

INCH-POUND

MS24185L
10 Jan 94
SUPERSEDING
MS24185K
25 July 1990

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 400 AMPERES, 1 PST,
N. O. 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 product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-R-6106.

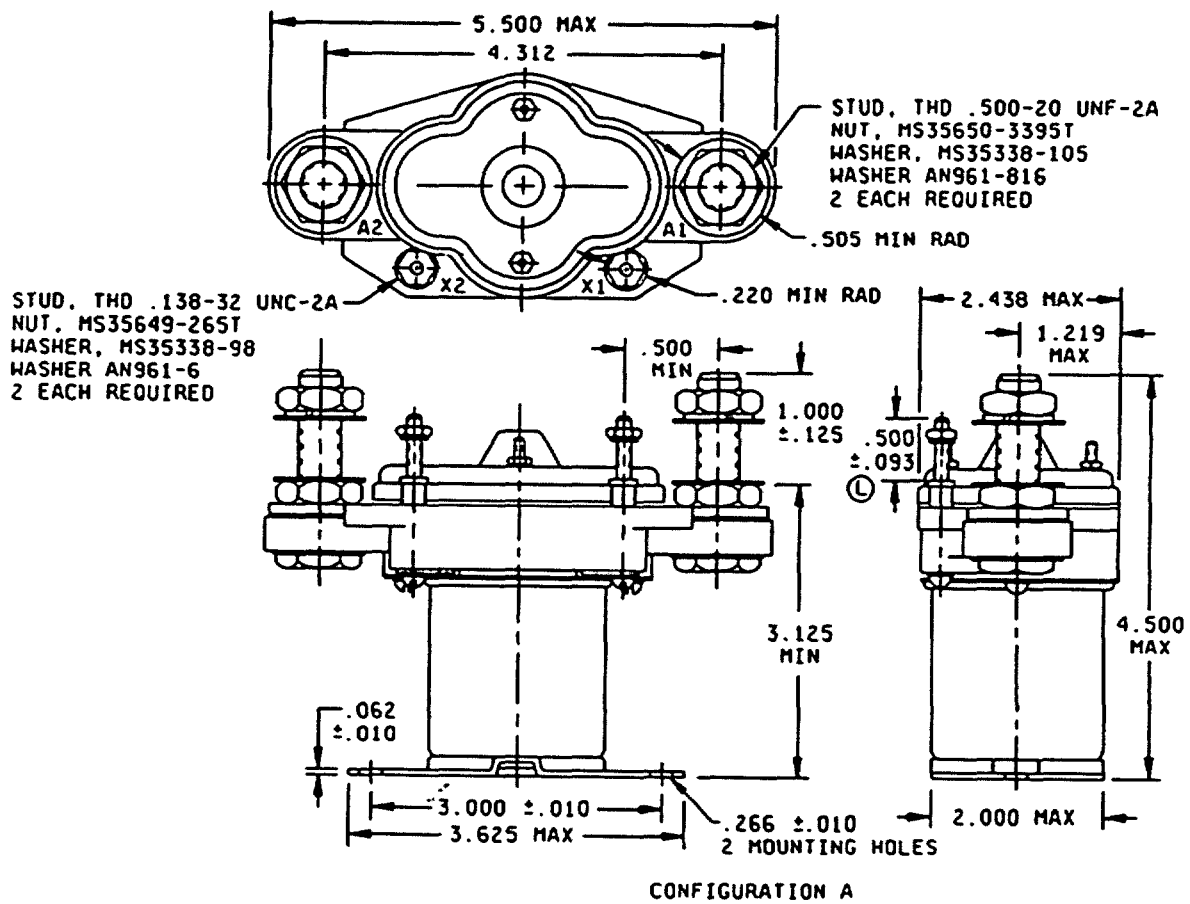
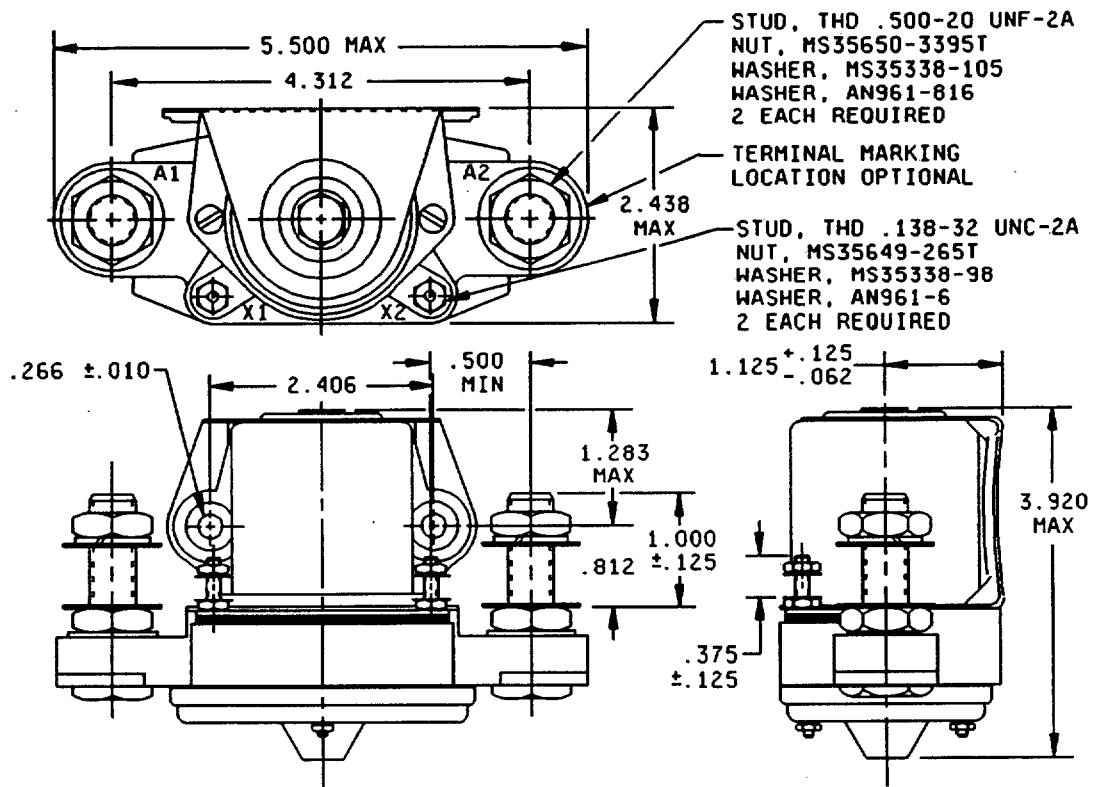


