CIRCUIT BOARD REVISION #3

REVISIONS

I. CIRCUIT DESCRIPTION

The inputs to this circuit board are switching signals from up to fifteen system fault points; when a fault occurs, 24VDC is applied to the corresponding terminal of the board (TB1-3,4,5,6,7,8,9,10,11,12,13,14,15,16,or17).

In addition the circuit board accepts a resetting signal (connection of TB3-35 to TB3-36). The outputs of the board are the following:

a) Fifteen individual 24VDC signals given when the corresponding faults have occurred, (TB3-37 to TB3-51), to be used for indicating lamps. These signals are latching (stay after removal of the corresponding inputs) and are resettable only after the corresponding inputs are removed. (Depressing the RESET push button while fault still exists will make the light go off but it will come on again upon release of the button; it will stay on after clearing of the fault and until the RESET button is de pressed again).

b) An overall SYSTEM FAULT signal (TB2-25, TB2-26, TB3-53) for indicating lamps and customer use. This is on when one or more individual fault signals are on. Therefore, it is latching and it is nonresettable unless all faults have been cleared first.

c) An overall signal (TB2-23, TB2-24, TB3-52) for indicating lamps and customer use, to which the name ELECTRICAL MALFUNCTION has been given. This is latching like the others, but it is resettable even before clearing of the fault. Then it is ready to be activated upon occurence of another fault even if the original one(s) has not been cleared. This scheme is very convenient to use for an audible alarm which can thus be silenced before clearing of the fault but which will be reactivated upon accurrance of additional fault(s).

The board contains sixteen magnetically latching relays. (Two coils--which was last evergized will determine the state of the contacts). Fifteen of these are associated with the fifteen input fault signals. Upon a fault occurance the corresponding capacitor takes a few milliseconds to change and this pulses K1*1 which triggers latching relay KL14*1. This relay is reset by depressing the RESET button; timer TD1 and relay K3 prevent retriggening of KL14 which otherwise would have occurred if uncleared faults are present when the button is released.

ACTIVE FOR
BY DATE

273-2
273-12
273-71
273-138
273-221
273-227
PRINTS TO

REVISION 1

II. CIRCUIT SPECIFICATIONS

All tests with 24 VDC connected to TB1-1 and ground connected to TB1-2.

1. Resistance between TB1-3 and ground: R1. Resistance between TP3 and TP4: R2. Voltage at TP2: E.

   a. TB3-35 disconnected:

      R1 = 700 to 1000 Ohms
      R2 < 0.1 Ohms
      E = ~~0~~ Volts 24.

   b. TB3-36 connected to TB3-35:

      R1 > 1 Megohm
      R2 > 1 Megohm
      E = ~~24~~ Volts 0V.

   c. TB3-36 disconnected:

      R1 = 700 to 1000 ohms
      R2 & E from state at (b) to state (a) after a dealy of 2.0 ± 0.2 sec.

2. Individual Channels (First Fault)

   Each of the fifteen channels should conform with the following table

INPUTS AT		CORRECT OUTPUTS AT						
TB1-X	TB3-36	TB3-Y	TB2-23	TB2-24	TB3-52	TB2-25	TB2-26	TB3-53
0	0	0	0	0	0	0	0	0
1	0	1	1	1	1	1	1	1
1	R	0	0	0	0	0	0	0
1	0	1	0	0	0	1	1	1
0	0	1	0	0	0	1	1	1
0	R	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
1	0	1	1	1	1	1	1	1
0	0	1	1	1	1	1	1	1
0	R	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

PRINTS TO

II. CIRCUIT SPECIFICATIONS (continued)

2. Individual Channels (First Fault) (continued)

Where:

1: 24 VDC
0: 0V
R: Connected to TB3-35 (or 24 VDC if more convenient)
X, Y given by the following table for each channel:

CHANNEL	X	Y
1	3	37
2	4	38
3	5	39
4	6	40
5	7	41
6	8	42
7	9	43
8	10	44
9	11	45
10	12	46
11	13	47
12	14	48
13	15	49
14	16	50
15	17	51

REVISIONS

II. CIRCUIT SPECIFICATIONS (continued)

3. Individual Channels (Second Fault)

Connect permanently 24 VDC to TB1-17.
Connect momentarily TB3-36 to TB3-35 to reset KL144
Each of the first fourteen channels should conform with the following table:

INPUTS AT			CORRECT OUTPUTS AT							
TB1-X	TB1-17	TB3-36	TB3-Y	TB3-51	TB2-23	TB2-24	TB3-52	TB2-25	TB2-26	TB3-53
0	1	0	0	1	0	0	0	1	1	1
1	1	0	1	1	1	1	1	1	1	1
0	1	0	1	1	1	1	1	1	1	1
0	1	R	0	0	0	0	0	0	0	0
0	1	0	0	1	0	0	0	1	1	1

Where 1, 0, R, X, Y same as in section 2 except that the table does not apply to channel 15 (X = 17, Y = 51).

For this channel the procedure of this section should be modified so that the permanent 24 VDC connection is made to TB1-3 and headings TB1-17, TB3-51 in the table should be replaced by TB1-3, TB3-37.

4. TP1 Pulse Waveshape

Application of 24 VDC to any of TB1-3 to 17 terminals after resetting the circuit (Momentarily connecting TB3-36 to TB3-35) causes a voltage pulse to appear at TP1.

To check TD1 monitor TP4 For 24VDC apply 24V to pin 36 when voltage is Removed From pin 36 TD starts. — see To Drop out with TD Dropped out you should have 24V on TP4 T.D. pick & drop OVDC on TP4

PRINTS TO

REV NO. 0

P3K-AL-0378-A01

CONT ON SHEET SH NO. 5

TITLE
TEST INSTRUCTION FOR ELECTRICAL MALFUNCTION
CIRCUIT BOARD 1TM2-M001 (ASSEM. DWG. 117D9140 G1)

FIRST MADE FOR EHC Mark II

REVISIONS

PREPARED BY: D N Economou DATE 8/23/1977

D.N. Economou
EHC DESIGN ENGINEERING

APPROVED BY: P C Callan DATE 9-6-77

P.C. Callan - Manager
EHC DESIGN ENGINEERING

REVIEWED BY: R. Debertolis DATE 9/6/77

R. Debertolis
EHC Test Engineer

PRINTS TO

MADE BY J. Polacek Sept. 16, 1977

ISSUED Sept 16, 1977

APPROVALS

Steam Turbine DIV OR DEPT.

Schenectady, N.Y. LOCATION

P3K-AL-0378-A01

CONT ON SHEET SH NO. 5

FF-803-WA (2-76)
PRINTED IN U.S.A.

CODE IDENT NO