

# 160 Series



160



165



## 160 Series 5 And 13 Amp General Purpose Plug-in Relay

General purpose relay that controls electrical loads

### Features

- Class F Coil Insulation System for 155° C Total Temperature
- Coil Molded in Rynite® PET for environmental protection
- Unique armature stop maintains adjustment
- Fine wire gauge coils are skined for integrity

### Typical Applications

- Industrial Machine Control
- Energy Management Systems
- Control Panels

### Models

- 160:** 5 Amp Open Frame
  - 161:** 13 Amp Open Frame
  - 165:** 5 Amp Covered Plug-in
  - 166:** 13 Amp Covered Plug-in
  - 165F:** 5 Amp Flanged Cover w/QC Terminals
  - 166F:** 13 Amp Flanged Cover w/QC Terminals
  - 166E:** Addition of Blowout Magnets - For Higher DC Ratings
- Other Suffixes Available: A-Indicator Lamp, P-Printed Circuit Terminals, TM-Top Mounted Cover

| Contact Data                |   |  |
|-----------------------------|---|--|
| Configuration               | Thru 3PDT   |  |
| Materials                   | 5 Amp: 1/8" Diameter Moveable Fine Silver   3/16" Diameter Stationary Fine Silver<br>13 Amp: 3/16" Diameter Moveable Silver Cadmium Oxide   3/16" Diameter Stationary Fine Silver<br>Gold Flash is Standard on all Contacts<br>Gold Diffused Available on Special Order - Min. Qty. Req'd |  |
| Contact Ratings             |   |  |
| Model                       | Pole Configuration  | UL Ratings*  |
| 160/165                     | Thru 3PDT   | 5 Amp or 1/8 HP at 120 VAC<br>5 Amp or 1/4 HP at 277 VAC<br>2 Amp at 600 VAC<br>5 Amp at 28 VDC  |
| 161/166                     | Thru 3PDT   | 13 Amp or 1/3 HP at 120 VAC<br>13 Amp or 1/2 HP at 277 VAC*<br>10 Amp at 28 VDC<br>1 HP at 277 VAC - 3 phase<br>3 Amp or 3/4 HP at 600 VAC<br>12 FLA, 35 LRA at 15 VAC |
| 166E<br>(w/ Blowout Magnet) | Thru DPDT   | 3 Amp at 150 VDC 30,000 cycles   |
|                             | Form X, Y, W, and Z   | 10 Amp at 150 VDC 100,000 cycles   |
| Expected Life               | Electrical at Rated Load (Min) 100,000 Operations   Mechanical Life 10,000,000 Operations   |  |
| Dielectric Strength         | 800 VRMS, 60 Hz Between Contacts<br>2200 VRMS, 60 Hz Between Other Elements   |  |
| Agency Approvals            | UL Recognized File No. E37066   |  |

\*3 Pole devices rate at 6-2/3 Amp when switching greater than 150 VAC, unless polarity is the same on all poles

All dimensions in Inches

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Specifications subject to change without notice

