

INCH-POUND

MS24187M  
 8 March 1993  
 SUPERSEDING  
 MS24187L  
 31 March 1992

## MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, 50/25 AMPERES, 1PDT  
 (NO/NC), TYPE II, NONHERMETICALLY 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.

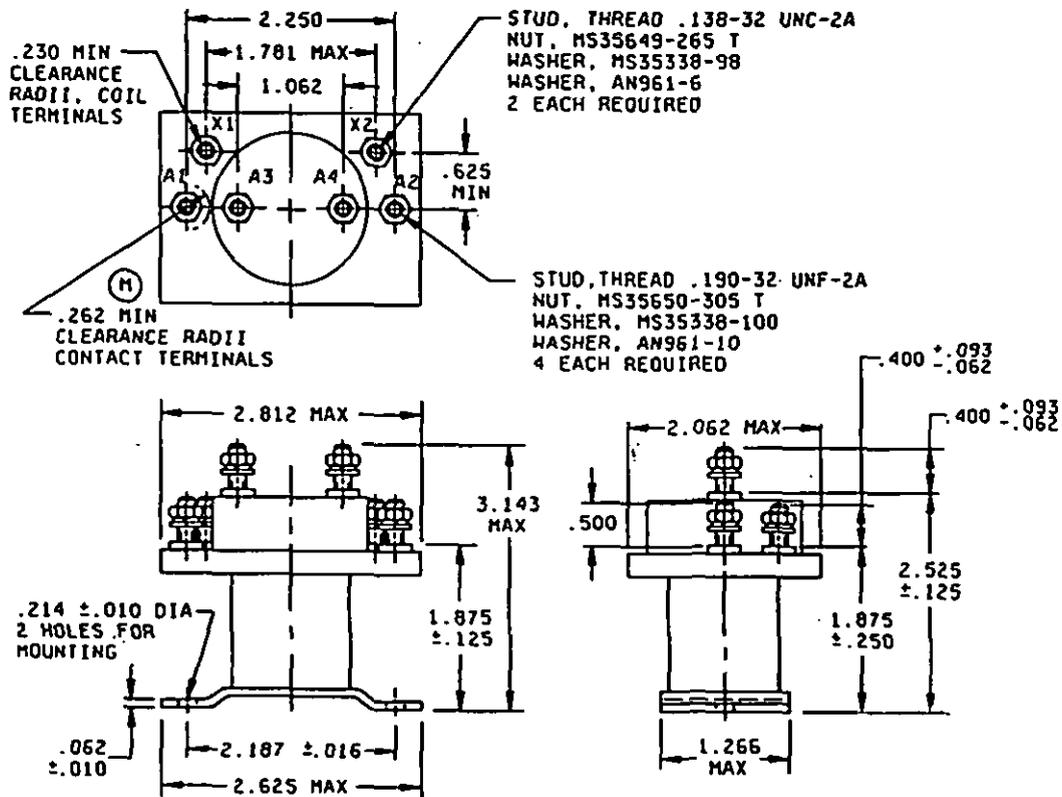
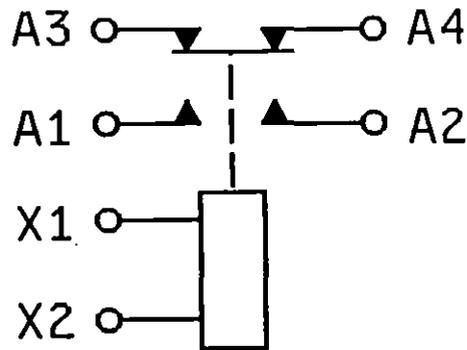


FIGURE 1. Dimensions and configuration.

(M) denotes changes

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## CIRCUIT DIAGRAM

Inches	mm	Inches	mm	Inches	mm
.010	0.25	.230	5.84	1.875	47.62
.016	0.40	.250	6.35	2.062	52.37
.062	1.57	.343	8.71	2.187	55.55
.093	2.36	.400	10.16	2.250	57.15
.125	3.18	.500	12.70	2.525	64.14
.138	3.51	.625	15.88	2.812	71.42
.190	4.83	1.062	26.97	3.143	79.83
.214	5.44	1.781	45.24		

### NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are  $\pm 0.061$  inch (1.57 mm).
3. Metric equivalents are given for general information only.
4. Additional flat washer may be used for terminal seat.
5. 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.
6. 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 specification to the extent specified herein.

FIGURE 1. Dimensions and configuration - Continued.

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## REQUIREMENTS:

Dimensions and configuration: See figure 1.

Dash numbers 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: NO: 400 amperes; NC: 200 amperes.