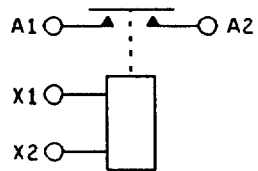
FIGURE 1. Dimensions and configurations.

Ⓛ denotes changes

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CONFIGURATION B



CIRCUIT DIAGRAM
APPLICABLE TO
CONFIGURATION A AND B

FIGURE 1. Dimensions and configurations - Continued.

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| Inches | mm | Inches | mm | Inches | mm |
|--------|-------|--------|-------|--------|--------|
| .010 | 0.25 | .500 | 12.70 | 2.406 | 61.11 |
| .062 | 1.57 | .505 | 12.83 | 2.438 | 61.93 |
| .090 | 2.29 | .812 | 20.62 | 3.000 | 76.20 |
| .125 | 3.18 | 1.000 | 25.40 | 3.125 | 79.38 |
| .138 | 3.51 | 1.125 | 28.58 | 3.625 | 92.08 |
| .220 | 5.59 | 1.219 | 30.96 | 3.920 | 99.57 |
| .266 | 6.76 | 1.273 | 32.33 | 4.312 | 109.52 |
| .375 | 9.52 | 1.281 | 32.54 | 4.500 | 114.30 |
| .475 | 12.06 | 2.000 | 50.80 | 5.500 | 139.70 |

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.062 (1.57 mm).
4. Additional flat washer may be used for terminal seat.
5. Terminal temperature rise under continuous current condition: $+95^{\circ}\text{C}$. Intermediate current to be conducted at $+71^{\circ}\text{C}$.
6. In the event of a conflict between the text of this standard and the references cited herein, the text of this standard shall take precedence.
7. 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 form a part of this standard to the extent specified herein.
8. Shape of relay is optional within the envelope dimensions shown.

FIGURE 1. Dimensions and configurations - Continued.

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REQUIREMENTS:

Dimensions and configurations: See figure 1.

Dash number and general characteristics: See table I.

Contact data:

Load ratings: See table II.

Maximum contact drop, initial: 0.150 V.

After life test: 0.175 V.

Overload current (N. O.): 3,200 amperes.

Rupture current (N. O.): 4,000 amperes.

Coil data: See table III.

Duty rating: Continuous.

RFI specification: MIL-STD-461 (applicable to coil circuits of ac operated relays).

Electrical data:

Minimum insulation resistance:

Initial: 100 megohms.

