



Control Solutions  
by SJE

# **SCHEMATIC & SUBMITTAL DATA**

**SIMPLEX CONTROL PANEL**

**115/230V-1Ø-1HP**

**FOR**

**231106DB01**

**AMERICAN CONCRETE**

**SUBMITTED: 1-11-24**



### **One Year “Limited” Warranty**

For a twelve (12) month period from date of invoice, subject to the terms and conditions herein after set forth, OEC Control Solutions by SJE reserves the right and option, in its sole discretion, to repair or replace defective equipment, parts or components. Labor, shipping and expenses are not covered by this Warranty.

This warranty does not apply to the following:

- 1) To defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with good trade practices.
- 2) To defects or malfunctions resulting from abuse, accident or negligence.
- 3) To normal maintenance service and the parts and labor used in connection with same.
- 4) To units which are not installed in accordance with applicable local, state and federal codes or ordinances and good trade practices.
- 5) To units which are moved from their original installation location.
- 6) To units which are used for purposes other than what it was designed and manufactured for.
- 7) To units which are damaged by lightning, conditions beyond the control of OEC Control Solutions by SJE, or other “acts of God”.

Contact your nearest authorized OEC Control Solutions by SJE dealer for warranty service. Any item to be replaced must be returned to OEC Control Solutions by SJE, 2395 Rock Road., Ashland, Ohio 44805, or such other places as OEC Control Solutions by SJE. may designate, freight prepaid.

AFTER THE EXPIRATION OF THE TIME PERIOD OF THIS WARRANTY, THERE ARE NO WARRANTIES OF ANY KIND, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. (**NOTE!** SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.)

IN NO EVENT SHALL OHIO ELECTRIC CONTROL, INC. BE LIABLE OR RESPONSIBLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY OEC Control Solutions by SJE PRODUCT, PARTS OR SERVICE. (**NOTE!** SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU).

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS; YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND WHAT IS STATED ABOVE.



## **SPECIFICATIONS**

### ELECTRICAL NOTES:

|                             |                                      |
|-----------------------------|--------------------------------------|
| INCOMING POWER: .....       | 115/230V - 1 $\phi$ - 3 WIRE SERVICE |
| CONTROL POWER: .....        | 115V - 1 $\phi$                      |
| MOTOR HORSEPOWER: .....     | 1HP.                                 |
| MOTOR FULL LOAD AMPS: ..... | 15F.L.A.                             |

### CONTROL PANEL NOTES:

1. The control panel will be provided with an aluminum back panel to mount contactor, fuses, relay, ground lugs and terminal blocks.
2. The buzzer audible alarm will be mounted to the bottom of the control panel enclosure.
3. The control panel components will be labeled.



## **OPERATIONS**

### SPECIAL NOTES:

- The alarm test switch, labeled "Test-Normal-Silence", allows personnel to test the audible and visual exterior alarms when the switch is placed in the "test" position.

### MOTOR CONTROL:

#### **Manual Mode:**

Place the Hand-Off-Auto selector switch in the "Hand" position. The pump motor will run.

#### **Auto Mode:**

1. Place the Hand-Off-Auto selector switch in the "Auto" position.
2. When the liquid level in the wet well rises to the "on" level, the pump will run.
3. The pump will stop when the liquid level drops below the "off" level.

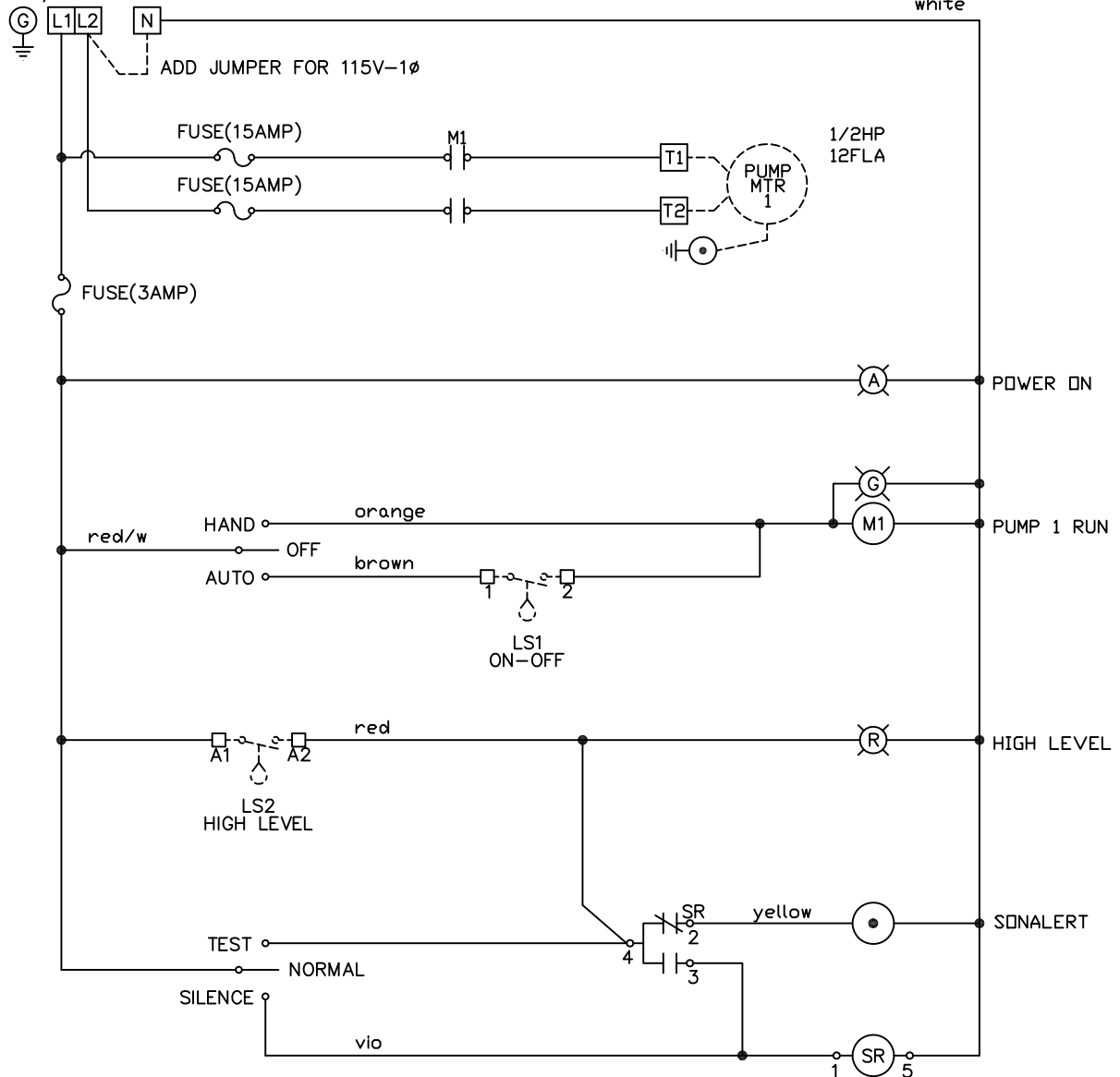
### Alarm:

**High Level:** The liquid level rises above the "high" level.

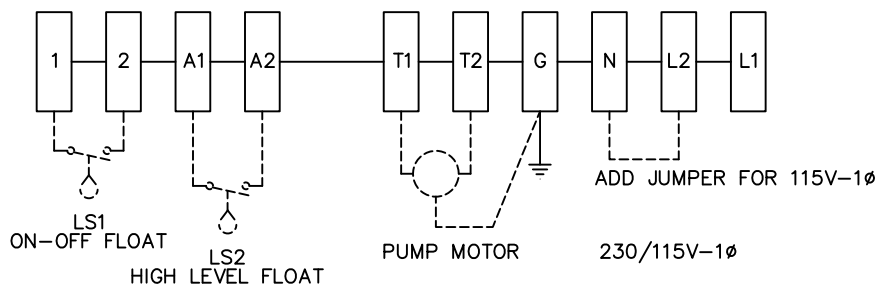
- An indicator light on the outer door will illuminate.
- The audible exterior alarm will sound and can be shut off by placing the "Test-Normal-Silence", in the "silence" position.

230/115V-1 $\phi$ -3 WIRE SERVICE

white



TERMINAL BLOCK LAYOUT



|                     |             |              |                |
|---------------------|-------------|--------------|----------------|
| VOLTAGE:<br>115/230 | PHASE:<br>1 | HERTZ:<br>60 | HP/FLA:<br>-/- |
|---------------------|-------------|--------------|----------------|



|        |                      |  |
|--------|----------------------|--|
| TITLE: | JDP SHEET ___ OF ___ |  |
|--------|----------------------|--|

|                   |
|-------------------|
| ENCLOSURE TYPE: 1 |
|-------------------|

|                            |
|----------------------------|
| SHORT CIRCUIT CURRENT: 5KA |
|----------------------------|

|                               |
|-------------------------------|
| RMS SYMMETRICAL, 240V MAXIMUM |
|-------------------------------|

Control Solutions  
by SJE

|               |           |                         |
|---------------|-----------|-------------------------|
| DATE:<br>1-24 | REV DATE: | DWG. NO.:<br>231106DB01 |
|---------------|-----------|-------------------------|



Control Solutions  
by SJE

**Quote Number:** 231106DB01  
**Company:** American Concrete  
**Contact Name:** Dan Sinclair  
**Phone Number:** 207-784-1388  
**Cell Number:** 800-638-9000  
**E-mail / Fax:** 207-783-4039  
**Job Name:** Indoor Polycarbon Panel 15 AMP  
**Quoted By:** David Baker

