



# 187 series

## 20-25 Amp Power Relays

File E38802

File LR54109

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to confirm the product meets the requirements for a given application.

### Features

- AC coils 6-240VAC 50/60 Hz., DC 6-110VDC.
- One or two pole models with single or double throw contacts.
- 187 relays with 2 form A or 2 form B contacts are rated 25 amps; 187 relays with other contact arrangements are rated 20 amps.
- .250" combination quick connect/solder terminals or PC terminals.
- Various mounting options include stud, core, bracket, flange, PC board.
- Open-style relay or with dust cover.

### Contact Data @ 25°C

**Arrangements:** 1 Form X (SPST-NO-DM), 1 Form Y (SPST-NC-DB), 2 Form C (DPDT), 2 Form A (DPST-NO) and 2 Form B (DPST-NC).

**Material:** Silver-cadmium oxide, .25" (6.5mm) dia. or Fine silver, .187" (4.75mm) dia.

**Expected Mechanical Life:** 10 million operations.

**Initial Contact Resistance:** 50 milliohms.

### Contact Ratings

| Contact Code & Description                          | UL Ratings  | Expected Life |
|---|---|---------------|
| -200<br>1/4" (6.25 mm) Dia.<br>Silver Cadmium Oxide | 20A @ 120/240VAC<br>10A @ 480/600VAC<br>3/4 HP @ 120VAC,<br>1 1/2 HP @ 240VAC<br>2 HP @ 208/277VAC*<br>17FLA, 65LRA @ 300VAC<br>20A @ 28VDC | 100,000 ops.  |
| -500<br>3/16" (4.75 mm) Dia.<br>Fine Silver         | 5A @ 120/240VAC<br>2A @ 480/600VAC<br>1/8 HP @ 120VAC,<br>1/4 HP @ 240VAC<br>2A (7.2A inrush) @ 24VAC<br>5A @ 28VDC                         | 100,000 ops.  |
| -600<br>1/4" (6.25 mm) Dia.<br>Silver Cadmium Oxide | 25A @ 120/240VAC<br>10A @ 480/600VAC<br>3/4 HP @ 120VAC,<br>1 1/2 HP @ 240VAC<br>2 HP @ 208/277VAC*<br>17FLA, 65LRA @ 300VAC                | 100,000 ops.  |

\*2 HP rating at reduced electrical life, consult factory.

### Initial Dielectric Strength

**Between Open Contacts:** >750V rms, 60 Hz.

**Between All Other Mutually Isolated Elements:** >2,500V rms, 60 Hz.

### Coil Data @ 25°C

**Voltage:** 6-110VDC and 6-240VAC.

**Nominal Power:**

**DC Coils:** 1.2 Watts.

**AC Coils:** 3.0VA.

**Duty Cycle:** Continuous at up to 25% overvoltage.

**Initial Insulation Resistance:** 1,000 megohms, min. @ 500VDC

**Insulation:** Class B, 130°C.

### Coil Data @ 25°C (continued)

**Temperature Rise:**

**AC Coils:**

**Nominal Voltage:** 35°C for open models.  
45°C for enclosed models.

**25% Overvoltage:** 55°C for open models.  
65°C for enclosed models.

**DC Coils:**

**Nominal Voltage:** 35°C for open models.  
40°C for enclosed models.

**25% Overvoltage:** 50°C for open models.  
55°C for enclosed models.

### Coil Data

|          | Nominal Voltage | DC Resistance in Ohms ± 10% | Must Operate Voltage |
|----------|-----------------|-----------------------------|----------------------|
| DC Coils | 6               | 32                          | 4.5                  |
|          | 12              | 120                         | 9.0                  |
|          | 24              | 470                         | 18.0                 |
|          | 48              | 1,800                       | 36.0                 |
|          | 110             | 11,000                      | 82.5                 |
| AC Coils | 6               | 4.2                         | 5.1                  |
|          | 12              | 18                          | 10.2                 |
|          | 24              | 72                          | 20.4                 |
|          | 120             | 1,700                       | 102.0                |
|          | 208             | 5,400                       | 176.8                |
|          | 240             | 7,200                       | 204.0                |

