Modular Distribution System

JPBD and LPBD Series

Protected Battery Disconnects

AIRPAX
## Modular Distribution System

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Rail Detail</td>
<td>226</td>
</tr>
<tr>
<td>Four Position Rear Connect</td>
<td>227</td>
</tr>
<tr>
<td>Four Position Top Connect</td>
<td>228</td>
</tr>
<tr>
<td>Eight Position Rear Connect</td>
<td>229</td>
</tr>
<tr>
<td>Eight Position Top Connect</td>
<td>2230</td>
</tr>
<tr>
<td>Decision Tables</td>
<td>231</td>
</tr>
</tbody>
</table>

## JPBD and LPBD Series

### Protected Battery Disconnects

<table>
<thead>
<tr>
<th>Series</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPBD Series PBD</td>
<td>233</td>
</tr>
<tr>
<td>JPBD Wall &amp; Frame Mounts</td>
<td>235</td>
</tr>
<tr>
<td>JPBD Bus Bar Specifications</td>
<td>236</td>
</tr>
<tr>
<td>JPBD Series Schematics</td>
<td>238</td>
</tr>
<tr>
<td>JPBD Series Decision Table</td>
<td>238</td>
</tr>
<tr>
<td>LPBD Series PBD</td>
<td>239</td>
</tr>
<tr>
<td>LPBD Wall &amp; Frame Mounts</td>
<td>240</td>
</tr>
<tr>
<td>LPBD Series Schematics</td>
<td>242</td>
</tr>
<tr>
<td>LPBD Bus Bar Specifications</td>
<td>242</td>
</tr>
<tr>
<td>LPBD Series Decision Table</td>
<td>243</td>
</tr>
</tbody>
</table>
Airpax provides circuit on demand from a pre-wired power bus. The Modular Distribution System utilizes “plug ‘n play” capabilities to simplify the design of your power bus system.

The module design simplifies line/load interface, saving both money and valuable time by eliminating the need for shutdown when expanding the equipment. Additionally, this flexible interface allows for adjacent circuits to be fused or protected, while parallel alarm conductors simplify signal wiring. By specifying the number of protected circuits, the Modular Distribution System can be designed to meet your application requirements.

Airpax, known for our high quality products and outstanding customer service, once again sets the standard in innovative and precision technology with our new Modular Distribution System.
Modular Distribution System

- Modular design provides unprecedented flexibility
- Hot Plug modules allow for equipment expansion without power shutdown
- Unique alarm conductors simplify signal wiring
- Module load terminals available with top or rear access

Mounting rails are available in 36 inch lengths. Airpax Part Number 647-230-5250. Consult factory for ordering information.
INSIDE INSULATOR SURFACE

RAIL MOUNT SCREWS
(2 SCREWS TO SECURE INSULATOR, REMAINING SCREWS SUPPLIED IN HARDWARE KIT)

LEAD WIRE 18 GAGE
(BLACK - COMMON, WHITE - NC, RED - NO)

8 X 1/4 X 20 UNC SCREW

2 X 3/8 X 16 UNC SCREW
Eight Position Rear Connect

Modular Distribution System

- **INSULATOR SIZE:** 4 X 3/8 X 16
- **UNC SCREW:** 16 X 1/4 X 20
- **LEAD WIRE 18 GAGE:** (BLACK - COMMON, WHITE - NC, RED - NO)
- **RAIL MOUNTING SCREWS:** (2 SCREWS TO SECURE INSULATOR, REMAINING SCREWS SUPPLIED IN HARDWARE KIT)
- **INSULATOR SURFACE:**
  - 16 X .625
  - 4 X .635
  - 1.028
  - 3.251

**Dimensions:**
- 7.137
- 2.174
- 2.897
- 4.336
- 2.710
- 1.234
- 1.028
- 3.251
- 8 X .625
- 8 X .640
- 7 X .787
- 8 X .625

** UNC SCREW:**
- 96 X 1/4 X 20
- 4 X 3/8 X 16
RAIL MOUNTING SCREWS (2 SCREWS TO SECURE INSULATOR, REMAINING SCREWS SUPPLIED IN HARDWARE KIT)

LEAD WIRE 18 GAGE (BLACK - COMMON, WHITE - NC, RED - NO)