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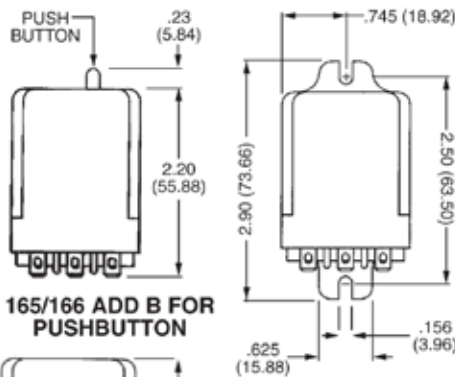
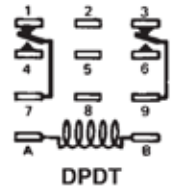
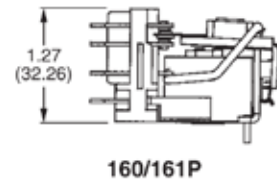
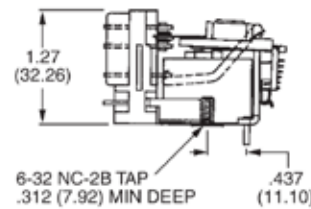
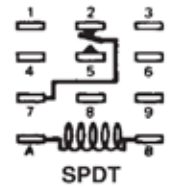
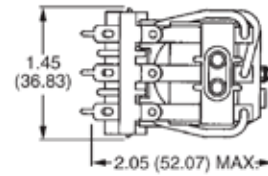
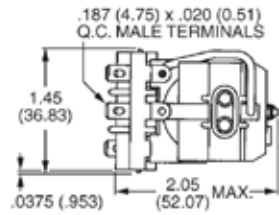
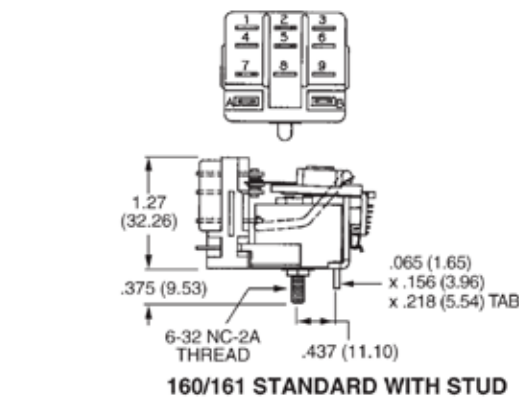
| Coil Data                     |  |                              |                    |
|-------------------------------|--|------------------------------|--------------------|
|                               | Nominal Voltage  | Resistance In Ohms $\pm$ 10% | Nominal Coil Power |
| AC Coils Single Pole Units    | 6 VAC  | 5.                           | 2.0 VA             |
|                               | 12 VAC   | 20                           |                    |
|                               | 24 VAC   | 80                           |                    |
|                               | 48 VAC   | 315                          |                    |
|                               | 120 VAC  | 2025                         |                    |
|                               | 240 VAC  | 8000                         |                    |
| AC Coils 2 & 3 Pole Units     | 6 VAC  | 4.5                          | 2.2 VA             |
|                               | 12 VAC   | 18                           |                    |
|                               | 24 VAC   | 72                           |                    |
|                               | 48 VAC   | 285                          |                    |
|                               | 120 VAC  | 1850                         |                    |
|                               | 240 VAC  | 7200                         |                    |
| DC Coils 1-3 Pole Units       | 6 VDC  | 30                           | 1.2 W              |
|                               | 12 VDC   | 120                          |                    |
|                               | 24 VDC   | 480                          |                    |
|                               | 48 VDC   | 1850                         |                    |
|                               | 110 VDC  | 10,000                       |                    |
| Coil Voltages                 | AC: Up to 277 Volts/60 Hz   DC: Up to 125 Volts  |                              |                    |
| Coil Treatment                | Molded Rynite® PET Std. Class F  |                              |                    |
| Insulation Resistance         | 100 Megohms Minimum  |                              |                    |
| UL Insulation System File No. | E74443 S155D 155°C Total Temperature Std. (Covers S105 Class A and S130D Class B Requirements)   |                              |                    |
| Operate Data                  |  |                              |                    |
| Pick Up (at 25°C)             | AC Volts 85% or Less of Nominal   DC Volts 75% or Less of Nominal  |                              |                    |
| Operate Time                  | Approx. 15 Milliseconds  |                              |                    |
| Release Time                  | Approx. 15 Milliseconds  |                              |                    |
| Environmental Data            |  |                              |                    |
| Operating Ambient             | AC: -45° to 55°   DC: -45° to 70°C   |                              |                    |
| Coil Temperature Rise         | (25°C Ambient - Continuous Duty)<br>AC: 45°C Approx. @ 60Hz - Use at 50 Hz will cause slight increase in Coil Rise<br>DC: 25°C Approx. |                              |                    |
| Mechanical Data               |  |                              |                    |
| Terminals                     | All Versions (Except P suffix) .187" x .020 Quick Connect/Solder   P suffix version Printed Circuit Pins                               |                              |                    |
| Cover                         | Clear Polycarbonate - Flammability Rating 94V2   |                              |                    |
| Weight                        | All Versions Approx. 3.0 oz. (85 g)  |                              |                    |