### Operate Data @ 25°C

**Must Operate Voltage:**

**DC Coils:** 75% of nominal.

**AC Coils:** 85% of nominal.

**Operate Time (Excluding Bounce):** 20 milliseconds, max, at nominal voltage, no coil suppression.

**Release Time (Excluding Bounce):** 10 milliseconds, max, at nominal voltage, no coil suppression.

### Environmental Data

**Temperature Range (50/60 Hz operation, based on 105°C limit):**

**Operating**

**AC Coils:** -45°C to +60°C for open models.  
-45°C to +45°C for enclosed models.

**DC Coils:** -45°C to +80°C for open models.  
-45°C to +70°C for enclosed models.

**Storage**

**All:** -65°C to +100°C.

**Shock:** 15g's, 11 ± 1 ms (non-operating, no mechanical damage).

**Vibration:** .1" double amplitude or 10 g's, 10-55 Hz. (operating, no contact chatter).

### Mechanical Data

**Termination:** .250" quick connect/solder; and PC board.

**Enclosure:** Open or polycarbonate dust cover.

**Weight:** 3 oz. (86g) approximately.

**Outline Dimensions**

Typical Part No. > **187- 3 2 T 2 00**

|   |  |  |  |  |  |  |
|---|--|--|--|--|--|--|
| <b>1. Basic Series and Type:</b><br>187 = Open or Enclosed 20-25 Amp Power Relay.   |  |  |  |  |  |  |
| <b>2. Enclosure and Terminals:</b><br>1 = Open, Solder/Quick Connect Terminals.<br>2 = Plain Enclosure with 6-32 Tapped Core, Solder/Quick Connect Terminals<br>3 = Flanged Enclosure, Solder/Quick Connect Terminals<br>4 = Plain Enclosure with Mounting Bracket and Stud on Closed End, Solder/Quick Connect Terminals<br>5 = Plain Enclosure with Bottom Mounted 6-32 Stud, Solder/Quick Connect Terminals<br>6 = Plain Enclosure with Bottom Mounted Bracket, Solder/Quick Connect Terminals<br>7 = Open, Printed Circuit Board Terminals<br>8 = Plain Enclosure, Printed Circuit Board Terminals<br>0 = Special |  |  |  |  |  |  |
| <b>3. Contact Arrangement:</b><br>2 = 2 Form C (DPDT)      6 = 2 Form A (DPST-NO)      7 = 2 Form B (DPST-NC)      0 = Special<br>8 = 1 Form X (SPST-NO-DM)      9 = 1 Form Y (SPST-NC-DB)  |  |  |  |  |  |  |
| <b>4. Coil:</b><br>A = 6VDC      C = 24VDC      F = 110VDC      N = 6VAC      Q = 24VAC      U = 240VAC      S = Special<br>B = 12VDC      D = 48VDC      P = 12VAC      T = 120VAC      M = 208VAC   |  |  |  |  |  |  |
| <b>5. Contacts:</b><br>2 = 1/4" (6.25mm) Diameter, Silver-Cadmium Oxide.      0 = Special<br>5 = 3/16" (4.75mm) Diameter, Pure Fine Silver.<br>6 = 1/4" (6.25mm) Diameter, Silver-Cadmium Oxide (Requires Contact Arrangement 6 [2 form A] or 7 [2 form B] in step 3 above).  |  |  |  |  |  |  |
| <b>6. Standard or Special:</b><br>00 = Standard      F0 = Class "F" Coil      A1-Z9 = Special Construction or Feature<br>L0 = Lamp in parallel with coil      M0 = Magnetic blowout   |  |  |  |  |  |  |