16 X 1/4 X 20 UNC SCREW

4 X 3/8 X 16 UNC SCREW

INSIDE INSULATOR SURFACE

RAIL MOUNTING SCREWS
Modular Distribution System Decision Table

<table>
<thead>
<tr>
<th>1 First Decision</th>
<th>2 Second Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular Distribution System Code</td>
<td>Number of Positions*</td>
</tr>
<tr>
<td>-4</td>
<td>4 position</td>
</tr>
<tr>
<td>-8</td>
<td>8 position</td>
</tr>
<tr>
<td>-12</td>
<td>12 position</td>
</tr>
<tr>
<td>-16</td>
<td>16 position</td>
</tr>
<tr>
<td>-20</td>
<td>20 position</td>
</tr>
</tbody>
</table>
*Consult factory for additional options.

<table>
<thead>
<tr>
<th>3 Third Decision</th>
<th>4 Fourth Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>-B Standard</td>
<td>Load Terminal Access</td>
</tr>
<tr>
<td>-T</td>
<td>Top</td>
</tr>
<tr>
<td>-R</td>
<td>Rear</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 Fifth Decision</th>
<th>8 Auxiliary Switch Wire Rating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-S Silver</td>
<td>200° C; 600 volts; UL recognized (UL 1199)</td>
</tr>
<tr>
<td>-T Tin</td>
<td></td>
</tr>
<tr>
<td>*Consult factory for metric thread information.</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

1. This specification covers Airpax four and eight position Modular Distribution Systems for LEL, LML, IEL, IML type circuit protectors using 5/16 inch diameter bullet terminals.

2. High-Low Temperature Operation: The Modular Distribution System shall operate in a range from -40°C to +85°C.

3. Dielectric Strength: The Modular Distribution System shall withstand DC voltage for 60 seconds between all electrically isolated parts as follows:
   - Between line and load bus bars: Minimum 2000 VDC
   - Between line and load bus bars and aux. switch contact strips: Minimum 2000 VDC
   - Between line and load bus bars and clamp up rods: Minimum 2000 VDC

4. Insulation Resistance: Shall not be less than 100 megohms at 500 volts DC.

5. Flammability: All Modular Distribution System parts have an U.L. 94 V-O flammability rating.

6. Electrical Ratings:
   - Current Ratings:
     - Maximum load bus rating per position is 100 amps.
     - Maximum common bus rating of the eight position Modular Distribution system is 600 amps.
     - Maximum common bus rating of the four position Modular Distribution System is 300 amps.
   - Voltage Rating: 125 VDC max.

7. Recommended Torque Specifications:
   - Load bus 1/4 - 20 UNC 72 inch pounds
   - Line bus 3/8 - 16 UNC 192 inch pounds
   - Mounting channel #10 x 0.750 long 20 inch pounds

8. Auxiliary Switch Wire Rating:
   - 200° C; 600 volts; UL recognized (UL 1199)

9. Ampacity:
   - Line bus @ 600 amps: 850 amps/sq inch
   - Line bus @ 300 amps: 850 amps/sq inch
   - Load bus @ 100 amps: 1140 amps/sq inch

10. Plating: Common and load bus bars are available with either silver or tin plating.

    Silver Plating: The plating of the louvertect bands of the Airpax circuit protectors used in the Modular distribution System are silver plated. Silver plated bus bars on the Airpax Modular Distribution System product significantly reduce the possibility of galvanic corrosion.

    Tin Plating: The use of tin plated bus bars with the silver plated louvertect bands on the circuit protector increases the possibility of galvanic corrosion at the joint interface. The use of a conductive polymer such as Stabilant 22 or CAIG 100 is recommended with both silver plated and tin plated bus bars in order to negate galvanic corrosion and to improve the conductivity of the joint interface.

11. Beryllium Copper Contact Strip: Beryllium copper strips are used to conduct current to and from the terminals of the circuit protector auxiliary switch. The beryllium copper strips have a minimum compression set and will return to their original size with as much as a 30% deflection. Repeated insertion and removal of the circuit protector in this application will have an insignificant effect on the contact force between the auxiliary switch terminals and the beryllium copper strips.
Telecommunication networks are highly reliable, with interruptions being predominately uncommon. To further reduce the unlikely event of an interruption, battery systems provide the critical backup power to keep these networks online. These battery backup systems also present a potential hazard to firefighters, emergency and maintenance personnel, making the need to provide a remote or manual disconnect function more critical.

