COMMON SYSTEMS
METALLIC FACILITY TERMINAL
POWER DISTRIBUTION CIRCUIT
FOR USE WITH METALLIC FACILITY
TERMINAL BAYS

CHANGES

B. Changes in Apparatus

B.1 Removed	Replaced By
CB1 Circuit Breaker KS-15815, App Fig 11	CB1 Circuit Breaker AMI B2A 25.0 20C
TS2 Terminal Strip, 277A, CAD 17	TS2 Terminal Strip, 298A, CAD 17

D. Description of Changes

D.1 In CAD 10, CAD 11, and CAD 12, changed sheet notes 1 and 2 to change connector type per Option S.

D.2 In CAD 17, added set of closures for MN and MJ alarm relay for use with E-Telemetry Centralized Maintenance System.

D.3 In CAD 16, added frame ground connector.

D.4 In CAD 16, interchanged positions of GRD and -48V leads on TSI to facilitate manufacture by permitting use of ground strap.

BELL TELEPHONE LABORATORIES

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METALLIC FACILITY TERMINAL
POWER DISTRIBUTION CIRCUIT
FOR USE WITH
METALLIC FACILITY TERMINAL BAYS

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 The Power Distribution Circuit is for use in the Metallic Facility Terminal (MFT) Bays to power MFT circuits documented and described in SD-1C359-01 and CD-1C359-01. It provides protection and distribution of circuit operating power, talk battery, and ringing voltage. It also provides, to the office alarm circuits, inputs to the audible and visable alarm circuits for major and minor alarm conditions.

SECTION II - DETAILED DESCRIPTION

1. POWER DISTPIBUTION CIRCUIT FS1 AND SIGNALING DISTRIEUTION CIRCUIT FS2

1.01 Circuits FS1 and FS2 are intended for use in the standard MFT Bays, J99343( ) per SD-1C359-01 and J99378( ) per SD-7C018-01. FS1 provides for power distribution for up to 180 circuits in a single module arrangement. FS1 and FS2 provide for power and signaling distribution for up to 90 circuits in a double module arrangement.

FILTER

1.02 Capacitors C1 and C4, and inductor L1 comprise a filter that provides sufficient attenuation of the noise on the common -48 volt power plant to allow it to be used, when required, for -48 volt talk battery. C4 is to reduce high frequency noise and C1 is to filter ripple and low frequency noise. L1 provides high frequency isolation between MFT circuits and the common -48 volt power plant.

FUSES

1.03 "S" and "T" fuses and "RLF" fuses are cumulatively used as overcurrent protection devices on the -48 volt power plant and ringing generator, respectively. Except for L1, P2, and P4, all fuses are the WECo 70 Type indicating fuse. L1, P2, and P4 are the non-indicating glass tube type.

ALARMS

1.04 All alarm conditions are the result of a power failure at some level in the bay. A major alarm condition is one which results when -48 volts or -72 volts has been lost to the entire bay, when ringing voltage has been lost to 12 double module circuits, or when the ABF1 fuse failure inhibits the other major fault reporting circuits. All other shelf level power failures are minor alarm conditions.

-72 VOLT TALK BATTERY

1.05 Switch SW-1 is a double-pole double-throw device that performs two functions. When a -72 volt talk battery is being used in the bay and SW-1 is in the "-72 volt" position, diode CR-3 is reverse biased and the PCA relay is activated, thereby opening the No. 7 contacts. Any interruption of -72 volts causes the PCA relay to fall out

and a closure of the No. 7 contacts. At the closure of the No. 7 contacts, the red PC ALM lamp is turned on and the MJ relay is activated, indicating a major fault has occurred.

CAUTION

SWITCH SW-1 MUST BE IN THE -72 VOLT POSITION ---BEFORE--- -72 VOLTS CAN BE APPLIED TO, OR WITHIN THE BAY.

1.06 For -72 volts to be applied to the circuitry switch S1 must be in the -72 volt position.

1.07 When a -48 volt battery is being used in the bay, SW-1 must be be in the "-48 volt" position. This does two things: (1) it shorts out diode CR-3, and (2) it prevents a false major alarm condition when the No. 7 contacts on the PCA relay remain closed.

RINGING VOLTAGE

1.08 MFT circuits require either an AC-DC or a superimposed negative continuous ringing voltage. Ringing voltage is supplied only to double module bays. The ringing voltage source is protected by fuses RLF-1 through RLF-8. Each fuse passes ringing voltage through two resistance lamps (RL) to two shelves. A failure by any RLF fuse will cause the RA relay to activate and close the associated "A" contacts which, in turn, activate the major alarm relay.

1.09 The signaling distribution circuit provides AC-DC or negative superimposed continuous ringing power. It is included with FS1 in equipment arrangements serving MFT double module circuits. For MFT single module circuits, FS2 is offered as a miscellaneous equipment arrangement for use with FS1 or FS4 of SD-1C359-01.