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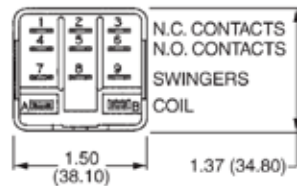
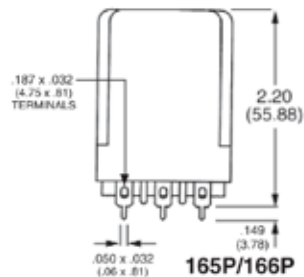
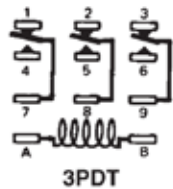
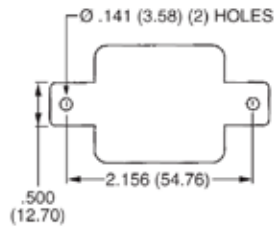
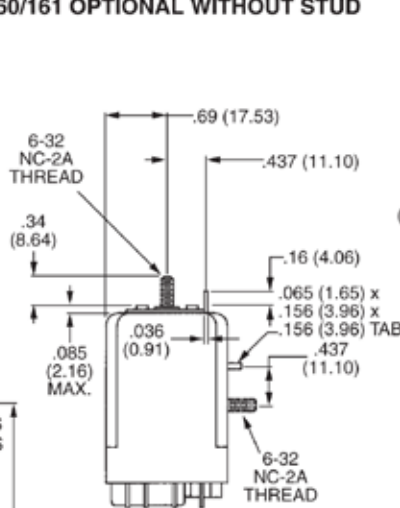
## Dimensional View For Reference Only

Units: Inches [mm]

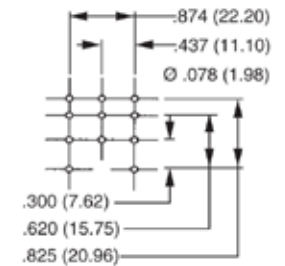
## Schematics



**160/161 OPTIONAL WITHOUT STUD**



**OPTIONAL TOP AND SIDE MOUNTINGS**



# 160 Series



## Ordering Information

### 5 Amp Part Numbers

| Model | Pole Config. | AC Coils |           |          | DC Coils |          |          |
|-------|--------------|----------|-----------|----------|----------|----------|----------|
|       |              | 24 VAC   | 120 VAC   | 240 VAC  | 12 VDC   | 24 VDC   | 110 VDC  |
| 165   | SPDT         | 20323-82 | 20323-84  | 20323-85 | 20326-81 | 20326-82 | 20326-84 |
|       | DPDT         | 20324-82 | 20324-84  | 20324-85 | 20327-81 | 20327-82 | 20327-84 |
|       | 3PDT         | 20325-82 | 20325-84* | 20325-85 | 20328-81 | 20328-82 | 20328-84 |
| 165F  | SPDT         | 20542-82 | 20542-84  | 20542-85 | 20548-81 | 20548-82 | 20548-84 |
|       | DPDT         | 20543-82 | 20543-84  | 20543-85 | 20549-81 | 20549-82 | 20549-84 |
|       | 3PDT         | 20544-82 | 20544-84  | 20544-85 | 20550-81 | 20550-82 | 20550-84 |