**CONTROL PANEL SPECIFICATIONS:**

Station Type: Simplex  
Pump Model: 1HP @ 15FLA maximum  
Panel Voltage: 115V/230V 1Ø  
SCCR Minimum Rating: 5000 Amps  
UL Listed: None  
PDF Specs Attached: Yes

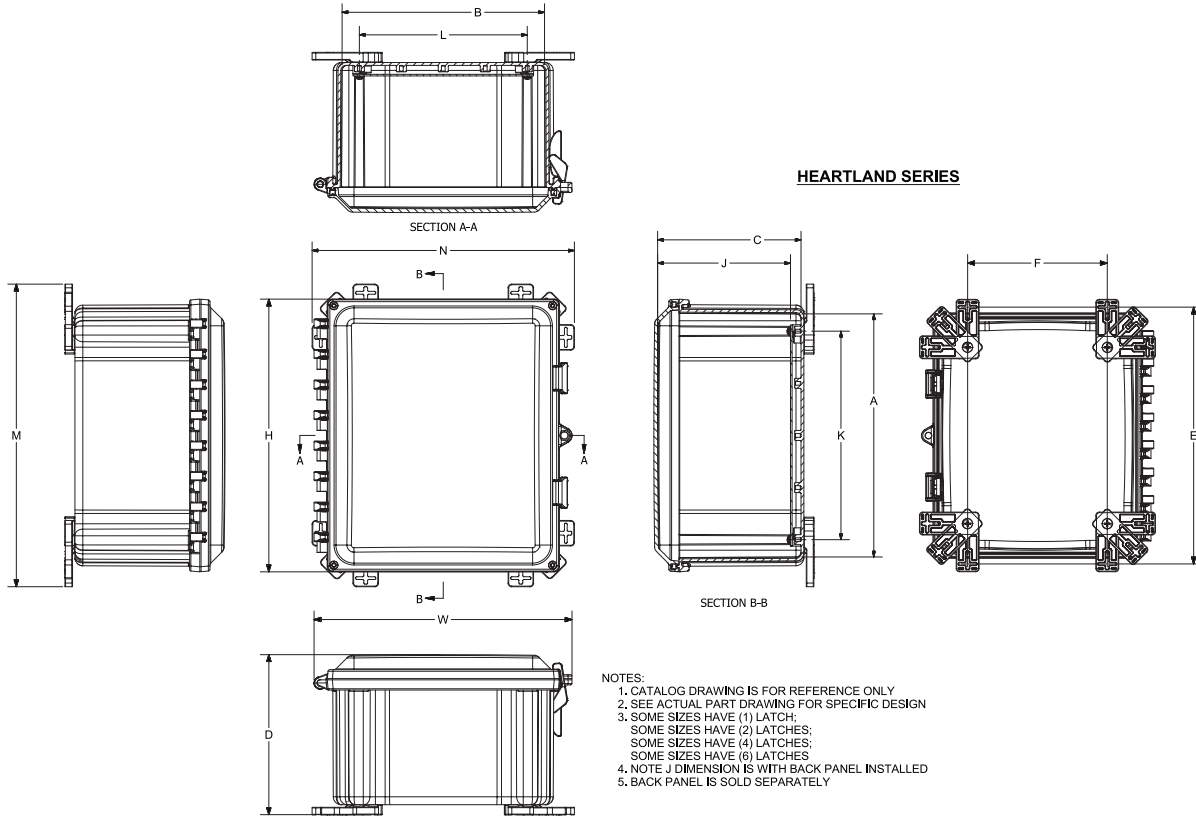
**OTHER REQUIREMENTS:**

| Quantity | Part Number     | Part Description                                   | Construction Notes  | Manufacturer |
|----------|-----------------|--|---|--------------|
| 1.0      | AH864           | ENCLOSURE  | TYPE 1 POLYCARBONATE, 8" X 6" X 4"                          | ATTABOX      |
| 1.0      | BP64A-AMCONPOLY | BACK PANEL   |   |              |
| 3.0      | BTWP2.5         | POWER BLOCK  | FOR POWER DISTRIBUTION                                      | WEG          |
| 2.0      | BTWP2.5         | PUMP T-BLOCK                                       | FOR WIRING OF MOTOR LEADS                                   | WEG          |
| 4.0      | BTWP2.5         | FLOAT T-BLOCK                                      | 2 FLOAT SYSTEM: OFF/ON, HIGH LEVEL;<br>FOR WIRING OF FLOATS | WEG          |
| 1.0      | GL4717          | GROUND BAR   | FOR INCOMING POWER AND PUMP<br>GROUNDS                      | LUGS DIRCT   |
| 1.0      | LC1D18G7        | CONTACTOR 600 V 18 A                               |   | SQUARE D     |
| 2.0      | MDA15R          | MOTOR FUSE   |   | BUSSMANN     |
| 2.0      | HKP             | MOTOR FUSE HOLDER                                  | MOUNTED IN OUTER DOOR                                       | BUSSMANN     |
| 1.0      | MDL3R           | CONTROL/ALARM FUSE                                 |   | BUSSMANN     |
| 1.0      | BKHTB28IR       | CONTROL FUSE BLOCK                                 | MOUNTED IN OUTER DOOR                                       | BUSSMANN     |
| 1.0      | RJ1SCA120       | SILENCE RELAY                                      | MOUNTED IN SOCKET ON BACK PANEL                             | IDEC         |
| 1.0      | SJ1S05BW        | RJ RELAY SOCKET                                    |   | IDEC         |
| 1.0      | 1190Q20B        | HAND-OFF-AUTO SWITCH<br>SPRING RETURN FROM<br>HAND | MOUNTED IN OUTER DOOR                                       | SPEMCO       |
| 1.0      | 1195Q20B        | ALARM TEST-NORMAL-<br>SILENCE SWITCH               | MOUNTED IN OUTER DOOR                                       | SPEMCO       |

|     |                     |                     |  |           |
|-----|---------------------|---------------------|--|-----------|
| 1.0 | 1052QC5             | RUN LIGHT           | GREEN MOUNTED IN OUTER DOOR                    | VCC       |
| 1.0 | 1050QC1             | HIGH LEVEL LAMP     | RED MOUNTED IN OUTER DOOR                      | VCC       |
| 1.0 | 1050QC3             | POWER ON LAMP       | AMBER MOUNTED IN OUTER DOOR                    | VCC       |
| 1.0 | 16004146-4HOLE      | BUZZER              |  | WORLDWIDE |
| 1.0 | LAMINATED           | DOOR LABEL          | MOUNTED ON OUTER DOOR                          | OEC       |
| 1.0 | MISC SHOP MATERIALS | WIRING HARNESS      |  | OEC       |
| 1.0 | *****               | *****               | *****  | *****     |
| 2.0 | MDA15R              | SPARE MOTOR FUSE    | SHIPPED LOOSE                                  |           |
| 2.0 | MDL3R               | SPARE CONTROL FUSES | SHIPPED LOOSE                                  | BUSSMANN  |
| 1.0 | *****               | *****               | *****  | *****     |
| 1.0 | NOTE                | NOTE: SCHEMATIC     | SCHEMATIC PROVIDED IN POCKET ON ENCLOSURE DOOR | OEC       |

# Heartland

TECHNICAL DRAWINGS / DIMENSIONS



HEARTLAND SERIES

- NOTES:
1. CATALOG DRAWING IS FOR REFERENCE ONLY
  2. SEE ACTUAL PART DRAWING FOR SPECIFIC DESIGN
  3. SOME SIZES HAVE (1) LATCH;  
SOME SIZES HAVE (2) LATCHES;  
SOME SIZES HAVE (4) LATCHES;  
SOME SIZES HAVE (6) LATCHES
  4. NOTE J DIMENSION IS WITH BACK PANEL INSTALLED
  5. BACK PANEL IS SOLD SEPARATELY