MTCE CONNECTOR

1.10 Connections to the maintenance (MTCE) connector circuit are made at the output side of the ABF1 fuse and at the alarm buss of the "S" fuses.

2. POWER DISTRIBUTION CIRCUIT FS3 AND SIGNALING DISTRIBUTION CIRCUIT FS4

2.01 Circuits FS3 and FS4 are functionally the same as circuits FS1 and FS2 with the following differences.

2.02 Circuits FS3 and FS4 are intended for use in the connectorized MFT bays, J99386( ) per SD-7C018-01. FS3 and FS4 provide for power and signaling distribution for up to 192 circuits in a single module arrangement and power and signaling distribution for up to 96 circuits in a double module arrangement.

2.03 Switch S1 is automatically operated to its -72 position by the insertion of a DC-DC converter or a -72 Filter in J1. The switch automatically reverts to the -48 position upon removal of the DC-DC Converter or -72 Filter.

2.04 For -48 volt power, option T, circuit breaker CB1 provides overcurrent protection by automatically tripping on an overload condition. Tripping of CB1 closes the associated auxillary switch resulting in a major alarm condition.

2.05 For -48 volt power, option S, Fuse L1 provides overcurrent protection by failing on an overload condition. Failure of L1 results in a failure of LA1 and a major alarm condition.

CAUTION: OPERATING CB1 DOES NOT REMOVE -72 OR FLT 24 VOLT POWER TO THE MFT PLUG-INS.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None

2. FUNCTIONAL DESIGNATIONS

2.01 None

3. FUNCTIONS

3.01 To distribute circuit operating power, talk battery, and ringing voltage within the MFT bay.

4. CONNECTING CIRCUITS

4.01 None

5. MANUFACTURING TESTING REQUIREMENTS

5.01 Continunity tests shall be made on all wiring. Sufficient continunity tests shall be made to insure that electrical association of apparatus and equipment is in accordance with the equipment layout and equipment designations. Additional testing is not required.

6. MAINTENANCE

6.01 Only as required by fuse or lamp failures.

7. TAKING EQUIPMENT OUT OF SERVICE

7.01 There are no sequential operations necessary other than normal personnel and equipment protection precedures, such as disconnecting the common power sources.

SECTION IV - REASONS FOR REISSUE

CHANGES

B. Changes in Apparatus

B.1 Superseded	Superseded By
CB1 Circuit Breaker KS-15815, L107, App Fig 11, T option	L1 Fuse, AGS, 25A, App Fig. 11, S option
SW1 Switch 7199K1, App Fig. 11, T option	SW1 Switch 7199K2, App Fig. 11 S option
J2 and J3 Connectors 2-552000-1, CAD 10 and CAD11, T option	J2 and J3 Connectors 229940-1, CAD 10 and CAD11, S option
J4 Connector 2-552137-1 CAD12, T option	J4 Connector 552136-1 CAD12, S option
TS1 and TS2 Terminal Strip, CAD16, T option	TS1 Terminal Strip, CAD16, S option
TS3 Terminal Strip 298A Type, CAD17 S option	TS3 Terminal Strip, 216A Type, CAD17 S option

D. Description of Changes

D.1 The following changes were made to improve the design of ED-7C073-( ).

(a) Added options S and T to Option Index and Circuit Notes 102 and 103.

(b) In App Fig. 11 and FS3, circuit breaker CB1, Option T, replaced by fuse L1, Option S.

(c) In App Fig. 11, changed push type switch SW1, Option T, to switch SW1, Option S, with solder terminals.

(d) In CAD10, CAD11, and CAD12, changed Amp connectors J2, J3 and J4 to panel mount type.

(e) Added CAD16 and CAD17, option S.

(f) In CAD14, Option T, and CAD16, Option S, removed terminal strips TS1 and TS2 and replaced with a single terminal strip TS1.

(g) In CAD17, changed terminal strip TS3 from type 298A to type s16A and redesignated as TS2.

D.2 CAD15, Option T, added (correction)

D.3 In Circuit Notes 102 and 103 and CAD18 added circuit information for using a ringing distribution panel with MFT single module frames (J99343 and J99378 series).

(a) Added CAD18, CAD19 and CAD20.

D.4 Revised Circuit Note 105 to reflect ringing supplies with or without audible components.

D.5 In FS2 and FS4, added reference to Circuit Note 105.

D.6 Added Circuit Note 108.

D.7 In FS1 and FS3 added reference to Circuit Note 108.

D.8 The following changes were made to provide circuitry for alarm relay for use with E Telemetry Centralized Maintenance System:

(a) Added option R to Option Index and Added Circuit Note 109.

(b) In FS1, FS3 and CAD13, added set of closures option R for MN and MI alarm relay and added reference to Note 109.

(c) Added option R to CAD13.

(d) In FS1 and FS3, corrected ground circuit.

(e) In CAD15, corrected documentation errors.

(f) Added CAD21, option R.

D.9 Note: This reissue also covers information authorized by the following appendices to Issue 2B of this CD. Appendix 1A - DWG ISS 5A

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