

CABLE INSULATION ALARM CIRCUIT SD-96348-01

METHOD OF OPERATION AND ALARM PROCEDURES

1. GENERAL

1.01 This section covers the method of operating the cable insulation alarm circuit and the procedures to be followed when responding to alarms.

1.02 This section is reissued primarily to revise the identification tables in Part 3 for clarity, and to add a new table to conform with a drawing change on Issue 11-D.

2. METHOD

Selection of Each Terminal — Automatic Operation

2.01 To start the circuit, simultaneously operate the MT (manual test) and ST (start) keys and then restore the MT key.

2.02 To stop testing, restore the ST key.

Selection of Particular Terminal — Manual Control

2.03 Simultaneously operate the MT and ST keys.

2.04 Where a crossbar switch is used for connecting to the test terminals, operate and release the SEL key as required to step the S selector until it is in the position corresponding to the terminal to be tested. Operate and release the HLD key as required to step the H selector until it is in the position corresponding with the terminal to be tested. The identification table indicates the terminals under test corresponding to the positions of the H and S selectors.

2.05 Where relays are used for connecting to the test terminals, operate and release the HLD key as required to step the H selector until it and the TR relay are in the required position. The identification table indicates the terminals under test corresponding to the position of the

H selector and the operated or nonoperated position of the TR relay. It may be necessary in some cases to step the H selector more than one complete revolution in order that the TR relay may be in the operated or nonoperated position as required. While stepping the H selector in this manner, momentarily restore the ST key every time positions 11 and 22 of the selector are reached.

2.06 When the required test position has been reached, restore the ST key.

2.07 Observe the CI1 sensitrol relay and the CI2 sensitrol relay where provided. If the pointer of the relay is not at the extreme left, the indication is that the insulation resistance of the terminal under test is above the lowest allowable value.

2.08 If the pointer of the relay is at the extreme left, the indication is that the insulation resistance of the terminal under test is below the lowest allowable value. Repeat the test if desired by momentarily operating the RS key.

2.09 To select other terminals, operate the ST key and repeat 2.04 or 2.05. If the CI1 or CI2 relay is operated as a result of a test previously made on another terminal, momentarily operate the RS key. Proceed as in 2.06 to 2.08.

2.10 Restore the MT key.

3. ALARM ROUTINE

3.01 When the audible alarm sounds and the aisle pilot lamp (where provided) and the red MP lamp in the cable insulation alarm circuit light, it indicates that the insulation resistance of one of the cable test terminals is too low, or, in the case of step-by-step dial offices, that there is an excessive number of permanent signals in the office.

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- 3.02** Momentarily operate the AL (alarm) key to silence the audible alarm.
- 3.03** Observe the CI1 sensitrol relay and the CI2 sensitrol relay where provided and, in the case of step-by-step offices, the SR sensitrol relay if provided. If the pointer is at the extreme left, indicating that the relay is operated, proceed as in 3.04, 3.05 or 3.06.
- 3.04** If a crossbar switch is provided in the cable insulation alarm circuit, observe the position in which the S and H selectors have stopped to identify the cable test terminal under test. The relationship of the selector positions to the terminals is shown in the identification table. The CI1 relay is associated with test terminals 0 to 99 and the CI2 relay where provided is associated with terminals 100 to 199.
- 3.05** Where relays are used to connect to the terminals, check whether the TR relay is operated or released and observe the position of the H selector to identify the terminal under test. The relationship of the position of the TR relay and the H selector to the test terminals is shown in the identification table.
- 3.06** If, in step-by-step offices, the SR relay in the permanent signal alarm circuit is operated, it is an indication of an excess number of permanent signals, in which case proceed as described in Section 226-145-300 covering alarm routines for the cable insulation alarm and permanent signal alarm circuits.
- 3.07** Make a record of the cable test terminal or of the permanent signal condition which brought in the alarm, then momentarily operate the RS (restore) key. This will cause the circuit to recheck the alarm condition.
- 3.08** If the MP lamp is extinguished and the audible alarm is silenced, no further action is required at this time.
- 3.09** If the MP lamp remains lighted and the audible alarm continues to sound, silence the audible alarm by momentarily operating the AL (alarm) key. Disconnect all of the cable conductor pairs from the cable test terminal under test and proceed in accordance with local instructions.
- 3.10** Momentarily operate the RS key to retire the alarm.

IDENTIFICATION TABLE

Crossbar Switch Arrangement

(S) SEL POS	(H) SEL POS										
	1 or 12	2 or 13	3 or 14	4 or 15	5 or 16	6 or 17	7 or 18	8 or 19	9 or 20	10 or 21	11 or 22
1 or 12	0 100	1 101	20 120	21 121	40 140	41 141	60 160	61 161	80 180	81 181	— —
2 or 13	2 102	3 103	22 122	23 123	42 142	43 143	62 162	63 163	82 182	83 183	— —
3 or 14	4 104	5 105	24 124	25 125	44 144	45 145	64 164	65 165	84 184	85 185	— —
4 or 15	6 106	7 107	26 126	27 127	46 146	47 147	66 166	67 167	86 186	87 187	— —
5 or 16	8 108	9 109	28 128	29 129	48 148	49 149	68 168	69 169	88 188	89 189	— —
6 or 17	10 110	11 111	30 130	31 131	50 150	51 151	70 170	71 171	90 190	91 191	— —
7 or 18	12 112	13 113	32 132	33 133	52 152	53 153	72 172	73 173	92 192	93 193	— —
8 or 19	14 114	15 115	34 134	35 135	54 154	55 155	74 174	75 175	94 194	95 195	— —
9 or 20	16 116	17 117	36 136	37 137	56 156	57 157	76 176	77 177	96 196	97 197	— —
10 or 21	18 118	19 119	38 138	39 139	58 158	59 159	78 178	79 179	98 198	99 199	— —
11 or 22	— —	— —									

IDENTIFICATION TABLE

Relay Arrangement

Prior to Drawing Issue 11-D

(H) SEL POS	(TR) RELAY	
	NO OP	OP
1	1	3
2	2	4
3	9	11
4	10	12
5	17	19
6	18	20
7	25	27
8	26	28
9	33	35
10	34	36
11	—	—
12	5	7
13	6	8
14	13	15
15	14	16
16	21	23
17	22	24
18	29	31
19	30	32
20	37	39
21	38	40
22	—	—

Drawing Issue 11-D or Later

(H) SEL POS	(TR) RELAY	
	NO OP	OP
1	0	2
2	1	3
3	8	10
4	9	11
5	16	18
6	17	19
7	24	26
8	25	27
9	32	34
10	33	35
11	—	—
12	4	6
13	5	7
14	12	14
15	13	15
16	20	22
17	21	23
18	28	30
19	29	31
20	36	38
21	37	39
22	—	—