## HEARTLAND SERIES DIMENSIONS

| SIZE ID NUMBER        | OVERALL H X W X D                          | INSIDE A X B X C                           | MOUNTING HOR. E X F          | MOUNTING VER. E X F          | MOUNTING 45 E X F            | J              | K              | L              | M              | N              | SHIPPING WEIGHT | PANEL NUMBER |
|-----------------------|--|--|------------------------------|------------------------------|------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|--------------|
| AH664<br>AH664C       | 7.41 x 8.68 x 5.84<br>(188 x 223 x 148)    | 5.94 x 5.94 x 5.02<br>(151 x 151 x 127)    | 3.64 x 8.40<br>(93 x 213)    | 8.04 x 3.64<br>(204 x 93)    | 6.75 x 6.74<br>(171 x 171)   | 4.50<br>(114)  | 4.25<br>(108)  | 4.25<br>(108)  | 8.89<br>(226)  | 8.89<br>(226)  | 2.50 lbs.       | BP66**       |
| AH864<br>AH864C       | 9.41 x 8.68 x 5.86<br>(239 x 223 x 149)    | 7.97 x 5.97 x 5.07<br>(202 x 152 x 129)    | 5.64 x 8.04<br>(143 x 213)   | 10.04 x 3.64<br>(255 x 93)   | 8.76 x 6.75<br>(223 x 171)   | 4.56<br>(116)  | 6.25<br>(159)  | 4.25<br>(108)  | 10.89<br>(277) | 8.89<br>(226)  | 3.19 lbs.       | BP86**       |
| AH884<br>AH884C       | 9.41 x 10.68 x 5.86<br>(239 x 271 x 149)   | 7.97 x 7.97 x 5.03<br>(202 x 202 x 128)    | 5.63 x 10.03<br>(143 x 255)  | 10.04 x 5.63<br>(255 x 143)  | 8.74 x 8.78<br>(222 x 223)   | 4.53<br>(115)  | 6.25<br>(159)  | 6.25<br>(159)  | 10.88<br>(277) | 10.88<br>(277) | CF              | BP88**       |
| AH1084<br>AH1084C     | 11.41 x 10.68 x 6.36<br>(290 x 271 x 161)  | 9.96 x 7.96 x 5.57<br>(253 x 202 x 142)    | 7.64 x 10.04<br>(194 x 255)  | 12.04 x 5.64<br>(306 x 143)  | 10.76 x 8.75<br>(273 x 222)  | 5.05<br>(128)  | 8.25<br>(210)  | 6.25<br>(159)  | 12.89<br>(327) | 10.89<br>(277) | 4.31 lbs.       | BP108**      |
| AH1086<br>AH1086C     | 11.41 x 10.68 x 7.89<br>(209 x 271 x 200)  | 9.95 x 7.95 x 7.06<br>(253 x 202 x 179)    | 7.63 x 10.03<br>(194 x 255)  | 12.03 x 5.63<br>(306 x 143)  | 10.76 x 8.75<br>(273 x 222)  | 6.54<br>(166)  | 8.25<br>(210)  | 6.25<br>(159)  | 12.88<br>(327) | 10.88<br>(277) | CF              | BP108**      |
| AH10106<br>AH10106C   | 11.41 x 12.68 x 6.97<br>(209 x 322 x 177)  | 9.95 x 9.95 x 6.15<br>(253 x 253 x 156)    | 7.63 x 12.03<br>(194 x 306)  | 12.03 x 7.63<br>(306 x 194)  | 10.76 x 10.75<br>(273 x 273) | 5.65<br>(144)  | 8.25<br>(210)  | 8.25<br>(210)  | 12.88<br>(327) | 12.88<br>(327) | CF              | BP1010**     |
| AH12106<br>AH12106C   | 13.40 x 12.68 x 7.86<br>(340 x 322 x 200)  | 11.95 x 9.95 x 7.07<br>(304 x 253 x 180)   | 9.64 x 12.04<br>(245 x 306)  | 14.04 x 7.64<br>(357 x 194)  | 12.76 x 10.75<br>(324 x 273) | 6.56<br>(167)  | 10.25<br>(260) | 8.25<br>(210)  | 14.89<br>(378) | 12.89<br>(327) | 6.19 lbs.       | BP1210**     |
| AH14126<br>AH14126C   | 15.40 x 14.68 x 7.86<br>(391 x 373 x 200)  | 13.95 x 11.95 x 7.07<br>(354 x 304 x 180)  | 11.64 x 14.04<br>(296 x 357) | 16.04 x 9.64<br>(407 x 245)  | 14.76 x 12.75<br>(375 x 324) | 6.56<br>(167)  | 12.25<br>(311) | 10.25<br>(260) | 16.89<br>(429) | 14.89<br>(378) | 7.99 lbs.       | BP1412**     |
| AH16148<br>AH16148C   | 17.65 x 16.68 x 9.98<br>(448 x 424 x 253)  | 15.93 x 13.93 x 9.20<br>(405 x 354 x 234)  | 13.64 x 16.04<br>(347 x 407) | 18.04 x 11.64<br>(458 x 296) | 16.76 x 14.75<br>(426 x 375) | 8.68<br>(220)  | 14.25<br>(362) | 12.25<br>(311) | 18.89<br>(480) | 16.89<br>(429) | 10.00 lbs.      | BP1614**     |
| AH181610<br>AH181610C | 19.41 x 18.68 x 11.90<br>(493 x 474 x 302) | 17.83 x 15.83 x 11.08<br>(453 x 402 x 281) | 15.64 x 18.04<br>(397 x 458) | 20.04 x 13.64<br>(509 x 347) | 18.75 x 16.74<br>(476 x 425) | 10.56<br>(268) | 16.25<br>(413) | 14.25<br>(362) | 20.89<br>(531) | 18.89<br>(480) | 11.25 lbs.      | BP1816**     |
| AH18164<br>AH18164C   | 19.41 x 18.68 x 5.41<br>(493 x 474 x 137)  | 18.16 x 16.16 x 5.08<br>(461 x 410 x 129)  | N/A                          | 20.50 x 13.50<br>(521 x 343) | N/A                          | 4.56<br>(116)  | 16.25<br>(413) | 14.25<br>(362) | 21.75<br>(552) | N/A            | CF              | BP1816**     |
| AH20168<br>AH20168C   | 21.41 x 18.68 x 9.97<br>(544 x 474 x 253)  | 19.86 x 15.86 x 9.15<br>(504 x 403 x 232)  | 18.75 x 19.17<br>(476 x 487) | 23.15 x 14.75<br>(588 x 375) | 21.91 x 17.87<br>(557 x 454) | 8.65<br>(220)  | 18.25<br>(464) | 14.25<br>(362) | 24.00<br>(610) | 20.02<br>(509) | CF              | BP2016**     |
| AH242410<br>AH242410C | 25.41 x 26.68 x 11.41<br>(645 x 678 x 290) | 23.91 x 23.91 x 11.88<br>(607 x 607 x 302) | N/A                          | 25.69 x 18.00<br>(653 x 457) | N/A                          | 10.56<br>(268) | 22.25<br>(565) | 22.25<br>(565) | 26.69<br>(678) | 21.86<br>(555) | CF              | BP2424**     |

All measures are in inches, items in parentheses are in millimeters.

\* AH18164 size does not exhibit same mounting foot design. Mounting feet are molded into the box rather than installed separately.

\*\* Panel sold separately



# Controls

## Terminal Blocks - BTWP Series

BTWP Series - Terminal Blocks with screw connection terminals

**MULTIPLIER  
SYMBOL for  
BTW Series- -Z9**

|                           |              | BTWP 2.5<br>5 mm width  |             |                 | BTWP 4<br>6 mm width  |             |                 | BTWP 6<br>8 mm width  |             |                 |
|---------------------------|--------------|---|-------------|-----------------|---|-------------|-----------------|---|-------------|-----------------|
|                           |              |  |             |                 |  |             |                 |  |             |                 |
|                           |              | CE C RU US  |             |                 | CE C RU US  |             |                 | CE C RU US  |             |                 |
| Technical data            |              | Voltage / Current / Cross section   |             |                 | Voltage / Current / Cross section   |             |                 | Voltage / Current / Cross section   |             |                 |
| IEC 60947-7-1             |              | 750 V~ / 24 A / 2.5 mm <sup>2</sup>   |             |                 | 750 V~ / 32 A / 4 mm <sup>2</sup>   |             |                 | 630 V~ / 41 A / 6 mm <sup>2</sup>   |             |                 |
| UL / CSA                  |              | 600 V~ / 20 A / AWG 26 ... 12   |             |                 | 600 V~ / 30 A / AWG 26 ... 10   |             |                 | 600 V~ / 50 A / AWG 26 ... 8  |             |                 |
| Rated Surge Voltage       |              | 8kV   |             |                 | 8kV   |             |                 | 8kV   |             |                 |
| Pollution degree          |              | 3   |             |                 | 3   |             |                 | 3   |             |                 |
| Cable stripping           |              | 10 mm   |             |                 | 10 mm   |             |                 | 12 mm   |             |                 |
| Tightening torque         |              | 0.4 Nm / 3.54 lb - in   |             |                 | 0.5 Nm / 4.42 lb - in   |             |                 | 0.8 Nm / 7.08 lb - in   |             |                 |
| Connection capacity       |              | Connection capacity   |             |                 | Connection capacity   |             |                 | Connection capacity   |             |                 |
| Rigid wire                |              | 0.5 ... 4 mm <sup>2</sup>   |             |                 | 0.5 ... 6 mm <sup>2</sup>   |             |                 | 0.5 ... 10 mm <sup>2</sup>  |             |                 |
| Flexible cable            |              | 1.5 ... 2.5 mm <sup>2</sup>   |             |                 | 1.5 ... 4 mm <sup>2</sup>   |             |                 | 1.5 ... 6 mm <sup>2</sup>   |             |                 |
| AWG Conductor             |              | 26 ... 12   |             |                 | 26 ... 10   |             |                 | 26 ... 8  |             |                 |
| Terminal Block            | Color        | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
|                           | Gray         | BTWP 2.5  | 100         | \$130.00        | BTWP 4  | 100         | \$160.00        | BTWP 6  | 100         | \$210.00        |
|                           | Blue         | BTWP 2.5 (AZ)   | 100         | \$130.00        | BTWP 4 (AZ)   | 100         | \$160.00        | BTWP 6 (AZ)   | 100         | \$210.00        |
|                           | Green        | BTWP 2.5 (VD)   | 100         | \$130.00        | BTWP 4 (VD)   | 100         | \$160.00        | BTWP 6 (VD)   | 100         | \$210.00        |
| Accessories               |              |   |             |                 |   |             |                 |   |             |                 |
| End plate                 | Color        | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
| 1.5 mm width              | Gray         | TF-BTWP 2.5-10  | 100         | \$65.00         | TF-BTWP 2.5-10  | 100         | \$65.00         | TF-BTWP 2.5-10  | 100         | \$65.00         |
|                           | Blue         | TF-BTWP 2.5-10 (AZ)   | 100         | \$65.00         | TF-BTWP 2.5-10 (AZ)   | 100         | \$65.00         | TF-BTWP 2.5-10 (AZ)   | 100         | \$65.00         |
|                           | Green        | TF-BTWP 2.5-10 (VD)   | 100         | \$65.00         | TF-BTWP 2.5-10 (VD)   | 100         | \$65.00         | TF-BTWP 2.5-10 (VD)   | 100         | \$65.00         |
| Separating Board          | Color        | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
|                           | Gray         | PD-BTWP 2.5-10  | 25          | \$17.50         | PD-BTWP 2.5-10  | 25          | \$17.50         | PD-BTWP 2.5-10  | 25          | \$17.50         |
| Connecting bridge         | Nº. of poles | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
|                           | 2            | PC-BTWP 2.5/2   | 25          | \$47.50         | PC-BTWP 4/2   | 25          | \$47.50         | PC-BTWP 6/2   | 25          | \$47.50         |
|                           | 3            | PC-BTWP 2.5/3   | 20          | \$56.00         | PC-BTWP 4/3   | 20          | \$56.00         | PC-BTWP 6/3   | 20          | \$56.00         |
|                           | 4            | PC-BTWP 2.5/4   | 15          | \$57.00         | PC-BTWP 4/4   | 15          | \$57.00         | PC-BTWP 6/4   | 15          | \$57.00         |
|                           | 10           | PC-BTWP 2.5/10  | 5           | \$44.00         | PC-BTWP 4/10  | 5           | \$44.00         | PC-BTWP 6/10  | 5           | \$44.00         |
| End bracket               | Color        | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
| 8 mm width                | Gray         | PF3-BTW   | 100         | \$120.00        | PF3-BTW   | 100         | \$120.00        | PF3-BTW   | 100         | \$120.00        |
|                           | Gray         | PF4-BTW   | 100         | \$120.00        | PF4-BTW   | 100         | \$120.00        | PF4-BTW   | 100         | \$120.00        |
| Din rail / Support        | Type         | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
| Din EN 50022              | Flat         | MR 35x7.5   | 2 m busbars | \$14.00         | MR 35x7.5   | 2 m busbars | \$14.00         | MR 35x7.5   | 2 m busbars | \$14.00         |
|                           | Support      | ST-BTW  | 25          | \$75.00         | ST-BTW  | 25          | \$75.00         | ST-BTW  | 25          | \$75.00         |
| Group identifier          | Assembly     | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
|                           | Din rail     | IG-BTW  | 50          | \$75.00         | IG-BTW  | 50          | \$75.00         | IG-BTW  | 50          | \$75.00         |
|                           | End Bracket  | IG22-BTW <sup>(1)</sup>   | 25          | \$37.50         | IG22-BTW <sup>(1)</sup>   | 25          | \$37.50         | IG22-BTW <sup>(1)</sup>   | 25          | \$37.50         |
| Identifier <sup>(2)</sup> |              | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack | Catalog Number  | Qty/Pack.   | List Price/Pack |
|                           |              | IDG10/5-BTW   | 44          | \$6.00          | IDG10/6-BTW   | 36          | \$6.00          | IDG10/6-BTW   | 36          | \$6.00          |
|                           |              | IDB5-BTW  | 50          | \$5.00          | IDG10/5-BTW   | 44          | \$6.00          | IDG10/5-BTW   | 44          | \$6.60          |
|                           |              | IDG6/5-BTW  | 40          | \$5.00          | IDB5-BTW  | 50          | \$5.00          | IDB5-BTW  | 50          | \$5.00          |
|                           |              |   |             |                 | IDG6/5-BTW  | 40          | \$5.00          | IDG6/5-BTW  | 40          | \$5.00          |