Two versions of the Airpax Protected Battery Disconnect provide highly effective and versatile solutions to address the issues associated with battery system applications. The JPBD and the LPBD series of Airpax Protected Battery Disconnects feature engineering and design innovations optimizing safety and operational requirements for a wide range of applications.
**JPBD Series Protected Battery Breaker Disconnects**

Disconnecting batteries in the event of an emergency or for maintenance has just become much easier with Airpax Protected Battery Disconnects (PBD). A key component of the Airpax disconnect product is the JTEP/JTMP circuit breaker packaged in a completely front accessible enclosure. The JTEP/JTMP is UL489A Listed for use in communications equipment. In addition to overcurrent protection and switching capability, applying a voltage signal to the optional remote trip circuit allows batteries to be disconnected from a remote location. Optional alarm and meter shunt functions can also be provided, eliminating the need to design these functions in separately.

**Ratings**

<table>
<thead>
<tr>
<th>Current Rating</th>
<th>Voltage</th>
<th>Interrupt Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 - 1200 amps</td>
<td>65 VDC</td>
<td>50,000 amps</td>
</tr>
<tr>
<td>200 - 800 amps</td>
<td>160 VDC</td>
<td>10,000 amps</td>
</tr>
</tbody>
</table>

**Application**
Manually or remotely disconnect batteries in communications networks.

**Voltage**
While primarily used in +24 and -48VDC circuits, Airpax disconnects will operate at any voltage up to 65VDC. (For higher voltages please consult the factory.)

**Terminations**
Standard bus plates are configured for two hole telecom lugs. Consult factory for various bus plate configurations.

**Mounting**
Airpax disconnects can be wall mounted or mounted on a battery stand. A rack mount version is also available.

**Operating Ambient**
-40° to +60°C.

**Optional Alarm**
An optional alarm circuit indicates power on, power off and/or tripped condition. The alarm feature can easily be accessed via a small terminal block at the top of the unit.

**Optional LED Indication**
Optional LEDs on the front of the unit can visually indicate power on, power off, and/or tripped condition.

**Optional Meter Shunt**
An optional 25mv at rated current, non-isolated meter shunt is available. Limited to current ratings of 800 amps max.

**Optional Remote Trip Capability**
Airpax battery disconnects can be activated from a remote location allowing a safe means of disconnecting batteries in the event of a fire or other types of emergencies. A terminal block at the top of the unit provides convenient termination points. It is recommended that a two amp switch be used to activate the remote trip feature.
Wall & Frame Mount
200-800 Amp

Wall Mount
1000-1200 Amp

Note: All dimensions shown in inches. Tolerance is ± .015 unless noted.
### Table: Protected Battery Disconnect

<table>
<thead>
<tr>
<th>Rating</th>
<th>Number of Poles</th>
<th>Dim. “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-1200 amps</td>
<td>6</td>
<td>10.5 [266.70]</td>
</tr>
<tr>
<td>100-600 amps</td>
<td>3</td>
<td>5.265 [133.48]</td>
</tr>
</tbody>
</table>

**Note:** All dimensions shown in inches. Tolerance is ± .015 unless noted.

**Note:** All dimensions shown in inches. Tolerance is ± .015 unless noted.
**400, 600, 800, 1000 and 1200 Amp Bus Bar Specifications**

<table>
<thead>
<tr>
<th>Amperage</th>
<th>Max. Lug Size</th>
<th>Max. Lug Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 amps</td>
<td>800 MCM</td>
<td>4 max.</td>
</tr>
<tr>
<td>1000 amps</td>
<td>800 MCM</td>
<td>3 max.</td>
</tr>
<tr>
<td>800 amps</td>
<td>777 MCM</td>
<td>3 max.</td>
</tr>
<tr>
<td>600 amps</td>
<td>777 MCM</td>
<td>2 max.</td>
</tr>
<tr>
<td>400 amps</td>
<td>777 MCM</td>
<td>2 max.</td>
</tr>
</tbody>
</table>

**Notes:**
1. This specification covers Airpax battery disconnect bus bars from 400 amps to 1200 amps. Two through six pole construction.
2. Finish: .001" copper undercoat followed by a .00005" - .0001 tin plating with brighteners added. Reference ASTM B-545-92 regarding tin plating and solderability requirements.
4. Special bus plate hardware available. Consult factory.

