CD-5D168-02
ISSUE 1
APPENDIX 4M
DWG ISSUE 5M
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT
6 FAN BI-DIRECTIONAL UNIT
CIRCUIT

Description of Changes

Changes in apparatus include the following.

- Removed terminal block TS1.
- Removed 24 fast-on lugs.

Rewired the fan to the control board wiring in order to remove one terminal block and 24 fast-ons.

Corrected documentation errors in the CADs. For CADs 1, 2, 6, 8, and 9 the plug number (P number) was changed to match the jack number (J number) as it is being built.

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Change in Apparatus

Changed the fan tray controller board from KS-23884 list 1 CC#406611228 to a KS-23884 list 1A CC#407010461.

Changed the thermistors from A-1097 CC#406951368 to an RL0503-2890-95-MS CC#407003474.

Description of Changes

The fan tray controller board adds brightness to the bezel light emitting diode (LED).

The thermistors use a stock thermistor instead of one that needs to be special ordered.

Added color codes to the thermistor and bezel LED wires to make them easier to wire.

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4. REASONS FOR REISSUE

D. Description of Changes

Corrected the wire colors on the fan lead in CAD 11.

Added the connector and plug designation (C1 and P6) to functional schematic 1 (FS 1) that was missing.

Added the comcode number for the new thermistor.

The control board designations for fans changed from numbers to letters.

Clarified the cable routing for SM2000 cabinets.

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CD-5D168-02
ISSUE 1
APPENDIX 1B
DWG ISSUE 2B
DISTN CODE BT13

5ESS® SWITCHING EQUIPMENT
6 FAN BI-DIRECTIONAL UNIT
CIRCUIT

CONTENTS

1. GENERAL DESCRIPTION

1.1 PURPOSE OF CIRCUIT

The six fan bidirectional fan unit is a new fan unit designed to improve the cooling capacity of the six fan unit while providing reduced acoustic noise. The fan unit is currently used in the SM2000 SMC cabinet and the ISLU2 cabinet. The fan unit provides air flow for maintaining adequate operating temperatures.

1.2 GENERAL DESCRIPTION OF OPERATION

Six separate fans are used in the six-fan bidirectional fan unit. Three of the fans direct air upward through the cabinet, and the other three fans direct air downward through the cabinet. Only two of the three fans are required to provide sufficient air flow, thereby ensuring that correct operating temperatures can be maintained in the event of a single fan failure. Circuitry to detect and report a fan failure to the Input/Output Processors (IOP) or to the Switch Module Processor (SMP) is provided. This is done via a scan point from the unit. A fan failure alarm can be retired manually, or under software control using a distribute point to the fan unit. Thermistors are used to sense air temperature input and exit. The fan tray controller KS23884L1 adjusts the appropriate (up or down) fans speed to maintain adequate operate temperature.

2. DETAILED DESCRIPTION

The KS23884L1 fan tray controller divides the unit into two separate fan units. Three fans blowing down from the rear of the unit and three blowing up from the front of the unit. One thermistor is in the air path at the front and one at the rear sensing incoming air temperatures. Three thermistors are placed at the top and three at the bottom of the cabinet sensing exit air temperatures. The controller use this information to control fan speed. The fan tray controller adjusts the fans speed to maintain temperature that has been programmed in the controller. If the controller cannot maintain programmed temperature or senses a fan problem via the tach signal the controller send out alarm and drives all fans in that direction to full speed and also lights a over temperature or fan fail lamp on the controller and at the top of the cabinet. There are 8 lamps and a momentary single pole double throw switch on the controller. The first lamp is for status. Lamp two to seven are fan fail 1 thru 6 and lamp eight is over temperature. The switch is for test and alarm reset of the controller. In the reset (switch down) position, the controller negates all alarms. In the test position (switch up) all LED's are lit. If the switch is held in the test position for 10 seconds, the status lamp will extinguished, leaving the remaining 7 LED's lit. This is the manual override status and all fans will run at full speed. The fan controller shall stay in this mode until reset manually as described above. The scan point (controller alarm) goes to the alarm state when a fan fails or a over-temperature is detected. This alarm state latches and is available for remoting the alarm. When the scan is in the alarm state a LED on the controller and at the top of the cabinet are lit. The distribution point is used to remotely reset a fan failure or over-temperature scan alarm from the software. It also extinguishes the LED on the controller and at the top of the cabinet. The switch can also reset the alarm when move to the down position.

2.2 CAD 01:

CAD 01 lists all the leads for the cabinet alarm LEDs connected at the appropriate LEDs on the top of the cabinet.

2.3 CAD 02:

CAD 02 lists the scan point (SCANR, 3BSCAN0) and the reset distribute point (RSTR, 3BRST1) of the CM233A circuit pack. This scan point and distribute point goes to IO/P0 or a preceding six-fan unit.

2.4 CAD 03:

CAD 03 lists the scan point (SCANR, 3BSCAN0) and the reset distribute point (3BRST1, RSTR) of the CM233A circuit pack. This scan point and distribute point goes to IO/P1 or a no connect.

2.5 CAD 04 AND 05:

CAD 04 and 05 lists the scan point (SCANR, 3BSCAN0) and the reset distribute point (RSTFANS, RSTFAN) of the KS23884L1 circuit pack. These scan points and distribute points go to a succeeding fan units.

2.6 CAD 06:

CAD06 list the 8 thermistors leads for tray A (thermistors 1-4) and tray B (thermistors 5-8). Also the temperature control code (TCC) program leads for programming the controller.

2.7 CAD 07:

Spare.

2.8 CAD 08:

CAD 08 contains control, tach and return lead for fans A, B and C and power to the controller.

2.9 CAD 09:

CAD 09 contain -48A and 48RTNA for power to the controller when CAD 08 is not present.

2.10 CAD 10:

CAD 10 contains control, tach and return leads for fans E, F and G.

2.11 CAD 11:

CAD 11 contains connecting information on two terminal strips, TS0 and TS1. These TS's are used to interface between the fuse/filter panel, the fans and the controller.

3. REFERENCE DATA

3.1 WORKING LIMITS

Voltages:

(a) -39.5 to -57 volts (nominal -48 volts).

Ambient Temperature

(a) 0 to 70 degrees centigrade (at circuit pack).

(b) 0 to 50 degrees centigrade (office aisle ambient).

3.2 CONNECTING CIRCUITS

Fuse/filter panel: SD-5D146-01

Input/output processor: SD-5D053-01

Switching Module Processing Unit, SD-5D129-01

Module Controller and Time Slot Interchanger Unit, SD-5D094-01

Switch Module Control Cabinet, SD-5D118-03

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