Rupture current: NO: 500 amperes; NC: 250 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	115 V ac
Coil to case:	1,250 V	N/A	1,000 V	N/A
Aux. contacts:	1,250 V	N/A	1,000 V	N/A
All other points:	1,250 V	1,250 V	1,000 V	1,000 V

Altitude, 1 minute:

	28 V dc	115 V ac
Coil to case:	500 V	700 V
Aux. contacts:	500 V	700 V
All other points:	700 V	700 V

## Environmental characteristics:

Temperature range: -55°C to +71°C.

Maximum altitude rating: 50,000 feet.

Shock g level: (NO) 25 g's, (NC) 15 g's.

Duration: 6-9 ms.

Maximum duration contact opening: 2 ms.

Vibration, sinusoidal: See table IV.

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Vibration, random: Not applicable.

High shock: Not applicable.

Acceleration: 10 g's.

TABLE I. Dash numbers and general characteristics.

Dash number MS24187-	Type	Coil type	Terminal type	Mounting or mating socket	Auxiliary contacts	Max weight (lbs)
D1 and D2	II	dc	Stud	Bracket	None	0.66

TABLE II. Rated contact load (amperes per pole) (case grounded). <sup>1/</sup>

Type of load	Life oper- ating cycles  x 10 <sup>3</sup>	28 V dc				115 V ac, 1 phase				115/200 V ac, <sup>2/</sup> 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	50	25			25								
Inductive	10	50	25											
Inductive														
Motor	50	50	25											
Lamp														
Transfer load														<sup>3/</sup>
Mechanical life reduced current	<sup>4/</sup>	12.5	6.3			6.3 <sup>5/</sup>								
Intermediate current	50	5	5			5 <sup>5/</sup>								

<sup>1/</sup> Normally closed contacts shall operate 20 percent of the maximum operating cycles for the motor load test. For resistive load tests, the normally open contacts shall be cycled with the rated dc resistive load and the normally closed contacts shall be cycled with the rated ac resistive load. For no other load tests shall both sets of contacts be cycled simultaneously. It is not required that the relay operate when the contact enclosure is removed. Contact enclosures of MS24187 relays shall be provided with resilient gaskets at mating surfaces and shall prevent entrance of all airborne particles of sand and dust.

<sup>2/</sup> Absence of value indicates relay is not rated for three phase applications.

<sup>3/</sup> Transfer load indicates relay is suitable for transfer between unsynchronized ac power supplies at rating indicated.

<sup>4/</sup> Mechanical life: 100,000 cycles for MS24187-01 and 500,000 cycles for MS24187-02.

<sup>5/</sup> Normally open only.

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(M) TABLE III. Operating characteristics.

PIN MS24187-	Coil	Coil data										Time (milliseconds maximum) <sup>2/</sup>					
		Rated			Max		Max pick-up voltage			Hold voltage 2/	Drop-out voltage 2/	Operate 3/	Release 4/	Contact bounce			
		Volts 1/	Freq. Hz	Res Ω +10% -15% at 25°C	Volts	Amps	Normal 2/	High temp test	Cont- cur- rent test					Main	NC	NO	NC
D1	X1,X2	28	dc	94.2	29	0.36	18	21	22.5	9.0	1.5	20	15	5	10		
D2	X1,X2	28	dc	94.2	29	0.36	18	21	22.5	9.0	1.5	20	15	5	10		

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.

TABLE IV. Vibration levels (sinusoidal).

PIN MS24187-	Frequency				
	5-10 Hz	10-55 Hz	55-250 Hz	250-500 Hz	500-1500 Hz
D1, D2	.08 DA	.06 DA	2 g's	2 g's	N/A

Part or Identifying Number (PIN): MS24187- (plus applicable dash number from table I).

Qualification by similarity: See table V.

TABLE V. Qualification by similarity.

PIN MS24187-	Loads						1/ Dynamics	2/ Environmental		
	Type I			Type I ER			A	A	B	C
	A 3/	B	C	D	E	F				
D1	4 4/						2	4		
D2	4 2/						2	4		

1/ All units must be tested (reference MIL-R-6106).

2/ Test unit with auxiliary contacts (reference MIL-R-6106).

3/ Letters on this line represent assigned subgroups in accordance with MIL-R-6106 (appendix).

4/ Numbers in these columns represent numerical ranking within the subgroups of MIL-R-6106 (appendix).

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Supersession data: See table VI.

TABLE VI. Supersession data.

Superseding (new) PIN	Superseded (old) PIN
MS24187-D2 MS24187-D2	AN3353-1 AN3353-2

Government logistics support: MS24187-02 shall be stocked, stored, and issued in lieu of MS24187-01.

## CONCLUDING MATERIAL

Custodians:  
Navy - AS  
Air Force - 85

Review activities:  
Navy - EC  
Air Force - 99  
DLA - ES

Preparing activity:  
Air Force - 85

Agent:  
DLA - ES

(Project 5945-Q898-01)