REV NO. 012
P3K-AL-0272
CONT ON SHEET 2 SH NO. 1

TITLE
TEST SPECIFICATION FOR THE SOLID STATE
125V RELAY BOARDS
FIRST MADE FOR EHC MARK I

REVISIO

I. DRAWINGS

This instruction lists the test specifications for the following circuit boards:

	Schematic	Assembly
A.	145D5094	118D1402 G1
B.	118D1409	118D1499 G1
C.	118D1454	118D1459 G1

...VE FOR 21
DC DATE 7/10/97

II. GENERAL

Each of the boards listed contains multiples of a new 125V relay circuit which is specifically designed as an interface circuit for Mark I machines. The relays are nominally 125 VDC and are powered by the customer's station battery. The new boards are to be used as direct replacements for our present mercury wetted 125V relay boards with the only addition being ± 24V power for the solid state portion of the circuits.

III. SPECIFICATIONS

* Power Supply: Each board should use between 50 → 80 ma of power at rated voltage and all relay circuits de-energized. Current draw out of this range should indicate a failure of some type.

+ Pin 22 (—) Pin 23

- Connect ± 24 VDC on the appropriate pins (Refer to the schematic).

- Read between TP1 (+) and TP2 (-) for 24V ± 1V.

* - Read TP3 for +5V ± .25V.

- Note that DS3 (GN) lites.

* - Check that the quiescent 24V current is between 50 → 80 ma.

* - Lower the Power Supply voltage to 20V and read TP3 for +5V ± .25V.

* - Each relay contact under test should be connected to some load to simulate real life operation. A 2K Ω resistive load should be sufficient.

Relay Circuit: These relay circuits are specifically designed to pickup and dropout at one specified voltage in order to reject low level noise. Each circuit can be divided into (8) major areas as shown on the following page.

1 PAulisi OCT 17 1980
2 PAulisi MAY 12 1980
273-
273-
273-
273-
273-
PRINTS

MADE BY J.Aulisi 5 May 1980
ISSUED MAY 6 1980
APPROVALS
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Schenectady, N.Y. LOCATION
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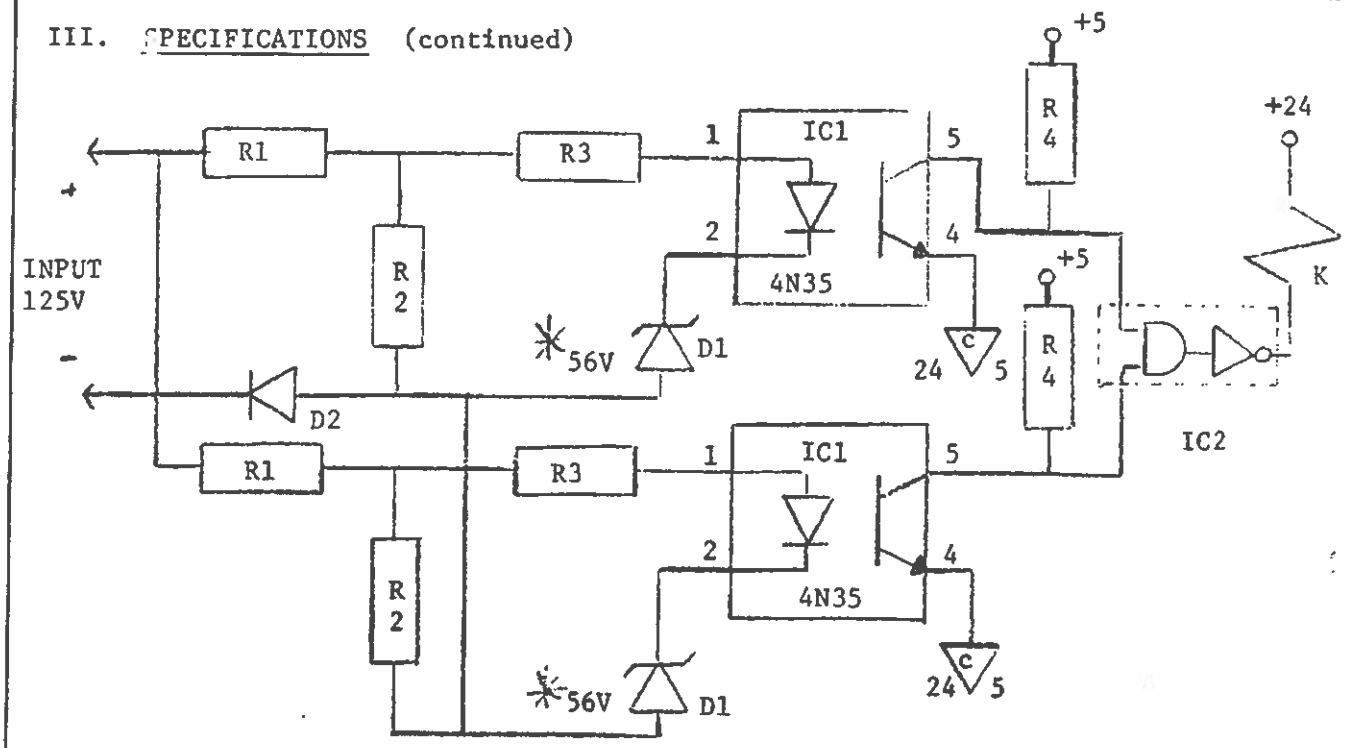
CODE IDEN
770

