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STEP-BY-STEP SYSTEMS
NO. 355A OR 35E97
MISCELLANEOUS ALARM CIRCUIT
REGISTER CIRCUIT
FOR TRAFFIC REGISTERS
LOCATED ON RELAY RACKS

Changes

D. Description of Changes

D.1 PEG count and Dial Number Test Count added for Coin Station Test Line Circuit.

F. Changes in CD Sections

F.1 Add under connecting circuits in SECTION III

V A) Coin Station Test Line Circuit SD-1C297-01.

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DEPT 5245-GFC
WECO DEPT8411-RWH-WEA

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STEP-BY-STEP SYSTEMS
NO. 355A OR 35E97
MISCELLANEOUS ALARM CIRCUIT
REGISTER CIRCUIT
FOR TRAFFIC REGISTERS
LOCATED ON RELAY RACKS

CHANGES

B. Changes in Apparatus (Components)

B.1 Added

Relay F - B324 - Fig. 31
Relay F1 - Y326 - Fig. 31
Resistor F1 - KS-8512,L1B, 665 ohms ±2% - Fig. 31
Diode B - 446F - Fig. 31

D. Description of Changes

D.1 Fig. 31 is added to arrange for INWATS overflow measurements needed for new billing scheme of measured rate INWATS service. The overflow measurements will be provided for lines served by Auxiliary Line Circuit for Measured Rate INWATS service, accessed from banks of Rotary Hunting Connectors. One Fig. 31 will be used for each individual INWATS line or for the last line of each hunting group of INWATS lines. Fig. 31 will be activated via leads TM and OS from Connector Bank Multiple Circuit, and it will generate the ground pulses on lead P to score the magnetic counter provided as a part of the Auxiliary Line Circuit. Connection to both of these circuits will be provided via distributing frame. Provision is also made to connect the pulse lead of Fig. 31 to EADAS.

D.2 Notes 102, 104 and 107 are changed to show the use of Fig. 31 in the circuit.

D.3 Note 101(B) is modified to add a fuse for Fig. 31.

D.4 Add Figs. 76 and 77.

F. Changes in Description of Operation

F.1 Add paragraph 21 in SECTION II:

21. OVERFLOW REGISTER RELAY FOR INWATS OVERFLOW MEASUREMENTS - FIG. 31

21.01 Fig. 31 is used when overflow measurements are required for measured rate INWATS lines that are accessed by rotary hunting connectors.

21.02 Leads TM and OS are connected to the H and S connector bank terminals of an individual INWATS line or of the last line in a hunting group of INWATS lines. When such line becomes busy, a busy sleeve ground appears on lead OS. Any connector finding this busy line condition momentarily places battery through a relay on the TM lead operating relay F. This relay locks up in series with F1 which operates. Relay F1 grounds lead P to score magnetic counter of the Auxiliary Line Circuit Arranged for Measured Rate INWATS Service. (The same ground appears on lead P- when required for EADAS.) Relay F1 also short circuits the primary winding of relay F which releases. The release of the F relay releases the F1 which removes ground from lead P (and P-). Diode B is used to prevent activation of relay F due to the surges on the sleeve. The F1 resistor is used to make relay F1 slow in releasing to provide for sufficient duration of the ground pulses on lead P.

F.2 Add under Connecting Circuits in SECTION III:

(vy) Connector Bank Multiple Circuit - SD-32128-01.

(vz) Common Systems - Auxiliary Line Circuit Arranged for Measured Rate INWATS Service - SD-99439-01.

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STEP-BY-STEP SYSTEMS
NO. 355A OR 35E97
MISCELLANEOUS ALARM CIRCUIT
REGISTER CIRCUIT

CHANGES:

B. Changes in Apparatus

B.1 REPLACED	REPLACED BY
R1 MAGNETIC counter KS-16493, L1	R1 MESSAGE REGISTER 19A

CHANGES:

D. Description of Changes

D.1 Connecting information is added to Note 107 to allow connection to:

A.) SD-32513-01, Pretranslator and Pretranslator Connector Circuit

D.2 Connecting information to EADAS shown in Figures 5,6,7,9,11,16,21,22,23,24,25,26,27 and Note 111 added.