**Note:** All dimensions shown in inches. Tolerance is ± .015 unless noted.
**JPBD and LPBD Series**

**LED INDICATES BREAKER OFF**

**JPBD Series**

NO ELECTRICAL ALARM

Refer to Airpax specification AM-374 for detailed circuit breaker information.

---

**JPBD Series Schematics**

**Fig. 1**

**Fig. 2**

**Fig. 3**

**Fig. 4**

**Fig. 5**

**Fig. 6**

**Fig. 7**

**Fig. 8**

**Fig. 9**

**Fig. 10**

**Fig. 11**

**Fig. 12**

**Fig. 13**

**Fig. 14**

**Fig. 15**

**Fig. 16**

**Fig. 17**

**Fig. 18**

**Fig. 19**

**Fig. 20**

**Fig. 21**

---

**JPBD Series Decision Table**

1. **First Decision**
   - Type
     - JTEPB - Series Trip
     - JTPBD - Mid-Trip

2. **Second Decision**
   - Aux. Switch
     - 0: Switch only
     - 1: Series Trip
     - 2: REC4 - electrical/mechanical alarm
     - 3: MRLS4 - electrical trip alarm only

3. **Third Decision**
   - Current Rating Poles
     - B: 200 amps 1
     - C: 250 amps 1
     - D: 400 amps 2
     - E: 600 amps 3
     - F: 800 amps 4
     - G: 1000 amps 5
     - H: 1200 amps 6
     - J: 350 amps 2

4. **Fourth Decision**
   - System Voltage
     - 24 Volts DC
     - 48 Volts DC
     - 72 Volts DC
     - 160 Volts DC

5. **Fifth Decision**
   - Mounting
     - W: Wall mount
     - WT: Wall mount top load only
     - WB: Wall mount bottom load only
     - FR*: Frame mount (right)
     - FL*: Frame mount (left)
     - R1: 19-inch rack mount
     - R2: 23-inch rack mount

6. **Sixth Decision**
   - LED Indication
     - 0: No indication
     - 1: Red indicating disconnected only (off)
     - 2: Green indicating connected only (on)
     - 3: Red (off), green (on) indication
     - 6: Red indicating (on)

7. **Seventh Decision**
   - Bus Bar Code
     - A: Thru hole connection
     - B: Threaded connection

8. **Eighth Decision (Optional)**
   - Remote Disconnected Voltage
     - 0: No remote
     - 1: 24 VDC
     - 2: 48 VDC
     - 3: 120VAC
     - 4: 240 VAC

9. **Ninth Decision (Optional)**
   - Options
     - M: Metering shunt (800 amp max.)
     - U: Handle guard (rack mount only)
     - C: Cable management (both ends)
     - T: Cable management (top only)
     - B: Cable management (bottom only)

---

Notes:
1. All configurations are available with remote disconnect.
2. All schematics shown with circuit breaker in off position.

---

**Example:** JTEPB - 0 - D - 1 - W - 1 - A - 2 - M

---

**Notes:**
- Refer to Bus Bar Specifications on page 335 for detailed circuit breaker information.
Connecting batteries in the event of an emergency or for maintenance has just become much easier with the Airpax LPBD battery disconnect. Maximum ratings of 200 amps @ +24 or -48VDC make the LPBD ideal for outside plant, cell site, central office and co-location applications. The LPBD is available in wall mount, rack mount, custom and NEMA enclosure configurations in package sizes that require minimal space. In addition to the disconnect function the LPBD also provides over current protection and provides a fault interrupt rating of 50,000 amps.

The LPBD can be supplied with an optional remote disconnect feature allowing batteries to be disconnected with an emergency shut down switch at the service entrance of a site or from a remote monitoring center. This key feature helps address increasingly stringent requirements of local Fire Marshall’s and pending NEC requirements.

In addition to remote disconnect capability the LPBD can also be configured to remotely reconnect battery circuits.

