

INCH-POUND

MS24193H  
w/AMENDMENT 1  
27 April 2006  
SUPERSEDING  
MS24193H  
27 November 2003

DETAIL SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 50 AMPERES,  
3PST TYPE II, NON-HERMETICALLY SEALED

This specification is approved for use by all Departments  
and Agencies of the Department of Defense.

The requirements for acquiring the relay described herein shall  
consist of this specification and the latest issue of MIL-PRF-6106.

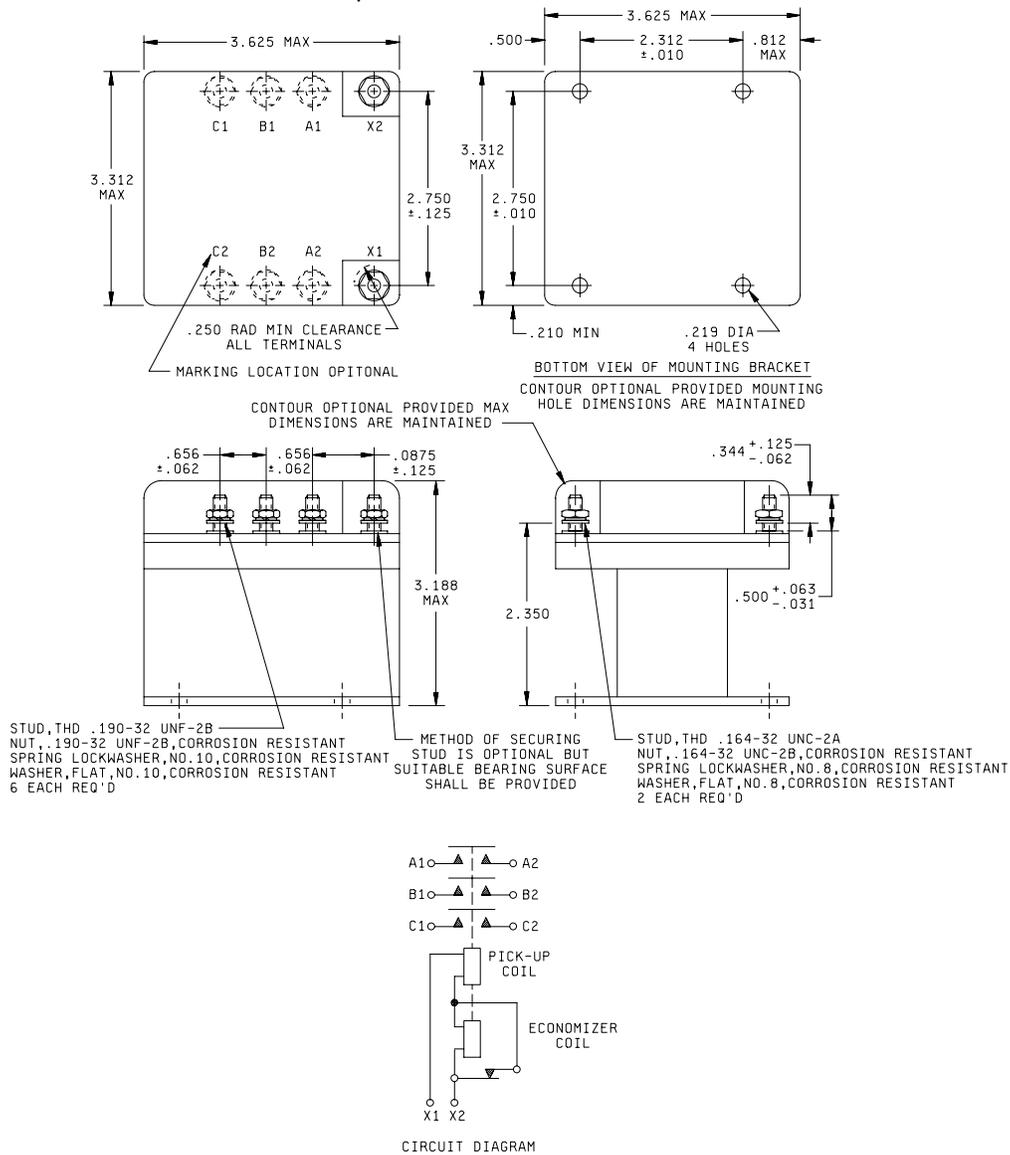


FIGURE 1. Dimensions and configuration.