### 13 Amp Part Numbers

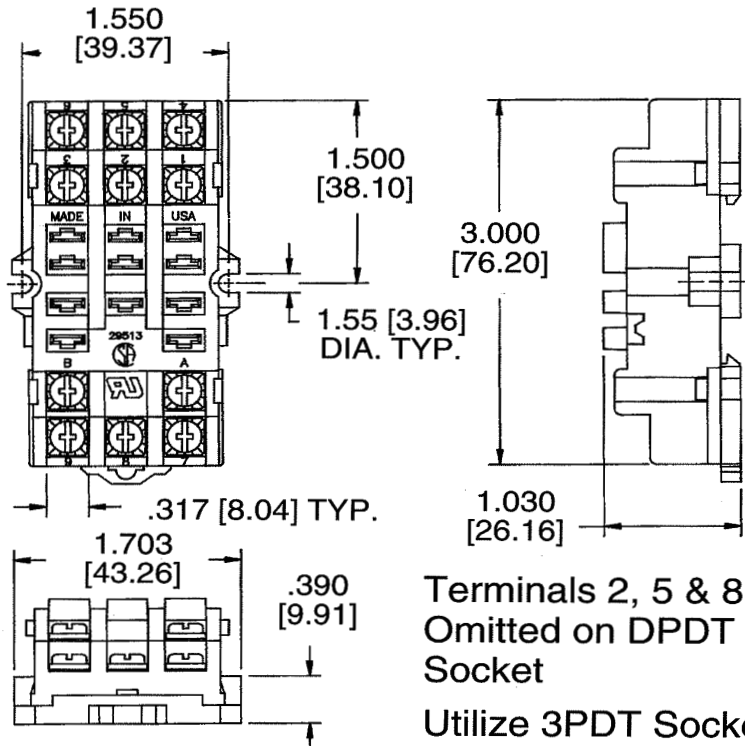
|      |      |           |           |           |           |           |           |
|------|------|-----------|-----------|-----------|-----------|-----------|-----------|
| 161  | SPDT | 20300-82  | 20300-84* | 20300-85  | 20303-81  | 20303-82  | 20303-84  |
|      | DPDT | 20301-82  | 20301-84* | 20301-85  | 20304-81  | 20304-82  | 20304-84  |
|      | 3PDT | 20302-82  | 20302-84  | 20302-85  | 20305-81  | 20305-82  | 20305-84  |
| 166  | SPDT | 20306-82  | 20306-84  | 20306-85  | 20309-81  | 20309-82  | 20309-84  |
|      | DPDT | 20307-82* | 20307-84* | 20307-85* | 20310-81* | 20310-82* | 20310-84  |
|      | 3PDT | 20308-82* | 20308-84* | 20308-85* | 20311-81* | 20311-82* | 20311-84* |
| 166A | SPDT | 20379-82  | 20379-83  | 20379-84  | 20382-81  | 20382-82  | 20382-83  |
|      | DPDT | 20380-82  | 20380-83  | 20380-84  | 20383-81  | 20383-82  | 20383-83  |
|      | 3PDT | 20381-82* | 20381-83* | 20381-84  | 20384-81  | 20384-82  | 20384-83  |
| 166F | SPDT | 20545-82  | 20545-84  | 20545-85  | 20551-81  | 20551-82  | 20551-84  |
|      | DPDT | 20546-82* | 20546-84* | 20546-85  | 20552-81  | 20552-82  | 20552-84  |
|      | 3PDT | 20547-82* | 20547-84* | 20547-85  | 20553-81  | 20553-82  | 20553-84  |

(\*) Normally Stocked

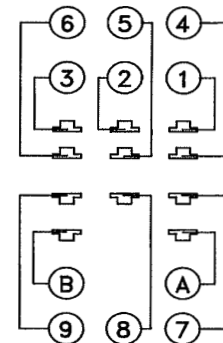
Non stocked items require a minimum order

# 160 Series

## DIN Rail Mounting Sockets



Terminal Location



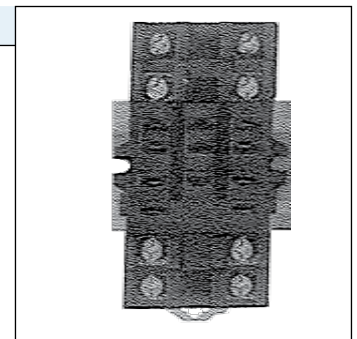
Top View

Terminals 2, 5 & 8 Omitted on DPDT Socket

Utilize 3PDT Socket for Single Pole Applications

| Part Number | Rating             | Configuration | Description       |
|-------------|--------------------|---------------|-------------------|
| 20982-81    | 10 Amps at 300 VAC | DPDT          | 8 TERMINAL SOCKET |

- Din Rail or surface mount
- Pressure clamp screws nickel plated 6-32
- UL Recognized File E66240
- CSA Certified File LR29513M36
- Accepts .187" Terminals



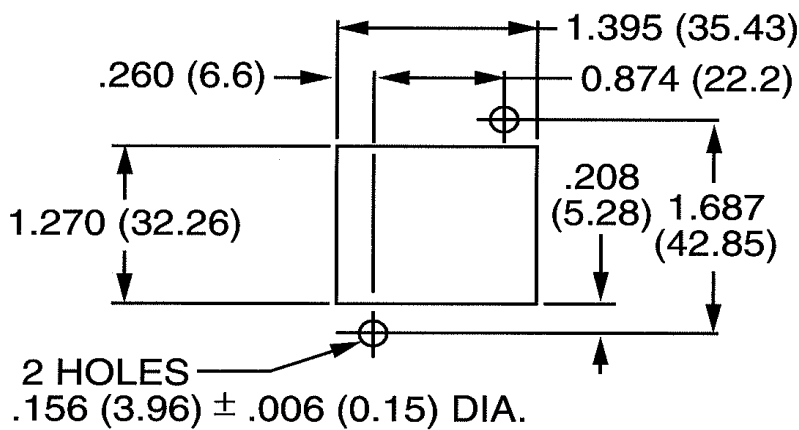
| Part Number | Rating             | Configuration | Description        |
|-------------|--------------------|---------------|--------------------|
| 20982-82*   | 10 Amps at 300 VAC | 3PDT          | 11 TERMINAL SOCKET |