- Disconnect and overcurrent protection
- Manual and remote disconnect and reconnect capability
- Completely front accessible
- +24 and -48VDC operation
- Wall, rack or battery stand mounting
- Optional NEMA enclosure
- LED indication of power on, off and/or tripped condition
- Standard ratings of 50, 100, 125, 150 and 200 amps
- Optional alarm circuit
- Standard Bellcore Lock
Application
Manually or remotely disconnect batteries in communications networks. Remote reconnect. Consult factory.

Voltage
While primarily used in +24 and -48VDC circuits, Airpax disconnects will operate at any voltage up to 80VDC.

Terminations
Consult factory for various bus plate options. Bus plates are configured for two hole telecom type lugs.

Mounting
Airpax disconnects can be wall mounted or mounted on a battery stand. A rack mount version is also available. Consult factory for additional information.

Operating Ambient
-40 to +60°C.

Optional Alarm
An optional alarm circuit indicates power on, power off or tripped condition. The alarm feature can easily be accessed via a small terminal block within the unit.

Optional LED Indication
Optional LEDs on the front of the unit can visually indicate power on, power off, and/or tripped condition.

Optional Remote Trip Capability
Airpax battery disconnects can be activated from a remote location allowing a safe means of disconnecting batteries in the event of a fire or other types of emergencies. A terminal block is provided for convenient termination.

Remote Reset Capability
Battery circuits can be reconnected remotely by applying a voltage signal to the optional remote actuator. A terminal block is provided for convenient termination.

Ratings

<table>
<thead>
<tr>
<th>Current Rating</th>
<th>Voltage</th>
<th>Interrupt Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 - 100 amps</td>
<td>80 VDC max.</td>
<td>50,000 amps</td>
</tr>
<tr>
<td>125 - 200 amps</td>
<td>65 VDC max.</td>
<td>50,000 amps</td>
</tr>
</tbody>
</table>

**Notes:**
1. Enclosure designed to NEMA type 3 “Rain Tight” specification.
2. “Connection Kit” hardware included.
LPBD Inside Wall, Surface & Frame Mount

JPBD and LPBD Series

Protected Battery Disconnect
LPBD Series Schematics

SWITCH ONLY

SERIES TRIP NO INDICATION

NOTES:
1. Bus Bar Finish: Tin over copper undercoat
2. Torque value for bus bar connections: 225-270 inch pounds.

LPBD Series Specifications

500 MINIMUM CLEARANCE BETWEEN LUG AND HOUSING (BOTH ENDS)

Recommended Lugs for LPBD (indoor)

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Part No.</th>
<th>MFG</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 MCM</td>
<td>256-30695-1245P</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>250 MCM</td>
<td>CL-250-2-3/8</td>
<td>Southport Ind.</td>
</tr>
<tr>
<td>250 MCM</td>
<td>CLL-25-20-3/8</td>
<td>Southport Ind.</td>
</tr>
<tr>
<td>250 MCM</td>
<td>GL250N-38</td>
<td>Nsi Industries</td>
</tr>
<tr>
<td>250 MCM</td>
<td>BLU-025D3</td>
<td>Penn Union</td>
</tr>
<tr>
<td>250 MCM</td>
<td>YA29L-2TC38</td>
<td>Burndy</td>
</tr>
</tbody>
</table>

Recommended Lugs for LPBD (outdoor)

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Part No.</th>
<th>MFG</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
<td>256-30695-1159PH</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>#4</td>
<td>256-30695-1161PH</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>1/0</td>
<td>256-30695-1162PH</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>2/0</td>
<td>256-30695-116P</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>3/0</td>
<td>54816BEPH</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>4/0</td>
<td>256-30695-1117P</td>
<td>Thomas &amp; Betts</td>
</tr>
<tr>
<td>Decision</td>
<td>Option</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LEPBD - Series Trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LMMPB - Mid-Trip</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Aux. Switch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 - Switch only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - Series Trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 - 1REC4 - electrical/mechanical alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - 1RLS4 - electrical trip alarm only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dual aux. switches available (consult factory)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Current Rating Poles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A - 50 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B - 75 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C - 100 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D - 125 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E - 150 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F - 175 amps (UL 489A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H - 175 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>J - 200 amps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K - 250 amps</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>System Voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - 24 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 - 48 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - 80 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 - 12 VDC</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Enclosure Type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A - Inside wall, surface and frame mount</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C - 19&quot; rack mount</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>LED Indications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 - No indication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - Red indicating disconnected only (off)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 - Green indicating connected only (on)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - Red (off) / Green (on) indication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - Red indicating on</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Remote Disconnect Voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D - No remote trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - 24 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 - 48 VDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 - 120 VAC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 - 240 VAC</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Options</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L - Handle lock*</td>
<td></td>
</tr>
</tbody>
</table>

*See Airpax specification AM-371 for other combinations.