D.3 The KS 16493 L-1 MAGNETIC COUNTER is rated MFR. Disc. and the 19A MESSAGE REGISTER is rated STANDARD

D.4 Option ZW on Fig's 8, 9 and ckt Note 110 are added to provide the direct Battery required by EADAS when used with TRAFFIC REGISTERS having controlled Battery.

D.4 Changed Fig's. 66, 67, 71, 72 & 75.

F. Changes in CD Sections

F.1 Under 3, Connecting Circuits, Section III, add:
(VW) Pretranslator and Pretranslator Connector Circuit, SD-32513-01

(VX) EADAS Traffic Data Converter SD-3B213-01, or read Terminal SD-3B214-01

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NO. 355A OR 35E97
MISCELLANEOUS ALARM CIRCUIT
REGISTER CIRCUIT
FOR TRAFFIC REGISTERS
LOCATED ON RELAY RACKS

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit shows the registers and associated control relays which are mounted on relay racks and record traffic loads.

SECTION II - DETAILED DESCRIPTION

1. PEG COUNT REGISTER CIRCUIT - FIG. 1

1.01 When a release magnet alarm relay associated with finders, selectors, connectors or reverting call selectors operates, leads R and GS are connected together, causing register PC to operate. Register PC operated opens the circuit to lead R1 which, in turn, releases the release magnet alarm relay. This is done to insure that the register fully operates.

2. LAST TRUNK BUSY OR ALL TRUNKS BUSY REGISTER - FIG. 2

2.01 When used as a last trunk busy register, lead R is connected to the S conductor of the last choice trunk available to selector. When this trunk is in use, the TB register operates. For operation with Fig. 16, see Paragraph 13. When used as an all trunks busy register, the TB register is normally operated over lead BR. When all trunks become busy, ground is removed from lead BR releasing register TB. On trunks using the last trunk busy register, the fuse failure make-busy relay of the trunk circuit should not be used, since battery from Fig. 3 may hold the make-busy relay in case the fuse of the trunk circuit blows.

3. REGISTER CIRCUIT - FIGS. 3 OR 24

3.01 The register of Figs. 3 or 24 is used to record traffic handled by the various connecting circuits. Register BR or R3 will operate each time ground is connected to lead K or OF.

4. PEG COUNT REGISTER CIRCUIT - FIG. 4 OR 23

4.01 The register of Fig. 4 or 23 is used to peg count calls handled by selectors arranged for peg count on cut-through. Register PC1 or R2 will operate each time ground is connected to lead R or 3 and key BC is operated.

5. ALL TRUNKS BUSY RELAY - FIGS. 5, AND 3 OR 24

5.01 Ground is removed from lead BR when all trunks available to rotary selectors are busy which releases relay RB. Relay RB grounds lead K to Fig. 3 or lead 4 to Fig. 24 and lead A to the rotary selectors or line circuits to prevent them from continuous hunting. It also grounds the MS lead to start the ringing machine, in order to supply busy tone.

6. ALL TRUNKS BUSY REGISTER CIRCUIT - FIG. 6, AND 3 OR 24

6.01 Ground is removed from lead BR or B on relay BR when all trunks available only to tandem office subscribers are busy. This releases relay BR which partially closes a series circuit to leads 4 or K on relay BR1 and relay BR2.

6.02 Ground is removed from lead BR or C on relay BR1 when trunks available to both tandem office subscribers and rotary selectors are busy. This releases relay BR1 which closes lead 4 or K (if relay BR is also released) to Fig. 24 or 3 for all trunks busy to tandem office subscribers registration and partially close a circuit to relay BR2 for that 4 or K lead.

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6.03 Ground is removed from lead BR or D on relay BR2 when all trunks available only to the rotary selectors are busy. This releases relay BR2 which closes lead 4 or K to Fig. 24 or 3 for all master office trunk busy registration and also to lead 4 or K to Fig. 24 or 3 for all trunks busy to rotary selectors registration. Relay BR2 also completes the closure of lead A to the rotary selectors to prevent them from continuously hunting.