III. SPECIFICATIONS (continued)



- R1 & R2 provide input load and divides input voltage.
- D1 zener selects (in conjunction with the input voltage divider) the PU and DO settings.
- D2 prevents reverse biasing on the circuit.
- IC1 provides isolation of grounds.
- IC2 is a relay driver which gates the two input circuits in a 1 out of 2 logic function.
- R3 is the current limit for IC1 and D1.
- K is a standard 24V electro-mechanical relay.
- R4 is a pull-up resistor which keeps IC2 off when IC1 is not turned on.

During test, each relay must be checked for (3) major operational points.

✳✳ 1. The relay must pickup between an input voltage range of 60 → 70 VDC.

✳ 2. Once energized, each relay must de-energize within .1V of its' pickup voltage. This small deadband will verify that the breakdown knee of the zener occurs in an avalanche fashion.

REVIS

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PRINTS

III. SPECIFICATIONS (continued)

3. The solid state "front end" functions as a 1 out of 2 logic circuit. Therefore, each channel must be independently checked. Using an IC test clip, verify that pin 5 of each optical isolator goes low (.8V or less) when the circuit has been energized and that when de-energized, that point goes high (4.5V or more). Be careful not to short any of the pins of the optical isolator together.

4. Each relay circuit must also be individually checked such that each can operate without falsely energizing any of the others, i.e. via excessive relay noise, high voltage arcing or solder bridges.

5. Lower the ± Power Supply to 20 VDC and recheck items 1 → 4.

6. Raise the circuit input voltage to ± 175 VDC and energize all circuits for a period of 3 minutes (This simulates a high battery charging voltage). Remove voltage and allow board to cool. Re-test items 1 → 4.

Test Complete.

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CONT ON SHEET – SH NO. 4

TITLE
TEST SPECIFICATION FOR THE SOLID STATE
125V RELAY BOARDS

FIRST MADE FOR EHC MARK I

REVIS
a K PAULISI MAY 12 1981
1 K PAULISI OCT 17 1980

PREPARED BY: _____ DATE: _____

R.J. Wood
EHC DESIGN ENGINEERING
Building 285 Room 231

APPROVED BY: _____ DATE: 5/7/80

R.L. Olson, Manager
EHC DESIGN ENGINEERING
Building 285 Room 231

PRINT

MADE BY J.Aulisi 5 May 1980
ISSUED MAY 6 1980

APPROVALS

Steam Turbine DIV OR DEPT.
Schenectady, N.Y. LOCATION

P3K-AL-0272
CONT ON SHEET – SH NO. 4

Data Sheet

Job # _____

Serial # _____

Date _____

Data Sheet for __118D1499G0001_____Page 1__

Test Procedure __P3K-AL-0272_____

Burn-in Start _____

Burn-in Stop _____

Technician _____

Test Procedure Step	Nominal	Lower Limit	Pre-Burn in Results	Post Burn in Results	Upper Limit	Pot Values If applicable CW	CCW	Pass/Fail
III - 1								
III - 2								
III - 3								
III - 4								
III - 5								
III - 6 - K1								
III - 7 - K1								
III - 8a - K1								
III - 8b - K1								
III - 6 - K2								
III - 7 - K2								
III - 8a - K2								
III - 8b - K2								
III - 6 - K3								
III - 7 - K3								
III - 8a - K3								
III - 8b - K3								
III - 6 - K4								
III - 7 - K4								
III - 8a - K4								
III - 8b - K4								
III - 6 - K5								
III - 7 - K5								

3/23/2012

cw

Data Sheet

Job # _____

Serial # _____

Date _____

Data Sheet for __118D1499G0001_____Page 2__

Test Procedure __P3K-AL-0272_____

Burn-in Start _____

Burn-in Stop _____

Technician _____

Test Procedure	Nominal	Lower Limit	Pre-Burn in Results	Post Burn in Results	Upper Limit	Pot Values If applicable		Pass/Fail
III - 8a - K5								
III - 8b - K5								
III - 6 - K6								
III - 7 - K6								
III - 8a - K6								
III - 8b - K6								
III - 6 - K7								
III - 7 - K7								
III - 8a - K7								
III - 8b - K7								
III - 9 - K1								
III - 9 - K2								
III - 9 - K3								
III - 9 - K4								
III - 9 - K5								
III - 9 - K6								
III - 9 - K7								
III - 10 - K1								
III - 10 - K2								
III - 10 - K3								
III - 10 - K4								
III - 10 - K5								
III - 10 - K6								
III - 10 - K7								