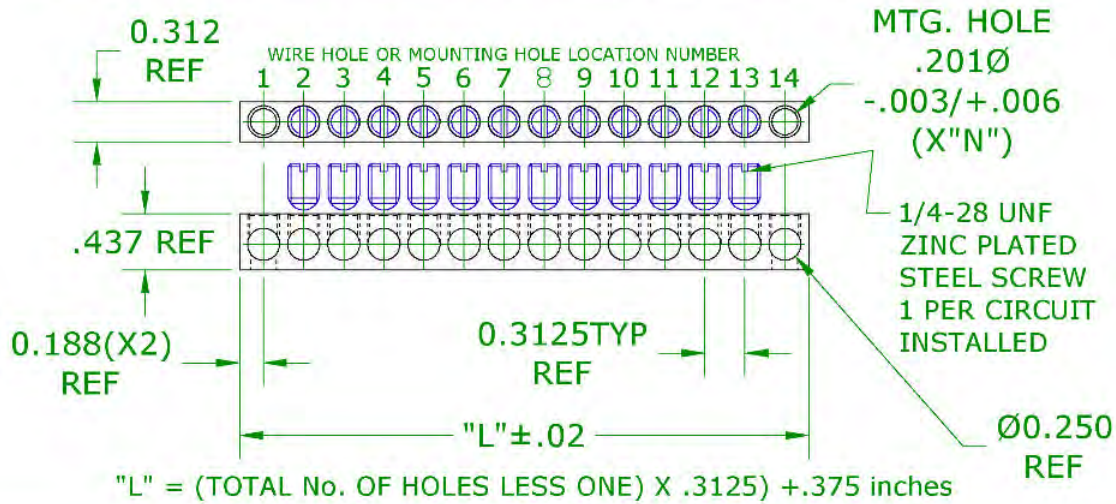
<sup>(1)</sup> For assembly on PF4-BTW end bracket only.

<sup>(2)</sup> Further details about identifiers on page B-279

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**STANDARD STOCK NEUTRAL BARS WITH MOUNTING HOLES**


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**UL & CSA AGENCY APPLICATION NOTES:**

- UL Recognized ("UR" mark) Class ZMVV2 and "CSA" Certified (CSA mark)
- Installation must be carried out only by qualified electricians in accordance with all applicable NEC & UL/CSA standards for the approved application.
- Approved for 90 ° C Temperature Rating Wire, CU9AL
- Amp Rated at 85 Amps for Copper wire and 70 Amps for Aluminum wire
- Wire range, American Wire Gauge AWG 4-14 CU (copper wire), 4-12 Al (aluminum wire) Dual Rated, Solid & Stranded, industrial rigid stranding wire.
- Tightening torques, 4-6 AWG = 45 lb-in, 8 AWG = 40 lb-in, 10-14 AWG = 35 lb-in
- The bar shall be prevented from turning by close fitting walls, or other turn preventive features such as two mounting holes.
- The bar shall not be mounted to a bus bar to act as a power distribution means to or from that bar.
- The bar is designed to be used as a neutral bar for ground or power.
- The bar is for use only in complete equipment where the suitability of the combination is determined & approved by UL
- The mounting screw is to be size #10-32 UNF. The proper use of washers to distribute screw clamping forces on the aluminum should be employed. Bellevilles and lock nuts should be considered in case of vibration.
- The screw will hold the smaller wires when the appropriate torque for the small wire is fully applied
- Dry locations only.

**CONSTRUCTION NOTES:**

- The tolerance between mounting holes is +/- .015"
- The mounting hole is .201 +.006/- .003.
- The listed overall length of each bar is +/- .020
- Material is High Strength Tempered aluminum 6160 with conductivity approx. 43% IACS.
- Aluminum body is Tin Plated to resist oxidation and galvanic corrosion.
- Screws are Zinc Plated Steel with Trivalent (Cr+3) Chromate conversion top layer.

# GL4717

Table 18.3: TeSys D Contactors—3 or 4 Pole, Screw Terminal Connections

| Maximum Horsepower Ratings |          |             |          |          |          | Maximum Current Utilization Categories |                   | No. of Poles |      | Instantaneous Auxiliary Contacts |      | Catalog Number ▲ | \$ Price |          |
|----------------------------|----------|-------------|----------|----------|----------|--|-------------------|--------------|------|----------------------------------|------|------------------|----------|----------|
| Single-Phase               |          | Three-Phase |          |          |          | Inductive AC3 (A)                      | Resistive AC1 (A) | N.O.         | N.C. | N.O.                             | N.C. |                  | AC Coils | DC Coils |
| 115 V hp                   | 230 V hp | 200 V hp    | 230 V hp | 460 V hp | 575 V hp |  |                   |              |      |                                  |      |                  |          |          |
| 0.5                        | 1        | 2           | 2        | 5        | 7.5      | 9                                      | —                 | 3            | 0    | —                                | —    | LC1D09 ◆◆◆       | 94.00    | 119.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | 20                | 4            | 0    | 1                                | 1    | LC1DT20 ◆        | 94.00    | 119.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 2            | 2    | —                                | —    | LC1D098 ◆        | 94.00    | 119.00   |
| 1                          | 2        | 3           | 3        | 7.5      | 10       | 12                                     | —                 | 3            | 0    | —                                | —    | LC1D12 ◆◆◆       | 119.00   | 149.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | 25                | 4            | 0    | 1                                | 1    | LC1DT25 ◆        | 119.00   | 149.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 2            | 2    | —                                | —    | LC1D128 ◆        | 119.00   | 149.00   |
| 1                          | 3        | 5           | 5        | 10       | 15       | 18                                     | —                 | 3            | 0    | —                                | —    | LC1D18 ◆◆        | 136.00   | 160.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | 32                | 4            | 0    | 1                                | 1    | LC1DT22 ◆        | 149.00   | 183.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 2            | 2    | —                                | —    | LC1D188 ◆        | 149.00   | 183.00   |
| 2                          | 3        | 7.5         | 7.5      | 15       | 20       | 25                                     | —                 | 3            | 0    | —                                | —    | LC1D25 ◆◆        | 151.00   | 181.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | 40                | 4            | 0    | 1                                | 1    | LC1DT40 ◆        | 193.00   | 240.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 2            | 2    | —                                | —    | LC1D258 ◆        | 193.00   | 240.00   |
| 2                          | 5        | 10          | 10       | 20       | 30       | 32                                     | 50                | 3            | 0    | 1                                | 1    | LC1D32 ◆◆        | 172.00   | 213.00   |
| 3                          | 5        | 10          | 10       | 30       | 30       | 40                                     | 60                | 3            | 0    | 1                                | 1    | LC1D40A ◆        | 218.00   | 275.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 4            | 0    | 0                                | 0    | LC1DT60A ◆       | 296.00   | 353.00   |
| 3                          | 7.5      | 15          | 15       | 40       | 40       | 50                                     | 80                | 3            | 0    | 1                                | 1    | LC1D50A ◆        | 234.00   | 291.00   |
| 5                          | 10       | 20          | 20       | 40       | 50       | 65                                     | —                 | 3            | 0    | —                                | —    | LC1D65A ◆        | 322.00   | 379.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 4            | 0    | 0                                | 0    | LC1DT80A ◆       | 446.00   | 503.00   |
| 7.5                        | 15       | 25          | 30       | 60       | 60       | 80                                     | 125               | 3            | 0    | 1                                | 1    | LC1D80           | 363.00   | 420.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 4            | 0    | —                                | —    | LC1D80004 ■      | 489.00   | 524.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 2            | 2    | 0                                | 0    | LC1D80008 ■      | 489.00   | 524.00   |
| —                          | —        | 30          | 40       | 75       | 100      | 115                                    | 200               | 3            | 0    | 1                                | 1    | LC1D115          | 479.00   | 479.00   |
| —                          | —        | 40          | 50       | 100      | 125      | 150                                    | —                 | 3            | 0    | —                                | —    | LC1D150          | 696.00   | 696.00   |
| —                          | —        | —           | —        | —        | —        | —                                      | —                 | 4            | 0    | 0                                | 0    | LC1D115004       | 630.00   | 630.00   |