After life or environmental test: 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 |
| Auxiliary contacts: | 1,250 V rms | N/A | 1,000 V rms | N/A |
| All other points: | 1,250 V rms | N/A | 1,000 V rms | N/A |

Altitude, 1 minute:

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

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Environmental characteristics:

Temperature range : -55°C to +71°C.

Maximum altitude rating: 50,000 feet.

Shock, g-level: 25 g's.

Duration: 6-9 ms.

Maximum duration contact opening: 2 ms.

Vibration, sinusoidal: See table IV.

Vibration, random: N/A.

High shock: N/A.

Acceleration: 10 g's.

Qualification by similarity: See table V.

Part or Identifying Number (PIN): MS24185- (plus applicable dash number from table I).

TABLE I. Dash numbers and general characteristics.

| Dash number MS24185L- | Type | Coil | Terminal type | Mounting or mating socket | Max weight (pounds) |
|--------------------------|------|------|---------------|------------------------------|------------------------|
| D1 <u>1/</u> | II | dc | Stud | Bracket - bottom | 2.6 |
| D2 <u>2/</u> | II | dc | Stud | Bracket - side | 2.6 |

- 1/ For Government logistics support, MS24185-D1 shall be used in lieu of AN3380-2.
- 2/ For Government logistics support, MS24185-D2 shall be used in lieu of AN3380-1.

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TABLE II. Rated contact load (amperes per pole), case grounded. 1/

| Type of load | Life operating cycles x 10 ³ | 28 V dc | | | | 115 V ac, 1 phase | | | | 115/200 V ac, 3 phase | | | | 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 | 400 | | | | | | | | | | | | |
| Inductive | 10 | 100 | | | | | | | | | | | | |
| Motor | 50 | 400 | | | | | | | | | | | | |
| Lamp | | | | | | | | | | | | | | |
| Transfer load | | | | | | | | | | | | | | 2/ |
| Mechanical life reduced current | 100 | 100 | | | | | | | | | | | | |
| Intermediate current | 50 | 40 | | | | | | | | | | | | |

① 1/ Absence of value indicates parameter is not applicable to this specification sheet.

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

TABLE III. Operating characteristics.

| PIN | | Coil data | | | | | | | | | | Time (milliseconds-maximum) | | | |
|----------|-------|-----------|-------|----------------------|-------|---------|---------------------|------|---------|--------------|--------------|-----------------------------|---------|--------|-----|
| | | ① Rated | | | Max | | Max pick-up voltage | | | Hold | Drop | Operate | Release | Bounce | |
| MS24185- | Coil | Volts | Freq. | Res Ω | Volts | Amperes | Normal | High | Cont. | volt- age | volt- age | | | Main | Aux |
| | | 1/ | Hz | +10% -15% 25°C | | | 2/ | temp | current | 2/ | 2/ | 3/ | 4/ | NO | NC |
| | | | | | | | | test | test | | | | | | |
| D1 | X1,X2 | 28 | dc | 66 | 29 | .60 | 18 | 21 | 22.5 | 7.0 | 1.5 | 40 | 15 | 5.0 | |
| D2 | X1,X2 | 28 | dc | 66 | 29 | .60 | 18 | 21 | 22.5 | 7.0 | 1.5 | 40 | 15 | 5.0 | |

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

2/ Over the temperature range.

① 3/ With rated coil voltage.

① 4/ From rated coil voltage.

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TABLE IV. Vibration levels (sinusoidal).

| 5-10 Hz | 10-55 Hz | 55-250 Hz | 250-500 Hz | 500-1,500 Hz |
|---------|----------|-----------|------------|--------------|
| .08 DA | .06 DA | 2 g's | 2 g's | N/A |

TABLE V. Qualification by similarity.

| PIN | Loads | | | | | | Dynamics 1/ | | | Environmental | | |
|----------|--------|---|---|-----------|---|---|-------------|---|---|---------------|---|---|
| | Type 1 | | | Type 1 ER | | | | | | | | |
| | A | B | C | D | E | F | A | B | C | A | B | C |
| MS24185- | | | | | | | | | | | | |
| D1 | 4 | | | | | | 2 | | | 4 | | |
| D2 | 4 | | | | | | 2 | | | 4 | | |

1/ For group C testing, each dash number shall be tested to meet vibration requirements.

CONCLUDING MATERIAL

Custodians:
Navy - AS
Air Force - 85

Review activities:
Navy - EC
Air Force - 99

Preparing activity:
Air Force - 85

Agent:
DLA - ES

(Project 5945-0915-01)