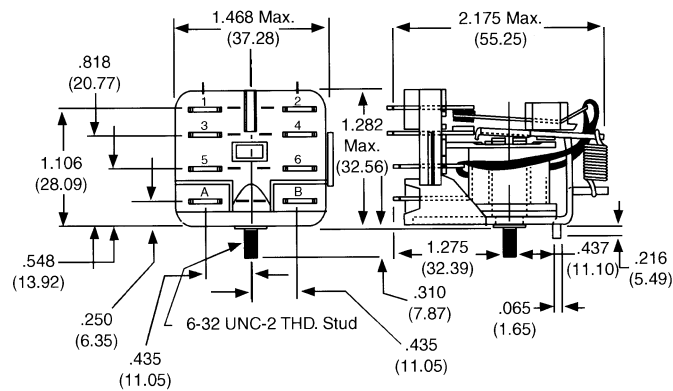
**NOTE: No sockets are available for this relay.**

**Our authorized distributors are more likely to maintain the following items in stock for immediate delivery.**

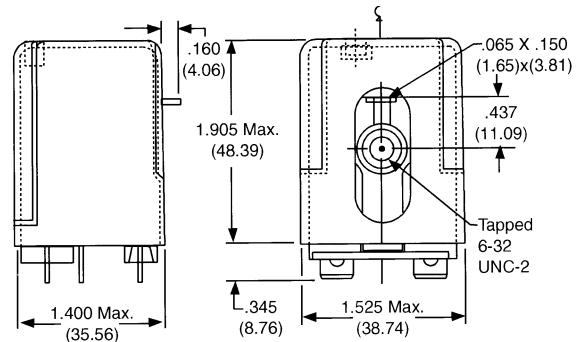
- |            |            |            |            |
|------------|------------|------------|------------|
| 187-32B200 | 187-32D200 | 187-32Q200 | 187-32U200 |
| 187-32C200 | 187-32F200 | 187-32T200 |            |

