

Order Number

Serial Number

Number in Batch

## PRODUCT/TEST MANUAL

**2HSA520K1**

**110V DC TIME DELAY RESET MULTI-TRIP RELAY  
5M 0B**

Issue Level	Date	Summary of changes
A	18/02/2008	Initial issue.
B	17/02/2009	Update to include dropout test

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MVL	DG	DG	

## 1. ASSOCIATED DRAWINGS

Wiring diagram 136-520-101  
PCI 145 ALPHA Reference Build specification  
PL201 Sample Inspection Plan

## 2. HIGH VOLTAGE TESTING

Using the standard Matrix High Voltage test fixture apply 2kV RMS 50Hz between terminals as in 2.a), 2.b) below.

Repeat the test using three 5KV 1/50us pulses of each polarity between terminals as in 2.a), 2.b) below.

- a) All terminals together to frame
- b) Coil to all contacts plus frame

## 3. TEST PROCEDURE

- a) Determine the sample size for the batch by referring to the Sample Plan on PL 201
- b) Select the samples at random from the batch and check that the minimum and maximum contact gap meets the requirements of PCI 145, using feeler gauges measure the contact gap on all contacts on all contact stacks, measure the contact pressures on blades that are accessible.

Check

- c) Manually operate the relay to its latched position, push the armature towards the pole face of the relay. Ensure that a minimal amount of backlash is present and that the contacts have sufficient over travel by ensuring that all of the contacts have made before the armature is fully latched.

Check

- d) Plug the relay into the Matrix Test panel.
- e) Adjust the auxiliary supply to 120% of nominal (132VDC)
- f) Hand reset the flag, operate the "Capacitor Discharge" switch, then push "Test" button. Ensure that the relay and flag does not operate or the contacts make, a slight flicker is acceptable.

Check

- g) Connect the coaxial lead from "CH2 Trigger" on the test jig to the external trigger input on the Oscilloscope; connect the "CH1" lead on the test jig to channel 1 input on the oscilloscope. Set the time base to about 2ms. Press the "Start" button and note the waveform on the oscilloscope, the time from the trigger point to the rising edge (N/O contacts) of the waveform on first touch is 12 ms for switch positions 1 - 5.

Check

- h) Make sure that the contact wiring of the relay corresponds to the connection diagram on the side of the relay.

Check

- i) Check that the relay operates satisfactorily at 120% (132VDC) and 50% (55VDC) and that the armature is fully home.

Check

- j) Ensure that after the relay has operated and latched that the current in the operating circuit is zero.

Check

- k) Reduce the auxiliary voltage input to 6.5% of nominal applied voltage (7.15V). All relay contacts should be dropped out AND the delay element is to be dropped out. If this is not the case, the

delay element residual screw should be adjusted inwards to make sure the delay element is in the unpowered state.

Check

#### 4. GENERAL & FUNCTIONAL

- a) Plug the "Alpha 20 contact" test jig into the test rack and plug in the test relay, insert the .030" gauge and slowly operate the armature by hand and note when each of the front panel LED's illuminate, all relevant LED's should be on by the time the armature is against the gauge.
- b) Fit elastic band on the flag to prevent damage to the flag mechanism during transport.
- c) Check that the relay is electrically sound and mechanically robust as per Standard Inspection & Test Schedule 903-000-026.

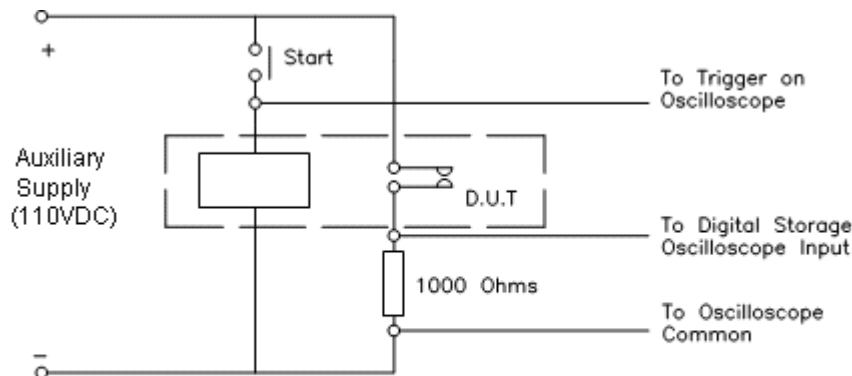
Check

**PASS**

TESTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

#### 5. TEST SETUP & WAVEFORMS

##### CONTACT TEST SETUP



Contact Test Setup. Pictorial representation shown actual schematic contains switches and various components.

##### CONTACT OPERATE WAVEFORMS

Below is the "Ideal" waveform to indicate the N/O contacts