7. OVERFLOW REGISTER CIRCUIT - FIG. 7

7.01 Leads H and S are connected to the bank terminals of the last trunk in a group and when this trunk becomes busy ground is connected to lead S. A connector now hunting for an idle trunk will stop on the last trunk and momentarily connect battery to lead H operating relay OF. The resistance OF, option ZR or the diode A, option ZS, prevents false registration when a connector passes over the last trunk of the group which is busy, but is not in the group dialed, or when the last trunk of the group is seized. Relay OF operated, connects ground through its primary winding to operate the register OR and hold OF operated to insure the operation of the register. When the register operates, ground short-circuits the primary winding of relay OF which releases and opens the register circuit when the battery is removed from lead H.

8. PEG COUNT CUTOFF RELAY AND KEY - FIGS. 8 AND 10

8.01 With key BC normal, relay BC is normal and the registers of Figs. 1, 4, 9, 14, 23, and 25, the magnetic counter in Fig. 21, and the register in the line finder circuit will not operate. With key BC operated, relay BC operates connecting ground to lead GC of Fig. 1 or lead GS to the line finder circuit and battery to the BC leads of Figs. 4, 9, 14, 21, 23 and 25 permitting the associated registers or magnetic counter to operate.

9. PEG COUNT REGISTER CIRCUIT - FIG. 9

9.01 When the rotary line switch of a line with which Fig. 9 is associated releases, battery is momentarily connected to lead M operating relay X on its primary winding. Relay X operated, holds from battery through register PC6 and its secondary winding. Resistance X is connected in parallel with the relay winding to insure sufficient current for operating the register. When the register operates, its contacts short circuit the secondary winding of relay X which releases and restores the register. Key PC2, G apparatus, is provided to prevent the operation of the register when not is use.

10. OVERFLOW REGISTER FOR SELECTOR REPEATERS - FIGS. 11, AND 3 OR 24

10.01 When a selector repeater goes to overflow, busy tone for it is obtained through relay R of Fig. 11, instead of directly as for an all trunks busy condition. Ground on which the tone is superposed operates relay R through the selector repeater and the calling subscriber line to battery in the selector repeater circuit. Relay R operates relay S and in turn the register of Fig. 24 or 3. Relay S is slow release to avoid multiple registration in case relay R follows pulses, and to insure registration in case relay R releases very soon after its operation.

11. DIAL TONE SPEED REGISTERS AND START KEY - FIGS. 12, 29 AND 13 OR 22

11.01 These figures provide the registers and start key required in connection with tests for dial tone delay. When key ST of Fig. 12 is operated, ground is closed to the T and R leads to start the dial tone speed register circuit testing. Register T of Fig. 13 or register R2 of Fig. 22 assigned to lead T operates from ground over lead T1 to lead T10 on each test to indicate the number of test calls made. Register D of Fig. 13 or register R2 of Fig. 22 assigned to lead D operates from ground over lead D1 to D10 each time dial tone is delayed, to indicate the number of calls which do not receive dial tone within 3 seconds. The operation of key ST also grounds lead DTG to the guard lamp of Fig. 29.

12. PEG COUNT REGISTER CIRCUIT - FIG. 14, 22, AND 23

12.01 When a release magnet alarm relay, associated with finders, selectors, connectors or reverting call selectors, operates, ground is connected to lead R, causing register R2 or PC to operate when key BC is operated.

13. LAST TRUNK BUSY REGISTER - FIGS. 15, 2, 22, AND LAST TRUNK BUSY RELAY - FIG. 16

13.01 When lead R of Fig. 16 is connected to conductor S of the last choice trunk available to selector and the trunk is seized, relay LTB operates, causing register -R2 of Fig. 22 or register LTB of Fig. 15 or Fig. 2 to operate. Thermistor A is used to slow down the operate of relay LTB.