MS24193H  
w/AMENDMENT 1

| Inches | mm   | Inches | mm    | Inches | mm    |
|--------|------|--------|-------|--------|-------|
| .010   | .25  | .210   | 5.33  | .875   | 22.23 |
| .031   | .79  | .219   | 5.56  | 2.350  | 59.69 |
| .062   | 1.57 | .250   | 6.35  | 2.750  | 69.85 |
| .063   | 1.60 | .344   | 8.74  | 3.188  | 80.98 |
| .125   | 3.18 | .500   | 12.70 | 3.312  | 84.12 |
| .164   | 4.17 | .656   | 16.66 | 3.625  | 92.08 |
| .190   | 4.83 | .812   | 20.62 |        |       |

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are  $\pm 0.031$  (0.79 mm).
4. Additional flat washer may be used for terminal seat.
5. Terminal covers and barriers required at power terminals.
6. Part number MS24193-D1 replaces number AN3341-1.
7. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.
8. Referenced Government documents of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation forms a part of this standard to the extent specified herein.

TABLE I. Dash numbers and characteristics.

| Dash number<br>MS24193- | Type | Coil | Terminal type | Mounting or<br>mating socket | Max weight<br>in pounds |
|-------------------------|------|------|---------------|------------------------------|-------------------------|
| D1                      | II   | dc   | Stud          | Plate                        | 1.6                     |

FIGURE 1. Dimensions and configurations - Continued.

TABLE II. Operating characteristics.

| PIN<br>MS<br>24193- | Coil data |                    |            |                                    |                 |       |         |                          |                      |                              |                              |  | Time (milliseconds-maximum) |                           |                  |    |     |     |     |
|---------------------|-----------|--------------------|------------|------------------------------------|-----------------|-------|---------|--------------------------|----------------------|------------------------------|------------------------------|--|-----------------------------|---------------------------|------------------|----|-----|-----|-----|
|                     | Coil      | Rated              |            |                                    |                 | Max   |         | Max pick-up voltage      |                      |                              | Hold<br>voltage<br><u>2/</u> | Drop<br>out<br>vol-<br>tage<br><u>2/</u> | Oper-<br>ate<br><u>3/</u>   | Rel-<br>ease<br><u>4/</u> | Bounce <u>5/</u> |    |     |     |     |
|                     |           | Volts<br><u>1/</u> | Freq<br>Hz | Res $\Omega$<br>$\pm 10\%$<br>25°C |                 | Volts | Amperes | Nor-<br>mal<br><u>2/</u> | High<br>temp<br>test | Cont<br>cur-<br>rent<br>test |                              |  |                             |                           | Main             |    | Aux |     |     |
|                     |           |                    |            | In-<br>rush                        | Steady<br>state |       |         |                          |                      |                              |                              |  |                             |                           | NO               | NC | NO  | NC  |     |
| D1                  | X1, X2    | 28                 | dc         | 13.5                               | 71.5            | 29    | 2.4     | .45                      | 18                   | 21                           | 22.5                         | 7.0                                      | 1.5                         | 20                        | 15               | 4  | --- | --- | --- |

1/ CAUTION: Use of any coil voltage less than rated coil voltage will compromise the operation of the relay.

2/ Over the temperature range.

3/ With rated coil voltage.

4/ From rated coil voltage.

5/ Bounce time after life test 8 ms.

3

TABLE III. Rated contact load (amperes per pole) (case grounded).

