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OPERATIONS SUPPORT SYSTEMS
COMMON
SWITCHED MAINTENANCE ACCESS SYSTEM NO. 5A
PHANTOM MAINTENANCE CONNECTOR CIRCUIT

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 The phantom maintenance connector (PMC) developed for use with Switched Maintenance Access System (SMAS) 5 ( ) provides a means of gaining access to "no test trunks" for the purpose of testing in the local switching systems.

2. GENERAL DESCRIPTION OF OPERATION

2.01 This circuit is designed to interconnect with a no test trunk by means of a terminal strip and with the SMAS network by means of the same connector cable as is used by conventional maintenance connectors. Assignment of a PMC to a SMAS network in effect assigns its SMAS number identify and reserves 24 SMAS numbers for that connector. For the PMC, none of these 24 SMAS numbers are available for other assignment.

2.02 Accessing of the PMC is accomplished by sending the proper SMAS number assigned to the PMC over the network in the usual manner. The assignment of this number determines where in the system the PMC is connected. The SMAS number consists of five digits; the first digit determines the type of network (maintenance connector or connector group), the next two determine the maintenance connector number within aquadrant, and the last two determine the quadrant and the circuit within the maintenance connector. The maintenance connector number is sent to the PMC by means of the gated battery (GTB) and gated ground (GTG) leads. Upon receipt of the gated battery and ground of these leads, the GT relay operates and (provide battery is connected to the unit) the GT1 is operated. The operation of the GT and GT1 relays provide a gated path to the TM relay, which is operated by the receipt of the circuit number. This is provided by a ground on at least one of the A through E leads, causing the TM relay to operate. The operation of the TM relay completes a ground path to the H or H1 lead, latching up the TM relay.

2.03 Once the TM relay has been operated, the access sequence is completed to the PMC. By applying -48 volts on the CM1 and CM2 leads from the SMAS network, the T, R, S, and G leads from the no test incoming trunk circuit are connected to the T, R, EL, and ML leads, allowing the tester to access the incoming trunk.

SECTION II - DETAILED DESCRIPTION

1. GENERAL

1.01 This circuit requires -48 volts and ground to be connected in order to function properly. In the absence of this source, an alarm condition is returned to the accessing test port.

2. DETAILED DESCRIPTION

PHANTOM MAINTENANCE CONNECTOR CIRCUIT - FS1

2.01 In the idle state all relays are in the released condition. Access to this circuit is achieved by -48 volt battery being applied to the GTB( ) lead through the 3-2 contact of the GT test jack, through R3 to the coil of the GT relay, through diode CR2 to the 4-5 contacts of the CT test jack, to ground on the GTC ( ) lead operating the GT relay. Operation of the GT relay will operate the GT1 relay from ground, through the GT12 make to the coil of the GT1 relay to -48 volts. With the GT and GT1 relays operated, the following leads are gated through leads A through E: HO, TPB, SEL, ALM1, and Y. During this time, a ground will be present on at least one of the A through E leads, causing the TM relay to operate. Operation of the TM relay completes a path from the H or H1 lead through diode CR1 through the TM8 make to the coil of the TM relay to -48 volts. With ground on the H or H1 lead the TM relay will remain operated. Once the TM relay has operated and ground is maintained on the H or H1 lead, the TPB LED is turned on by the closure of the 12 make contact, giving a local indication that the connector is busy.

2.02 The operation of the GT and GT1 relays also provide a ground path from the connector back to the SMAS network on the

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following leads:

a) SEL - which indicates a valid access number.

b) Y - which indicates the type of connector, and in this case, the value of resistor R4 will indicate to the SMAS network it is a type 3.

c) TPB - ground will be present on this lead if the connector is busy.

d) ALM1 - ground will be present on this lead if the GT1 relay fails to operate.