13.02 When using this register, the fuse failure make-busy relay of the trunk circuit should not be used, since the battery from Fig. 16 may hold the make-busy relay in case the fuse of the trunk circuit blows.

14. ALL TRUNKS BUSY REGISTER - FIGS. 24, 17 AND 18

14.01 Register R3 or ATB is normally operated over lead BR or PB. When all trunks become busy, ground is removed from lead 4, BR or PB, and register R3 or ATB is released.

15. PEG COUNT REGISTER CIRCUIT - FIG. 25 OR 19

15.01 When an intercepting trunk circuit is seized or the line concentrator identifier circuit or the group alerting circuit is operated, ground is connected to lead 5, CT or PC and register R3 or PC2 is operated when key BC is operated.

16. ALL FINDERS BUSY OR GROUP BUSY REGISTER - FIG. 24 OR 20

16.01 The register of Fig. 24 or 20 is used to record all finders busy or group busy registration. Register AB will operate each time ground is connected to lead 4 or OF.

17. ALL TRUNKS BUSY REGISTER RELAY CIRCUIT, OR LAST TRUNK BUSY REGISTER RELAY CIRCUIT - FIG. 27 AND FIGS. A, B, OR C

17.01 Fig. 27 provides the All Trunks Busy register relay for post selecting rotary out trunk switch circuit. In Fig.27 with Fig. A, there is one all trunks busy register relay which is designated ABL, and it corresponds to the trunk subgroup which is common to all the rotary out trunk switch groups. Relay ABL is held normally operated, and releases only when all the trunks of the common subgroup become busy. Relay ABL released, grounds leads B and C of Fig. B through Fig. A. The remaining subgroups of trunks that are associated with only one rotary out trunk switch group, will have one all trunks busy register relay, or Fig. 27 and B, associated with each trunk subgroup. This relay will be designated ABL1, ABL2, etc., as required per number of trunk subgroups. Relays ABL1, ABL2, etc., are normally held operated, and release only when all of the trunks of the subgroup with which it is associated, become busy. Upon release, it functions to extend ground, if it is present on leads B and C, to leads A and 4. This causes the busy circuit of the rotary out trunk switch group, to function and operates the associated register.

17.02 When Fig. 27 and C are used, the all trunks busy register is designated ABL. Relay ABL is held normally operated, and releases only when all the trunks of the subgroup with which it is associated, become busy. Relay ABL released, grounds leads A and 4.

18. RELAY TEST JACK - FIG. 28

18.01 This jack facilitates testing of relays BR, BR1 and BR2 of Fig. 6, by providing for transfer of these relays from their associated trunks to the adjusting equipment without unsoldering of leads.

19. GUARD LAMP - FIG. 29

19.01 The guard lamp, Fig. 29, is arranged to light whenever the Dial Tone Speed Register Start key of Fig. 12 is operated. The lamp remains lighted while the Dial Tone Speed Equipment is in use, and is extinguished when the key of Fig. 12 is restored to normal.

20. TRAFFIC USAGE - REGISTER CIRCUIT - FIG. 26

20.01 Fig. 26, Option ZT, is provided for connection to the 3B Traffic Usage Recorder (TUR) when photographing registers is not required.

20.02 When 3B TUR is used where camera and camera control is required, provide Option ZU, Fig. 26 and Fig. 8, ZV Option and lead S, Option ZV, to the traffic register cabinet circuit which provides the camera equipment. Fig. 10A provides contact protection for relay BC in Fig. 8.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None

2. FUNCTIONS

2.01 To record various traffic loads.

2.02 To control operation of traffic registers.

2.03 To provide camera usage where required.

3. CONNECTING CIRCUITS

3.01 When this circuit is shown on a key-sheet, the connecting information thereon shall be followed.

(a) Switch Trouble Alarm Circuits o Miscellaneous Alarm Circuits for:

(1) Selectors - SD-32043-01

(2) Connectors - SD-32045-01

(3) Reverting Call Selectors - SD-32048-01

(4) Selector Repeaters - SD-32102-01

(5) Finders - SD-31514-01, SD-32239-01

(b) Selector Circuit - SD-33003-01

(c) Auxiliary Line Circuit for Pre-Post Payment Service - SD-31873-01

(d) Finder - SD-31908-01

(e) Vacant Level or Overflow Trunk - SD-31872-01

(f) Rotary OGT Switch - SD-31990-01, SD-30868-01

(g) Subscribers Rotary Line Switch - SD-31259-01

(h) Rotary Hunting Connectors - SD-31738-01

(i) Trunk Circuits - SD-31884-01

(j) Power Ringing Circuit - SD-80779-01

(k) Dial Tone Speed Register Circuit - SD-96403-01

(ℓ) Group and Alarm Relay Circuit - SD-32194-01

(m) Intercepting Trunk Circuit - SD-32202-01

(n) Line Concentrator Identifier Circuit - SD-95739-01

(o) ANI Outpulser Circuit - SD-95811-01

(p) ANI Outgoing Trunk Circuit - SD-32244-01

(q) Miscellaneous Circuit for ANI Trunk Frames - SD-32248-01

(r) No. 1 and 350A Trunk Finder Circuit - SD-31953-01

(s) Incoming Register Circuit - SD-32260-01

(t) Sender Circuit - SD-32261-01

(u) Decoder Circuit - SD-32262-01

(v) Transverter Circuit - SD-32263-01

(w) Position Link Circuit - SD-32264-01

(x) Rotary Out Trunk Switch Circuit - SD-32253-01

(y) Control Circuit - Group Alerting System - SD-95883-01

(z) Sleeve Repeating Trunk Circuit - SD-31421-01

(aa) Rotary Out Trunk Switch Circuit with Pre-Selection - SD-30868-01

(bb) Subacribers Rotary Line Switch with Lockout - SD-31898-01

(cc) TOUCH-TONE Calling Signal to Dial Pulse Converter Circuit - SD-32328-01

(dd) Originating Register Circuit Out-pulsing Controller Circuit - SD-32351-01

(ee) Pulse Correcting Repeater Circuit Incoming and Outgoing - SD-32184-01

(ff) Pulse Correcting Repeater Circuit Outgoing from Local and Toll Selector Multiple for Direct Inward Dialing to PBX - SD-32346-01

(gg) Register Trunk and Link Circuit - SD-32353-01

(hh) ANI-Type C Outpulser Circuit - SD-32375-01

(ii) No. 2 A and 3A Traffic Usage Recorder Circuit - SD-96549-01

(jj) No. 3B Traffic Usage Recorder Circuit - SD-99359-01

(kk) KS-15947 Totalizer Circuit - SD-95965-01

(ℓℓ) Large MJ Mobile Radio Telephone System - Line Circuit - SD-2R002-01

(mm) Large MJ Mobile Radio Telephone System - Link Circuit - SD-2R008-01

(nn) Large MJ Mobile Radio Telephone System - Marker Circuit - SD-2R004-01

(oo) Permanent Signal Master Timing and Control Circuit - SD-33036-01

(pp) Small MJ Radio Telephone System - Sender-Register - SD-2R051-01

(qq) Small MJ Radio Telephone System - Link Circuit - SD-2R054-01

(rr) Small MJ Radio Telephone System - Line Circuit - SD-2R049-01

(ss) Outgoing Information Trunk Circuit - SD-32170-01

(tt) Traffic Register Cabinet Circuit - SD-95531-01

(uu) ANI Outgoing Trunk Circuit - SD-32244-01

(vv) Common Systems - Traffic Register Camera Control Circuit - SD-95797-01

SECTION IV - REASONS FOR REISSUE

D. Description of Changes

D.1 Options ZT, ZU and ZV are added to the circuit in Figs. 8 and 26.

D.2 Notes 102 and 104 are revised to show these options.

D.3 Note 107 is revised to show reference to Note 102 for Fig. 26 use.

D.4 In Note 107 connection is shown to the outgoing information trunk circuit.

D.5 Fig. 10A is added to the circuit.

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