| Type of load                    | Life operat-<br>ing cycles<br>$\times 10^3$ | 28 V dc |    |     |      | 115 V ac, 1 phase |       |        |       | 115/200 V ac, 3 phase <u>1/</u> |       |        |       | See appropriate notes |
|---------------------------------|---|---------|----|-----|------|-------------------|-------|--------|-------|---------------------------------|-------|--------|-------|-----------------------|
|                                 |   | Main    |    | Aux |      | Main              |       | Aux    |       | Main                            |       | Aux    |       |                       |
|                                 |   | NO      | NC | NO  | NC   | 400 Hz            | 60 Hz | 400 Hz | 60 Hz | 400 Hz                          | 60 Hz | 400 Hz | 60 Hz |                       |
| Resistive                       | 50  | 50      |    |     | 50   |                   |       |        | 50    |                                 |       |        |       |                       |
| Inductive                       | 10  | 50      |    |     | 50   |                   |       |        | 50    |                                 |       |        |       |                       |
| Inductive                       |   |         |    |     |      |                   |       |        |       |                                 |       |        |       |                       |
| Motor                           | 50  | 50      |    |     | 50   |                   |       |        | 50    |                                 |       |        |       |                       |
| Lamp                            |   |         |    |     |      |                   |       |        |       |                                 |       |        |       |                       |
| Transfer load                   |   |         |    |     |      |                   |       |        |       |                                 |       |        |       | <u>2/</u>             |
| Mechanical life reduced current | 100   | 12.5    |    |     | 12.5 |                   |       |        | 12.5  |                                 |       |        |       |                       |
| Mixed loads                     | 50  | 5       |    |     | 5    |                   |       |        | 5     |                                 |       |        |       |                       |

1/ Absence of value indicates relay is not rated for 3-phase application.

2/ Transfer load indicates relay is suitable for transfer between unsynchronized ac power supplies at rating indicated.

MS24193H  
w/AMENDMENT 1

Environmental characteristics.

|                              |                |
|------------------------------|----------------|
| Temperature range            | -55°C to +71°C |
| Max altitude rating          | 50,000 ft      |
| Shock G-level                | 25 g's         |
| Duration                     | 6 - 9 ms       |
| Max duration contact opening | 2 ms           |

Vibration - sinusoidal

| 5-10 Hz | 10-55 Hz | 55-250 Hz | 250-500 Hz | 500-1500 Hz |
|---------|----------|-----------|------------|-------------|
| .08 DA  | .06 DA   | 2 g's     | 2 g's      |             |

Vibration - Random

|                          |        |
|--------------------------|--------|
| Applicable specification | N/A    |
| Power spectral density   | N/A    |
| RMS G-min                | N/A    |
| Frequency range          | N/A    |
| Curve                    | N/A    |
| High shock               | N/A    |
| Acceleration             | 10 g's |

Electrical characteristics.

|                                   |              |
|-----------------------------------|--------------|
| Insulation resistance, initial    | 100 megohms. |
| After life or environmental tests | 50 megohms.  |

|                                  |             |
|----------------------------------|-------------|
| Dielectric strength (sea level). | 2-5 seconds |
|----------------------------------|-------------|

|                  | Initial     |             | After life tests |             |
|------------------|-------------|-------------|------------------|-------------|
|                  | 28 V dc     | 115 V ac    | 28 V dc          | 115 V ac    |
| Coil to case     | 1,250 V rms | N/A         | 1,000 V rms      | N/A         |
| Aux contacts     | 1,250 V rms | N/A         | 1,000 V rms      | N/A         |
| All other points | 1,250 V rms | 1,500 V rms | 1,000 V rms      | 1,125 V rms |

Dielectric strength (altitude): 1 minute.

|                  | 28 V dc   | 115 V ac  |
|------------------|-----------|-----------|
| Coil to case     | 500 V rms | N/A       |
| Aux contacts     | 500 V rms | N/A       |
| All other points | 500 V rms | 500 V rms |

|                           |  |
|---------------------------|--|
| Max contact drop initial: | 0.150 volt.  |
| After life test:          | 0.175 volt.  |
| Overload current (N.O.):  | 400 amperes  |
| Rupture current (N.O.):   | 500 amperes  |
| Duty rating:              | Continuous.  |
| RFI specification:        | MIL-STD-461.   |
|                           | (Applicable to coil circuits of ac operated relays). |

Qualification by similarity: See MIL-PRF-6106.

MS24193H  
w/AMENDMENT 1

NOTES

Referenced documents. In addition to MIL-PRF-6106, this specification sheet references the following documents. (Government documents are available on line at <http://assist.daps.dla.mil/quicksearch> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

STANDARDS

Department of Defense

MIL-STD-461 - Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

Changes from previous issue: Marginal notations are mark with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:  
NAVY - AS  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC  
(Project 5945-2006-022)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <http://assist.daps.dla.mil> .