LOOP TEST RELAY

2.03 The loop test (LT) relay may be used to make a continuity check to PMC before access to the no test trunk is attempted. In order to operate the LT relay, it is necessary for the SMAS network to apply +24 volts to the CM1 lead through diode CR3 to the coil of the LT relay to ground, operating the LT relay. The operation of the LT relay shorts leads T to T1, R to R1, EL to ED, and ML to MD, allowing the SMAS network to perform a continuity test. Removal of the +24 volts from the CM1 lead releases the LT relay and removes the shorts.

SP1 RELAY

2.04 The split 1 (SP1) relay in the release condition provides a high sleeve condition to the S lead by applying -48 volts through resistors R1 and R2, through the 5 break of the SP1 relay, to the S lead. Operation of the SP1 relay is accomplished by the SMAS network applying -48 volts on the CM1 lead through diode CR4 to the coil of the SP1 relay to ground.

2.05 Operation of the SP1 relay completes a path from the SMAS network on the EL lead to the 9 break of the LT relay, to the 5 make of the SP1 relay, to the S lead and from the ML lead to the 10 break of the LT relay, the 1 make of the SP1 relay, to the G lead. This completes the path through the PMC to the no test trunk circuit and allows the SMAS network to put on the proper conditions required to perform testing.

SP2 RELAY

2.06 The split 2 (SP2) relay in the released condition provides an open to the T and R leads toward the no test trunk. Operation of the SP2 relay is accomplished by the SMAS network applying -48 volts on the CM2 lead through diode CR5 to the coil of the SP2 relay to ground.

2.07 Operation of the SP2 relay completes a path from the SMAS network lead T to the 8 break of the LT relay, to the 6 make of the SP2 relay, to the circuit T lead, and from the SMAS network R lead to the 12 break of the LT relay, to the 8 make of the SP2 relay, to the R circuit lead. This completes the path through the PMC to the no test trunk circuits and allows the testport to establish the proper conditions required to perform testing.

NO TEST TRUNK CONDITIONS

2.08 The no test circuit allows the PMC to gain connection to customer lines through the office switching equipment, and in order to accomplish this the following conditions are required:

a) Seizure - closure across tip and ring and low resistance battery on the S (sleeve) lead; then dial number of customers line to be tested.

b) Test - maintain low resistance battery on S lead and tip and Ring leads can be open or closed as required in order to perform test.

c) Release - open on tip and ring, which resistance battery on the S lead, and ground on the G lead; the PMC performs this function in the idle state.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

DESIGNATION	MEANING
GT, GT1	Gating
LT	Loop Test
SP1	Split 1
SP2	Split 2
TM	Trunk Maintenance

2.02 Jack

DESIGNATION	MEANING
GT Test	Gating Test

2.03 LEDs

DESIGNATION	MEANING
TPB	Test Position Busy

3. FUNCTIONS

3.01 Provides circuitry to gain access to no test trunk circuit.

3.02 Provides disconnect condition to no test trunk circuitry in the idle condition.

3.03 Provides alarm condition when access attempt is made and battery and ground are not connected to circuit.

3.04 Provides busy indication when circuit has been accessed.

4. CONNECTING CIRCUITS

(a) SMAS 5A/B Local Test Ports and Distribution Circuit - SD-1P106-01.

(b) SMAS Maintenance Concentrate and Control Circuit - SD-99500-01.

(c) Test Trunk First Selector Circuit - SD-21642-01 or SD-21643-01 (typical) (panel).

(d) SXS Test Distributor Control Circuit - SD-31349-01 (typical) (SXS).

(e) Incoming Trunk Circuit - SD-25432-01 (typical) (1XB).

(f) Incoming Test Trunk Circuit - SD-26136-01 (typical) (5XB).

(g) Incoming Trunk Circuit - SD-1A186-01 (typical) (No. 1 ESS).

(h) Incoming Test Trunk Circuit - SD-2H109-01 (typical) (No. 2 ESS).

(i) No. 3 ESS Peripheral Test Circuit - 3 SD-3H520-01 (typical) (No. 3 ESS).

5. MANUFACTURING TESTING REQUIREMENTS

5.01 All components covered by individual testing specifications shall have met their own testing requirements before overall testing is performed.

5.02 In addition, this circuit shall operate as described in Section II.

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