failure in a loop, ground, or continuity test occurs.

#### DIAL TONE CALL FAILURE

7.06 One register per office is provided and is operated by the marker each time trouble is encountered on a dial tone call except on a condition which would score another register.

#### COMPLETING TROUBLE RECORD FIRST TRIAL FAILURE

7.07 One register per office is provided and is operated by the marker each time trouble is encountered on first trial except on a condition which would score another register.

#### COMPLETING SECOND TRIAL FAILURE

7.08 One register per office is provided and is operated by the marker each time trouble is encountered on second trial except on a condition which would score another register.

#### AUTOMATIC IDENTIFICATION FAILURE ON ANI CALL AFTER SECOND TRIAL

7.09 One register per office is provided and operates from the marker each time for automatic identification failure on ANI calls after each second trial.

#### SENDER TIME OUT OR TRUNK GUARD TEST FAILURE

7.10 One register per office is provided and operates from the sender circuit for each sender time out or trunk guard test failure.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5245-LCB

WE DEPT 355-RET-KLF-MH

### SECTION III - REFERENCE DATA

#### 1. WORKING LIMITS

1.01 None.

#### 2. FUNCTIONAL DESIGNATIONS

##### 2.01 Relays

<u>Designation</u>	<u>Meaning</u>
PH	Pulse Holding
PL	Pulse Lengthening

#### 3. FUNCTIONS

3.01 For Functions of this circuit see SECTIONS I and II.

#### 4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a key-sheet, the connecting information thereon is to be followed.

(a) Marker Circuit - SD-26384-01.

(b) Incoming Register Circuit - SD-26386-01.

(c) Originating Register Circuit - SD-26385-01.

(d) Alarm Circuit - SD-26393-01.

(e) Sender Circuit - SD-26387-01.

#### 5. MANUFACTURING TESTING REQUIREMENTS

5.01 The traffic register and plant register equipment shall be capable of meeting all the requirements of the Circuit Requirements Table.