- Din Rail or surface mount
- Pressure clamp screws nickel plated 6-32
- UL Recognized File #E66240
- CSA Certified File LR29513M36
- Accepts .187" Terminals

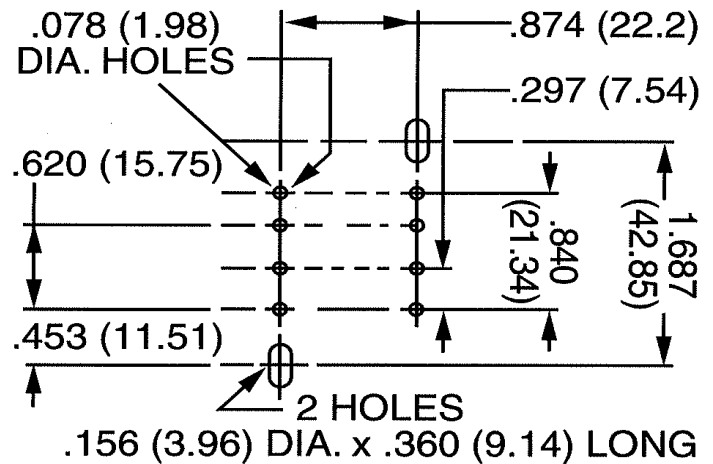


# 160 Series

## Back Connecting Sockets



Tab Type Mounting



PC Mounting

| Part Number | Rating             | Configuration | Description            |
|-------------|--------------------|---------------|------------------------|
| 20312-80    | 10 Amps at 300 VAC | SPDT          | 160 SERIES SOLDER TYPE |
| 20312-81*   |                    | DPDT          | 160 SERIES SOLDER TYPE |
| 20312-82*   |                    | 3PDT          | 160 SERIES SOLDER TYPE |



- Surface Mount - Back Connect
- Accepts .187" Terminals
- UL Recognized File #E66240
- CSA Certified File LR29513M36

| Part Number | Rating             | Configuration | Description                         |
|-------------|--------------------|---------------|-------------------------------------|
| 20313-80    | 10 Amps at 300 VAC | SPDT          | 160 SERIES .187" QUICK CONNECT TYPE |
| 20313-81    |                    | DPDT          | 160 SERIES .187" QUICK CONNECT TYPE |
| 20313-82*   |                    | 3PDT          | 160 SERIES .187" QUICK CONNECT TYPE |



- Surface Mount - Back Connect
- Accepts .187" Terminals
- UL Recognized File #E66240
- CSA Certified File LR29513M36

# 160 Series

## Sockets

| Part Number | Rating             | Configuration | Description                     |
|-------------|--------------------|---------------|---------------------------------|
| 20314-80    | 10 Amps at 300 VAC | SPDT          | 160 SERIES PRINTED CIRCUIT TYPE |
| 20314-81    |                    | DPDT          | 160 SERIES PRINTED CIRCUIT TYPE |
| 20314-82*   |                    | 3PDT          | 160 SERIES PRINTED CIRCUIT TYPE |

- Surface Mount - Back Connect
- Accepts .187" Terminals
- UL Recognized File #E66240
- CSA Certified File LR29513M36



| Part Number | Rating             | Configuration | Description                                  |
|-------------|--------------------|---------------|--|
| 20395-80    | 10 Amps at 300 VAC | SPDT          | 160 SERIES DEEP BARRIER TYPE WITH .187" Q.C. |
| 20395-81    |                    | DPDT          | 160 SERIES DEEP BARRIER TYPE WITH .187" Q.C. |
| 20395-82    |                    | 3PDT          | 160 SERIES DEEP BARRIER TYPE WITH .187" Q.C. |

- Surface Mount - Back Connect
- Accepts .187" Terminals
- UL Recognized File #E66240
- CSA Certified File LR29513M36



## Hold Down Springs

| Part Number | Description                             |
|-------------|---|
| 20902-03*   | Din Rail/Surface Mount Hold Down Spring |
| 20902-00*   | Back Connecting Hold Down Spring        |