- ▲ Complete the catalog number by adding the coil voltage code from Table 18.11 on page 18-6 (for example, LC1D09G7).
- For DC version of these devices, replace the **C** with a **P** (for example, LC1D80004\*\* becomes LP1D80004\*\*). This applies only to 80 A, 4-pole devices.
- ◆ For ring tongue versions of LC1D09–LC1D65A and LC1DT20–LC1DT80A, add **6** to the catalog number prior to adding the voltage code (for example, LC1D09G7 becomes LC1D096G7 and LC1D50AG7 becomes LC1D50A6G7). There is no charge for this modification.
- ★ For spring terminals versions of LC1D09–LC1D65A, add **3** to the catalog number prior to adding the voltage code (for example, LC1D12G7 becomes LC1D123G7 and LC1D40AG7 becomes LC1D40A3G7. Note that 40–65 A spring terminals are only on the control terminations and not on power terminations). Ring tongue terminations have a 10% adder to list price.
- ▼ For slip-on connector versions of LC1D09 and LC1D12 only, add **9** to the catalog number prior to adding the voltage code (for example, LC1D09G7 becomes LC1D099G7). There is no charge for this modification.

Table 18.4: TeSys D Overload Relays—Ambient Compensated, Bimetallic, Direct Mounting

| Current Setting Range (A) | For Direct Mounting to LC1... | Class 10 with Single-Phase Sensitivity | Class 10 without Single-Phase Sensitivity | Class 20 with Single-Phase Sensitivity | Class 20 without Single-Phase Sensitivity | \$ Price |            |
|---------------------------|-------------------------------|--|---|--|---|----------|------------|
| 0.10–0.16                 | D09–D32                       | LRD01                                  | LR3D01                                    | —                                      | —   | 60.00    |            |
| 0.16–0.25                 |                               | LRD02                                  | LR3D02                                    | —                                      | —   |          |            |
| 0.25–0.40                 |                               | LRD03                                  | LR3D03                                    | —                                      | —   |          |            |
| 0.40–0.63                 |                               | LRD04                                  | LR3D04                                    | —                                      | —   |          |            |
| 0.63–1                    |                               | LRD05                                  | LR3D05                                    | —                                      | —   |          |            |
| 1–1.6                     |                               | LRD06                                  | LR3D06                                    | —                                      | —   |          |            |
| 1.6–2.5                   |                               | LRD07                                  | LR3D07                                    | —                                      | —   |          |            |
| 2.5–4                     |                               | LRD08                                  | LR3D08                                    | LRD1508                                | LR3D1508A1                                |          |            |
| 4–6                       |                               | LRD10                                  | LR3D10                                    | LRD1510                                | LR3D1510A1                                |          |            |
| 5.5–8                     |                               | D09–D32                                | LRD12                                     | LR3D12                                 | LRD1512                                   |          | LR3D1512A1 |
| 7–10                      | D09–D32                       | LRD14                                  | LR3D14                                    | LRD1514                                | LR3D1514A1                                |          |            |
| 9–13                      | D12–D32                       | LRD16                                  | LR3D16                                    | LRD1516                                | LR3D1516A1                                |          |            |
| 12–18                     | D18–D32                       | LRD21                                  | LR3D21                                    | LRD1521                                | LR3D1521A1                                |          |            |
| 16–24                     | D25–D32                       | LRD22                                  | LR3D22                                    | —                                      | —   |          |            |
| 17–25                     | D25–D32                       | —                                      | —   | LRD1522                                | LR3D1522A1                                |          |            |
| 23–32                     | D25–D32                       | LRD32                                  | LR3D32                                    | —                                      | —   | 73.00    |            |
| 23–28                     | D25–D32                       | —                                      | —   | LRD1530                                | LR3D1530A1                                |          |            |
| 25–32                     | D25–D32                       | —                                      | —   | LRD1532                                | LR3D1532A1                                |          |            |
| 30–38                     | D32                           | LRD35                                  | LR3D35                                    | —                                      | —   | 107.00   |            |
| 9–13                      | D40A–D65A △                   | LRD313                                 | LR3D313                                   | LRD313L                                | —   |          |            |
| 12–18                     | D40A–D65A △                   | LRD318                                 | LR3D318                                   | LRD318L                                | —   |          |            |
| 16–25                     | D40A–D65A △                   | LRD325                                 | LR3D325                                   | LRD325L                                | —   |          |            |
| 23–32                     | D40A–D65A △                   | LRD332                                 | LR3D332                                   | LRD332L                                | —   |          |            |
| 30–40                     | D40A–D65A △                   | LRD340                                 | LR3D340                                   | LRD340L                                | —   |          |            |
| 37–50                     | D40A–D65A △                   | LRD350                                 | LR3D350                                   | LRD350L                                | —   |          |            |
| 48–65                     | D40A–D65A △                   | LRD365                                 | LR3D365                                   | LRD365L                                | —   |          |            |
| 17–25                     | D40–D80 □                     | LRD3322                                | LR3D3322                                  | LR2D3522                               | LR3D3522                                  |          | 107.00     |
| 23–32                     | D40–D80 □                     | LRD3353                                | LR3D3353                                  | LR2D3553                               | LR3D3553                                  |          |            |
| 30–40                     | D40–D80 □                     | LRD3355                                | LR3D3355                                  | LR2D3555                               | LR3D3555                                  |          |            |
| 37–50                     | D50–D80 □                     | LRD3357                                | LR3D3357                                  | LR2D3557                               | LR3D3557                                  |          |            |
| 48–65                     | D50–D80 □                     | LRD3359                                | LR3D3359                                  | LR2D3559                               | LR3D3559                                  |          |            |
| 55–70                     | D65–D80                       | LRD3361                                | LR3D3361                                  | LR2D3561                               | LR3D3561                                  | 127.00   |            |
| 63–80                     | D65–D80                       | LRD3363                                | LR3D3363                                  | LR2D3563                               | LR3D3563                                  |          |            |
| 80–104                    | D80                           | LRD3365                                | —   | —                                      | —   |          |            |
| 80–104                    | D115–D150                     | LRD4365                                | —   | —                                      | —   |          |            |
| 95–120                    | D115–D150                     | LRD4367                                | —   | —                                      | —   | 362.00   |            |
| 110–140                   | D150                          | LRD4369                                | —   | —                                      | —   |          |            |

- △ Overload relays with Everlink termination—direct mount to D40A to D65A only.
- Direct mount to old D2 style D40 to D65 (no Everlink terminations) and to D80 only.

TeSys D contactor accessories . . . . . pages 18-8 to 18-11  
 TeSys D overload relay accessories . . . . . page 18-16  
 TeSys D replacement coils . . . . . page 18-19  
 Dimensions . . . . . pages 18-40 to 18-46  
 TeSys T . . . . . pages 16-91



LC1D09



LC1D093



LC1D40A



LC1D115



LRD22



LRD3



E164862  
CCN NLDX



LR43364  
Class 3211 04



# MDA

## 1/4" x 1 1/4" Time-delay ceramic tube fuses



### Product features

- Time-delay
- Optional axial leads available
- 1/4" x 1-1/4" (6.35 x 31.75 mm) physical size
- Ceramic tube, nickel-plated brass endcap construction
- UL Listed product meets standard 248-14

### Agency information

- UL Listed Card: MDA 1/4 - 20 A (Guide JDYX, File E19180)
- UL Recognized Card: MDA 25 - 30 A (Guide JDYX2, File E19180)
- CSA Certification Card: MDA 1/4 - 20 A (Class No. 1422-01)
- CSA Component Acceptance: MDA 25 - 30 A (Class No. 1422-30)

### General specifications

- Shock: 1 A thru 30 A – MIL-STD-202, Method 213, Test Condition J
- Vibration: 1/4 A thru 30 A – MIL-STD-202, Method 204, Test Condition C (Except 5 g, 500 Hz)