**Outline Dimensions**

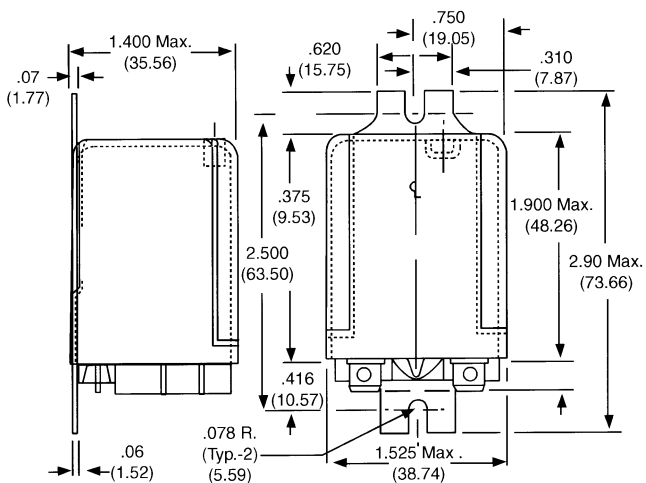
**Open 187-1**



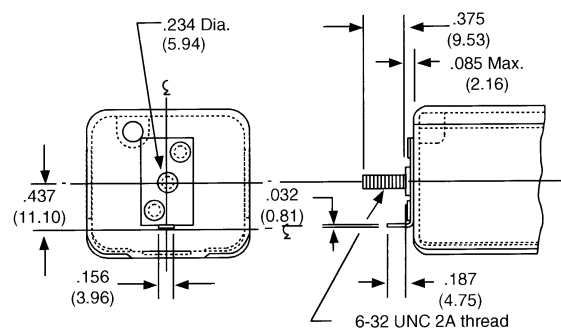
**Dust Cover 187-2**



**Dust Cover with Mounting Flange 187-3**

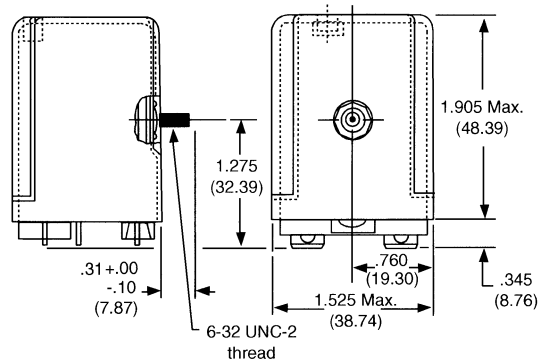


**Dust Cover with Bracket and Stud on End 187-4**

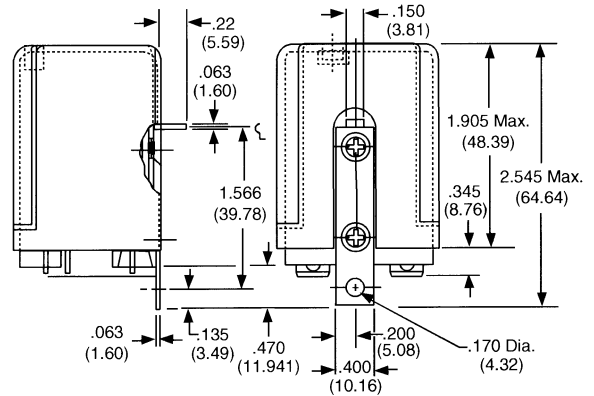


**Outline Dimensions (Continued)**

**Bottom Stud 187-5**

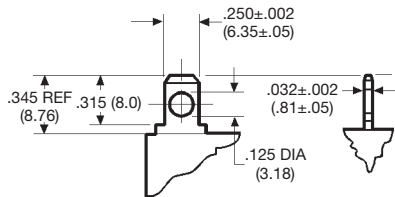


**Bracket Mount 187-6**

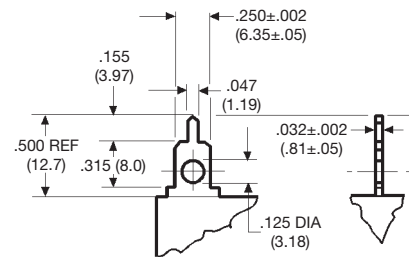


**Terminal Dimensions**

**.250" (6.35mm) Quick Connect**

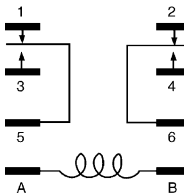


**Printed Circuit**

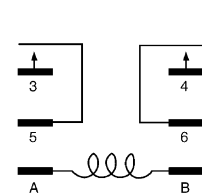


**Wiring Diagrams**

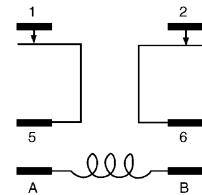
**2 Form C (DPDT)**



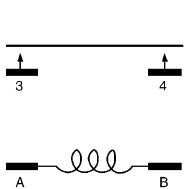
**2 Form A (DPST-NO)**



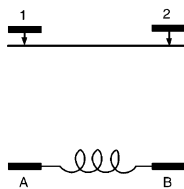
**2 Form B (DPST-NC)**



**1 Form X (SPST-NO-DM)**

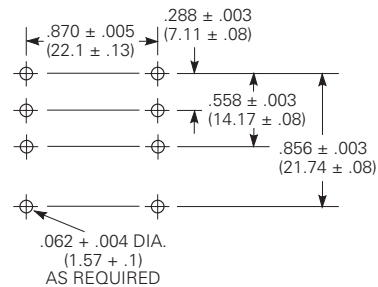


**1 Form Y (SPST-NC-DB)**



**PC Board Layout (Bottom View)**

**Suggested PCB layout for 187 series relays with PCB terminals**



**Reference Only**

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