### Ordering

- Specify packaging code prefix, part number and and option code. Replace the "I" with a "-" (i.e. BK-MDA-BV-1-4-R)

| Electrical characteristics |            |                  |
|----------------------------|------------|------------------|
| Rated current              | Amp rating | Opening time     |
| 1/4 - 30 A                 | 100%       | None             |
|                            | 135%       | 60 minutes max.  |
|                            | 200%       | 120 seconds max. |

| Part number | Voltage rating |     | AC interrupting rating* (A) |       | DC interrupting rating (A) 125 V | Typical DC cold resistance** (Ω) | Typical melting I <sup>2</sup> t† AC | Typical voltage drop‡ |
|-------------|----------------|-----|-----------------------------|-------|----------------------------------|----------------------------------|--------------------------------------|-----------------------|
|             | Vac            | Vdc | 250 V                       | 125 V |                                  |                                  |                                      |                       |
|             | MDA-1/4-R      | 250 | -                           | 35    |                                  |                                  |                                      |                       |
| MDA-1/2-R   | 250            | -   | 35                          | 10000 | -                                | 1.78                             | 2.53                                 | 1.42                  |
| MDA-3/4-R   | 250            | -   | 35                          | 10000 | -                                | 0.82                             | 8.58                                 | 1.31                  |
| MDA-1-R     | 250            | -   | 35                          | 10000 | -                                | 0.56                             | 12.21                                | 1.03                  |
| MDA-1-1/2-R | 250            | -   | 100                         | 10000 | -                                | 0.2565                           | 27.5                                 | 0.691                 |
| MDA-2-R     | 250            | -   | 100                         | 10000 | -                                | 0.17                             | 70.4                                 | 0.623                 |
| MDA-2-1/2-R | 250            | 125 | 200                         | 10000 | 10000                            | 0.068                            | 31.79                                | 0.213                 |
| MDA-3-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.0525                           | 44.99                                | 0.182                 |
| MDA-4-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.03575                          | 147.4                                | 0.162                 |
| MDA-5-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.0256                           | 380.49                               | 0.145                 |
| MDA-6-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.02035                          | 587.73                               | 0.141                 |
| MDA-7-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.0165                           | 638.33                               | 0.137                 |
| MDA-8-R     | 250            | 125 | 200                         | 10000 | 10000                            | 0.013                            | 1038.4                               | 0.134                 |
| MDA-10-R    | 250            | 125 | 200                         | 10000 | 10000                            | 0.00925                          | 1620.43                              | 0.135                 |
| MDA-12-R    | 250            | 125 | 750                         | 10000 | 10000                            | 0.00755                          | 125.18                               | 0.128                 |
| MDA-15-R    | 250            | 125 | 750                         | 10000 | 10000                            | 0.00565                          | 336.82                               | 0.107                 |
| MDA-20-R    | 250            | 125 | 1500                        | 10000 | 10000                            | 0.004065                         | 483.45                               | 0.095                 |
| MDA-25-R    | 250            | 125 | 1500                        | 10000 | 10000                            | 0.0031                           | 734.69                               | 0.105                 |
| MDA-30-R    | 250            | 125 | 1500                        | 10000 | 10000                            | 0.002465                         | 1096.7                               | 0.110                 |

\* Interrupting ratings (Measured at 70% - 80% power factor on AC. The interrupting ratings for 25 A, 30 A were measured at 90% - 100% power factor on AC)

\*\* DC Cold resistance (Measured at <10% of rated current)

† Typical melting I<sup>2</sup>t (A<sup>2</sup>sec) (I<sup>2</sup>t was measured at listed interrupting rating and rated voltage)

‡ Typical voltage drop (Voltage drop was measured at +25 °C ambient temperature at rated current)



Powering Business Worldwide

# HKP

## 1/4" x 1 1/4" Panel-mount fuse holders



### Product features

- For 1/4" x 1 1/4" (6.3 mm x 32 mm) fuses
- Maximum panel thickness 5/16" (7.9 mm) thick
- Bayonet-type knob
- Vibration resistant
- Military version is designated FHN26G1
- Standard plastic nut
- Optional metal nut
- Cap – BK-9435-1-2
- Neoprene washer – 9732

### Agency information

- UL Recognized: IZLT2, E14853
- CSA Component Acceptance: Class 6225-01, File 47235
- CE (HKP, HKP-L, HKP-W, HKP-OO)

### Environmental data

- Temperature rating (RTI): The mounting body for all devices has a temperature rating of 150 °C. The knob for these devices are molded plastic with a temperature rating of 150 °C.
- Meets UL 94HB
- Terminal Strength: 5 pounds
- Torque: Mounting – 20 inch-pound
- Salt Spray (corrosion): Test condition B

### Ordering information

- Specify packaging prefix and product code
- Optional metal nut, order separately part number 1A4806-2 (100 parts minimum)

| Product code | Specifications  |                |                |
|--------------|---|----------------|----------------|
|              | Feature   | Voltage rating | Current rating |
| HKP-R        | Standard  | 250 V          | 30 A           |
| HKP-BBHH-R   | 1/4" Quick-Connects, nut and washer assembled                                 | 250 V          | 15 A           |
| HKP-HH-R     | 1/4" Quick-Connects   | 250 V          | 15 A           |
| HKP-L-R      | 2250 stand-off barrier  | 250 V          | 30 A           |
| HKP-LW-HH-R  | Drip-proof knob, 2250V stand-off barrier and 1/4" quick connects <sup>1</sup> | 250 V          | 15 A           |
| HKP-OO-R     | Snap-lock   | 250 V          | 30 A           |
| HKP-W-R      | Drip-proof knob <sup>1</sup>  | 250 V          | 30 A           |

1. IP53 rating for exposed locations



Powering Business Worldwide

# 1/4" x 1 1/4" Time-Delay, Glass Tube Fuses MDL Series

## Description

- Time-delay
- Optional axial leads available
- 1/4" x 1 1/4" (6.4 x 31.7mm) physical size
- Glass tube, nickel-plated brass endcap construction
- UL Listed product meets standard 248-14



| Electrical Characteristics |                 |                     |
|----------------------------|-----------------|---------------------|
| Rated Current              | % of Amp Rating | Opening Time        |
| 1/16 - 30A                 | 100%            | None                |
|                            | 135%            | 60 minutes maximum  |
|                            | 200%            | 120 seconds maximum |
| 1/16 - 3A                  | 200%            | 5 seconds minimum   |
| 3-2/10 - 8A                | 200%            | 12 seconds minimum  |

## Agency Information

- UL Listed Card: MDL 1/16 - 8A (Guide JDYX, File E19180)
- UL Recognized Card: MDL 9 - 30A (Guide JDYX2, File E19180)
- CSA Certification Card: MDL 1/16 - 8A (Class No. 1422-01)
- CSA Component Acceptance: MDL 9-30A (Class No. 1422-30)
- CE

## Environmental Data

- Shock: 1A thru 30A – MIL-STD-202, Method 207, (HI Shock)
- Vibration: 1/4A thru 30A – MIL-STD-202, Method 204, Test Condition C (Except 5g, 500HZ)

## Ordering

Specify packaging code

- Insert packaging code prefix before part number. E.g., BK (or BK1)-MDL-5-R

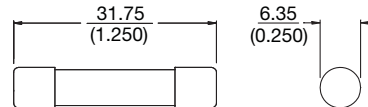
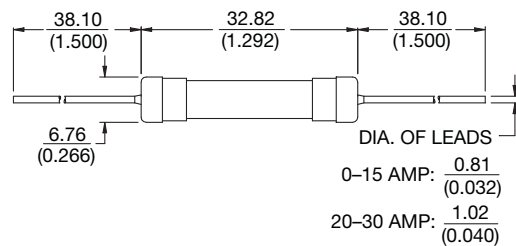
Specify option codes if desired

- For axial leads, insert "V" between catalog series and amp rating. E.g., BK-MDL-V-5-R

- For board washable, insert "B" between catalog series and amp rating. E.g., BK-MDL-B-5-R
- For axial leads and board washable, insert "B" then "V" between catalog series and amp rating. E.g., BK-MDL-BV-5-R

## Dimensions - mm (in)

Drawing Not to Scale



## Specifications

| Part Number | Voltage Rating Vac | AC Interrupting Rating* (amps)@ |        |       | Typical DC Cold Resistance** (Ω) | Typical Melting I <sup>††</sup> AC | Typical Voltage Drop‡ |
|-------------|--------------------|---------------------------------|--------|-------|----------------------------------|------------------------------------|-----------------------|
|             |                    | 250Vac                          | 125Vac | 32Vac |                                  |                                    |                       |
| MDL-1/16-R  | 250                | 35                              | 10000  | -     | 45.6                             | 0.0046                             | 2.79                  |
| MDL-1/10-R  | 250                | 35                              | 10000  | -     | 15.68                            | 0.0420                             | 1.95                  |
| MDL-1/8-R   | 250                | 35                              | 10000  | -     | 12.238                           | 0.0422                             | 1.52                  |
| MDL-3/16-R  | 250                | 35                              | 10000  | -     | 4.81                             | 0.116                              | 1.05                  |
| MDL-2/10-R  | 250                | 35                              | 10000  | -     | 5.234                            | 0.314                              | 0.972                 |
| MDL-1/4-R   | 250                | 35                              | 10000  | -     | 3.208                            | 0.447                              | 0.965                 |
| MDL-3/10-R  | 250                | 35                              | 10000  | -     | 2.046                            | 0.412                              | 0.808                 |
| MDL-3/8-R   | 250                | 35                              | 10000  | -     | 1.567                            | 0.982                              | 1.46                  |
| MDL-1/2-R   | 250                | 35                              | 10000  | -     | 0.943                            | 1.656                              | 1.27                  |
| MDL-3/4-R   | 250                | 35                              | 10000  | -     | 0.397                            | 4.343                              | 1.01                  |
| MDL-1-R     | 250                | 35                              | 10000  | -     | 0.273                            | 11.498                             | 0.995                 |
| MDL-1-1/4-R | 250                | 100                             | 10000  | -     | 0.205                            | 86.2                               | 0.722                 |
| MDL-1-1/2-R | 250                | 100                             | 10000  | -     | 0.156                            | 22.7                               | 0.721                 |
| MDL-2-R     | 250                | 100                             | 10000  | -     | 0.116                            | 62.3                               | 0.644                 |
| MDL-2-1/4-R | 250                | 100                             | 10000  | -     | 0.096                            | 49.6                               | 0.535                 |
| MDL-2-1/2-R | 250                | 100                             | 10000  | -     | 0.081                            | 63.1                               | 0.410                 |
| MDL-3-R     | 250                | 100                             | 10000  | -     | 0.057                            | 67.5                               | 0.345                 |
| MDL-4-R     | 250                | 200                             | 10000  | -     | 0.038                            | 19.3                               | 0.187                 |
| MDL-5-R     | 250                | 200                             | 10000  | -     | 0.025                            | 32.0                               | 0.160                 |
| MDL-6-R     | 250                | 200                             | 10000  | -     | 0.022                            | 37.4                               | 0.155                 |
| MDL-6-1/4-R | 250                | 200                             | 10000  | -     | 0.02                             | 38.7                               | 0.152                 |
| MDL-7-R     | 250                | 200                             | 10000  | -     | 0.018                            | 42.7                               | 0.140                 |
| MDL-8-R     | 250                | 200                             | 10000  | -     | 0.015                            | 47.8                               | 0.119                 |
| MDL-9-R     | 32                 | -                               | -      | 1000  | 0.012                            | 51.5                               | 0.124                 |
| MDL-10-R    | 32                 | -                               | -      | 1000  | 0.01                             | 64.4                               | 0.114                 |
| MDL-15-R    | 32                 | -                               | -      | 1000  | 0.005                            | 354.0                              | 0.130                 |
| MDL-20-R    | 32                 | -                               | -      | 1000  | 0.004                            | 2914.0                             | 0.530                 |
| MDL-25††    | 32                 | -                               | -      | 1000  | 0.01225                          | 15221.0                            | 0.30                  |
| MDL-30††    | 32                 | -                               | -      | 1000  | 0.0011                           | 15581.0                            | 0.40                  |

\* Interrupting Ratings (Interrupting ratings were measured at 70% - 80% power factor on AC)

\*\* DC Cold Resistance (Measured at ≤10% of rated current)

† Typical Melting I<sup>††</sup> (A<sup>2</sup>Sec) (I<sup>††</sup> was measured at listed interrupting rating and rated voltage.)

‡ Typical Voltage Drop (Voltage drop was measured at 25°C±3°C ambient temperature at rated current)

†† MDL-25 & MDL-30 not available in RoHS compliant construction.

# HTB

## 1/4" x 1-1/4" and 5 mm x 20 mm Panel-mount fuse holders



### Agency information

- UL Recognized: File E14853, Guide IZLT2,
- CSA: File 47235, Class 6225-01,
- VDE: Certificate 136128 (M version, 5 x 20 mm only)
- CE



### Product features

- For 1/4" x 1 1/4" and 5 mm x 20 mm fuses
- All holder bodies have the option of using 1/4" x 1 1/4" or 5 mm x 20 mm carriers
- Withstands 15 to 20 Lb-In torque to mounting nut when mounting fuse holder to panel
- High temperature, flame retardant thermoplastic meets UL 94 V-0

### Environmental compliance



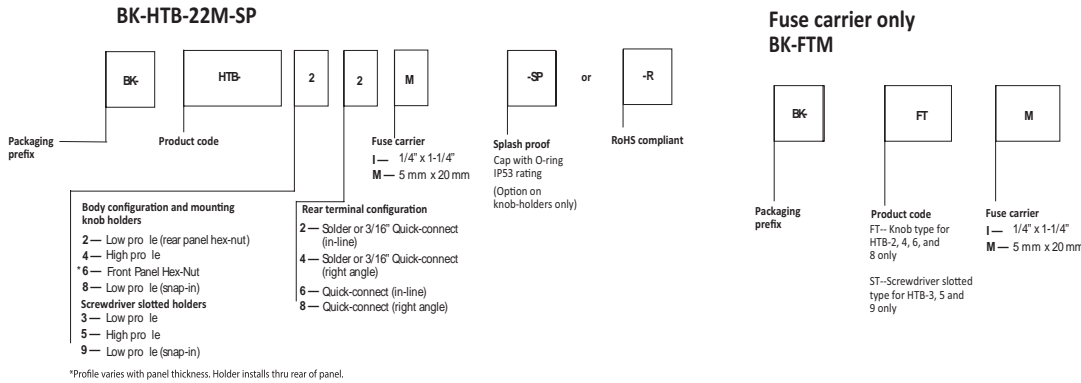
### Specifications

| Part number | UL Current rating (A) | CSA Current rating (A) | Voltage rating (V) | Fuse size     | Quick-connect |
|-------------|-----------------------|------------------------|--------------------|---------------|---------------|
| HTB-x2I     | 20                    | 16                     | 250                | 1/4" x 1-1/4" | 3/16"         |
| HTB-x4I     | 20                    | 16                     | 250                | 1/4" x 1-1/4" | 3/16"         |
| HTB-x6I     | 20                    | 16                     | 250                | 1/4" x 1-1/4" | 1/4"          |
| HTB-x8I     | 20                    | 16                     | 250                | 1/4" x 1-1/4" | 1/4"          |
| HTB-x2M     | 16                    | 16                     | 250                | 5 mm x 20 mm  | 3/16"         |
| HTB-x4M     | 16                    | 16                     | 250                | 5 mm x 20 mm  | 3/16"         |
| HTB-x6M     | 16                    | 16                     | 250                | 5 mm x 20 mm  | 1/4"          |
| HTB-x8M     | 16                    | 16                     | 250                | 5 mm x 20 mm  | 1/4"          |



Powering Business Worldwide

**Ordering details**



**Packaging prefix**

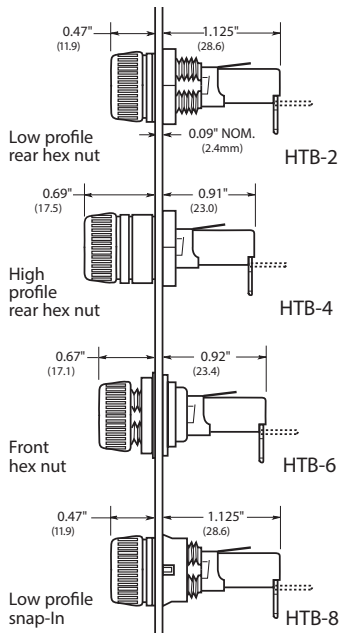
- Blank 10 pieces in a carton
- BK- 100 pieces in a cardboard shelf package

# # BKHTB28IR

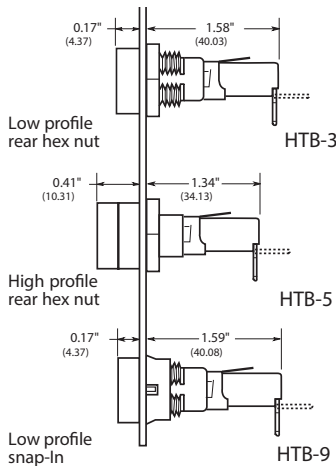
**Dimensions- inches (mm)**

**Carrier**

**Knob type**

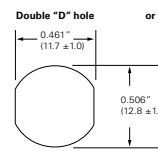


**Screwdriver type**

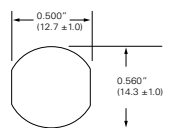


**Mounting- inches (mm)**

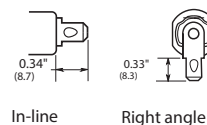
**HTB-2, -3, -4, -5 and -6**



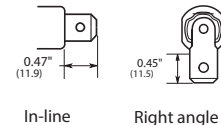
**HTB-8, and -9**



**Solder or 3/16" Quick-connect**



**1/4" Quick-connect**



**Maximum panel thickness**

| Body type | Inches | mm   |
|-----------|--------|------|
| HTB-2     | 0.30   | 7.62 |
| HTB-3     | 0.30   | 7.62 |
| HTB-4     | 0.125  | 3.18 |
| HTB-5     | 0.125  | 3.18 |
| HTB-6     | 0.30   | 7.62 |
| HTB-8     | 0.125  | 3.18 |
| HTB-9     | 0.125  | 3.18 |



## RJ Series Slim Power Relays

### Key features:

- Compact and rugged power relays. Large switching capacity
- Compact housing only 12.7-mm wide.  
Large contact rating  
RJ1 (1-pole): 16A (UL general use rating @250V AC)  
RJ2 (2-pole): 8A
- Non-polarized LED indicator available on blade type. IDEC's unique light guide structure enables high visibility of coil status from any direction.
- The smallest width for 2-pole/bifurcated contact relay
- Excellent electrical and mechanical life.  
Electrical life: 200,000 operations (AC load)  
Mechanical life: 30 million operations (AC coil)
- RoHS directive compliant (EU directive 2002/95/EC). Contains no lead, cadmium, mercury, hexavalent chromium, PBB or PBDE.
- Diode model:  
Diode reverse withstand voltage: 1000V
- UL recognized, CSA certified, EN compliant.



UL508  
UL File No. E55996



CSA C22.2 No. 14  
1608322  
CSA File No. LR35144





EN61810-1  
VDE (REG.-Nr B312)



EN61810-1  
EC Low Voltage Directive

### Part Number Selection

| Style   | Terminal | Contact | Model  | Part Number                                       | Coil Voltage Code<br>(Standard Stock in bold)   |   |
|---|----------|---------|--|---|---|---|
|  | Blade    | SPDT    | Standard   | RJ1S-C-□  | <b>A24</b> , A110, <b>A120</b> , A220, <b>A240</b> ,<br>D12, <b>D24</b> , D48, D100         |   |
|   |          |         | with LED   | RJ1S-CL-□   |   |   |
|   |          |         | with Surge Suppression Diode                         | RJ1S-CD-□   |   |   |
|   |          |         | with LED & Surge Suppression Diode                   | RJ1S-CLD-□  |   |   |
|   |          | DPDT    | Standard   | Standard  | RJ2S-C-□  | <b>A24</b> , A110, <b>A120</b> , A220, <b>A240</b> ,<br>D12, <b>D24</b> , D48, D100 |
|   |          |         |  | with LED  | RJ2S-CL-□   |   |
|   |          |         |  | with Surge Suppression Diode                      | RJ2S-CD-□   |   |
|   |          |         |  | with LED & Surge Suppression Diode                | RJ2S-CLD-□  |   |
|   |          |         | Standard Bifurcated contacts (without LED indicator) | Standard  | RJ22S-C-□   | A12, <b>A24</b> , <b>A120</b> , <b>A240</b> ,<br>D5, D12, <b>D24</b> , D100         |
|   |          |         |  | Bifurcated contacts (with LED indicator)          | RJ22S-CL-□  |   |
|   |          |         |  | Bifurcated contacts diode (without LED indicator) | RJ22S-CD-□  |   |
|   |          |         |  | Bifurcated contacts diode (with LED indicator)    | RJ22S-CLD-□   |   |
|  | PCB      | SPDT    | Standard   | RJ1V-C-□  | <b>A24</b> , A110, <b>A120</b> , A220, <b>A240</b> ,<br>D5, D6, D12, <b>D24</b> , D48, D100 |   |
|   |          |         | High Capacity  | RJ1V-CH-□   |   |   |
|   |          | SPST-NO | Standard   | RJ1V-A-□  |   |   |
|   |          |         | High Capacity  | RJ1V-AH-□   |   |   |
|   |          | DPDT    | Standard   | RJ2V-C-□  |   |   |
|   |          | DPST-NO | Standard   | RJ2V-A-□  |   |   |
|   |          | DPDT    | Bifurcated contacts                                  | RJ22V-C-□   |   | A12, <b>A24</b> , <b>A120</b> , <b>A240</b> ,<br>D5, D12, <b>D24</b> , D48, D100    |
|   |          | DPST-NO | Bifurcated contacts                                  | RJ22V-A-□   |   |   |

### Ordering Information

When ordering, specify the Part No. and coil voltage code:

(example) **RJ1S-C-** **A120**  
Part No.                      Coil Voltage Code

**Coil Voltage Table**

|                   |        |        |         |         |         |         |       |       |        |        |        |                 |
|-------------------|--------|--------|---------|---------|---------|---------|-------|-------|--------|--------|--------|-----------------|
| Coil Voltage Code | A12    | A24    | A110    | A120    | A220    | A240    | D5    | D6    | D12    | D24    | D48    | D100            |
| Coil Rating       | 12V AC | 24V AC | 110V AC | 120V AC | 220V AC | 240V AC | 5V DC | 6V DC | 12V DC | 24V DC | 48V DC | 100-110V DCV DC |

**Sockets**

|              | Relays               | Standard DIN Rail Mount | Finger-safe DIN Rail Mount | PCB Mount |
|--------------|----------------------|-------------------------|----------------------------|-----------|
| Blade Models | RJ1S (Std)           | SJ1S-05BW               | SJ1S-07LW                  | SJ1S-61   |
|              | RJ2S (Std)/RJ22S     | SJ2S-05BW               | SJ2S-07LW                  | SJ2S-61   |
| PCB Models   | RJ1V (Std)           | —                       | SQ1V-07B*                  | SQ1V-63*  |
|              | RJ1V (HC) RJ2V/RJ22V | —                       | SQ2V-07B*                  | SQ2V-63*  |





Shown with optional marking plate.

**Replacement Hold Down Springs**

| Part Number | Used With Socket                           |
|-------------|--|
| SJ9Z-CM     | SJ1S-05BW, SJ1S-07LW, SJ2S-05BW, SJ2S-07LW |
| SQ9Z-C      | SQ1V-07B, SQ2V-07B                         |
| SQ9Z-C63    | SQ1V-63, SQ2V-63                           |




**Jumpers for SJ Sockets**

| Poles | Part Number | Quantity                           |
|-------|-------------|------------------------------------|
| 2     | SJ9Z-JF2    | Must purchase in quantities of 10. |
| 5     | SJ9Z-JF5    |                                    |
| 8     | SJ9Z-JF8    |                                    |
| 10    | SJ9Z-JF10   |                                    |



\*Hold-down clip or spring must be removed to use with RJ PCB relays.

**Accessories**

| Item                               | Appearance  | Use with                   | Part No.    | Remarks   |
|------------------------------------|---|----------------------------|-------------|---|
| Aluminum DIN Rail (1 meter length) |   | All DIN rail sockets       | BNDN1000    | The BNDN1000 is designed to accommodate DIN mount sockets. Made of durable extruded aluminum, the BNDN1000 measures 0.413 (10.5mm) in height and 1.37 (35mm) in width (DIN standard). Standard length is 39" (1,000mm). |
| DIN Rail End Stop                  |  | DIN rail                   | BNL5        | 9.1 mm wide.  |
| Marking Plate                      |  | Finger safe sockets (ONLY) | SJ9Z-PWPN10 | 10 pieces per pack  |



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### 1190-Q/20B

Item Number : **1190-Q/20B**   Cut Sheets : [PDF](#)



### SPDT, ON-OFF-(ON), 20Amp-125v, .250 Q.C. Terminals

|                            |               |
|----------------------------|---------------|
| Type                       | Toggle Switch |
| Amps @ 125 VAC             | 20            |
| Amps @ 250 VAC             | 10            |
| Maximum HP                 | 3/4           |
| Contact Form               | SPDT          |
| Switch Function            | ON-OFF-(ON)   |
| Number of Connections      | 3             |
| Terminals                  | .250 Q.C.     |
| Mounting Type              | Panel         |
| Mounting Hole (Inches)     | 15/32         |
| Bat Toggle Length (Inches) | .65           |
| Stem Length (Inches)       | .47           |
| Stem Diameter (Inches)     |               |
| Application                |               |
| RoHS                       | Yes           |
| Approvals                  | U.L. & CSA    |

(Required Field denoted by \*)

Order Quantity :  \*

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NOTE: ( ) Around a function denotes a MOMENTARY function.

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1195/20  
W/SEAL Sealed

**\$7.25**

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1187-Q/20  
W/SEAL Sealed

**\$6.75**

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### 1195-Q/20 W/SEAL Sealed Double Momentary Toggle Switch, Center Off, Spade terminals, Single pole

Spemco  
**\$7.25**

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SKU: 1195-Q/20 W/SEAL

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Current Stock: 57

Quantity:



1185-Q/20  
W/Seal, Sealed

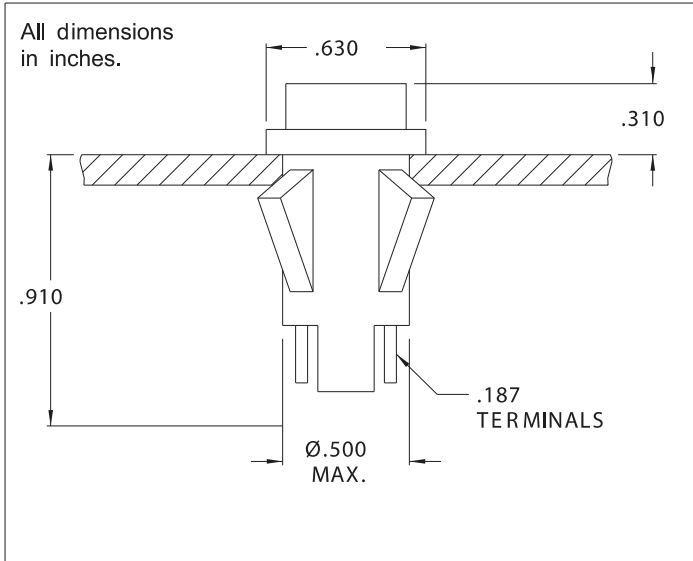
**\$7.75**

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# 1050QC, 1051QC, 1052QC, 1053QC and 1090QC Series Non-Relampable Neon-Incandescent Indicator Lights



Mounting: Will snap-fit into Ø.500" hole in panels .020" -.100" thick. Push-on speednut SN0461-C also available.

Terminals: Tinned brass

Lens: Polycarbonate

Bezel: Polished stainless steel. For Black Bezel, please add a "X" after "C", for example: 1090QCX3-28V

Housing: White Nylon

| Lens Color | Neon                      |                         | Incandescent       |                    |
|------------|---------------------------|-------------------------|--------------------|--------------------|
|            | Model No.<br>(105-125VAC) | Model No.<br>(208-250V) | Model No.<br>(12V) | Model No.<br>(28V) |
| Red        | 1050QC 1                  | 1051QC 1                | 1090QC 1-12V       | 1090QC 1-28V       |
| Clear      | 1050QC 2                  | -                       | -                  | -                  |
| Amber      | 1050QC 3                  | 1051QC 3                | -                  | 1090QC3-28V        |
| White      | 1050QC 4                  | 1051QC 4                | 1090QC 4-12V       | 1090QC4-28V        |
| Green      | 1052QC 5*                 | 1053QC 5*               | 1090QC 5-12V       | 1090QC5-28V        |
| Lamp used  | C2A+R resistor            | C2A+R resistor          | #2162              | #2187              |

\* Incorporates G2B lamp and resistor.  
Underwriters Laboratories (UL) File No. E20356

## Compliance & Approvals





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