**Example:** LEPBD - 1 - C - 2 - A - 3 - 2 - L

*Refer to ANSI C57.12.500-AIC 80 VDC.
**Ambient Temperature**: Temperature of medium, such as air, water or earth, into which heat of device is dissipated.

**Ampacity**: Current-carrying capacity of electrical conductor or device.

**Arcing Time**: (As used for fuses) is measured from point when element melt time ends to point when current is interrupted and permanently becomes zero. If mechanical indicator is used which incorporates secondary element parallel to fusible equipment, arcing time will commence from point at which indicator melt time ends. Circuit protector arcing time is measured from the moment of contact separation to the point when the current permanently drops to zero.

**Automatic**: Self-acting, operating by own mechanism when actuated by some impersonal influence, such as change in current strength, pressure, temperature or mechanical configuration.

**Branch Circuit**: Portion of wiring system extending beyond final over-current device protecting circuit.

**Busbars**: Current-carrying conductors in power distribution equipment, such as unit substations, busways, etc. Usually solid copper and rectangular shaped rather than round.

**Cascade Circuit**: Circuit in which more than one protector is connected in series between power source and load. (See Coordination.)

**Circuit Breaker**: Device used to open and close circuit by non-automatic means, as well as to open circuit automatically on predetermined overload current without injury to itself (when properly applied within its rating.)

**Circuit Breaker, Non-trip-free**: Breaker designed so that circuit can be held closed by restraining handle when carrying overload current that would normally trip breaker to open position (Not normally recommended.)

**Circuit Breaker Trip-free**: Breaker whose pole(s) cannot be maintained closed when carrying overload currents that would automatically trip breaker to open position. None of the circuit breaker poles would reclose while operating mechanism is maintained in closed position.

**Common Trip**: Multi-pole circuit breaker in which overload on any pole will cause all poles to open simultaneously.

**Conductor**: Material that has attached to its atoms many “free” electrons which may be detached easily by electrical pressure or voltage. Silver, copper and aluminum are good conductors. Thus any material or wire that is used to carry electric current.

**Coordination**: Ability of protector with lowest rating (in cascade arrangement) to open before protectors with higher rating when fault occurs downstream from lowest rated protector. (See Cascade Circuit.)

**Current Limitation**: Ability of protective device to reduce short-circuit peak current to value less than that which would be available if no protective device was in circuit.

**Current Rating (Continuous)**: Maximum direct current or alternating current in amperes at rated frequency which protective device will carry continuously under defined conditions without exceeding specified performance limits.

**Current-responsive Element (Fusible Elements)**: Part of fuse or limiter which carries current and melts when current exceeds predetermined value.

**Disconnect**: Device through which conductors of circuit can be disconnected from their source.

**Duty Continuous**: Requirement of service that demands operation at substantially constant load for an indefinitely long time.

**Duty Intermittent**: Requirement of service that demands operation for alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load and rest.

**Effective Voltage (or Current)**: Effective value of sinusoidal voltage or current is 0.707 times peak value. Also designated RMS value (Root Mean Square). When AC voltage is referred to effective value is understood unless otherwise noted. Symbols E and I without subscripts indicate effective values.

**Element Melt Time**: Time elapsed from moment fusing current begins to flow until moment current sharply drops in value and arcing commences.

**Fault**: Abnormal flow of current through defect in normal circuit configuration. Commonly referred to as short circuit.

**Fault Current**: (See Short-circuit Current.)

**Feeder**: Circuit conductors between service entrance equipment and branch circuit overcurrent device.

**Fuse**: Device which protects circuit by melting of its current responsive element when overcurrent passes through it.

**Fuse Dual Element**: Time-delay fuse combines thermally controlled element which functions in case of overload and fusible element which operates under short circuit.

**Fuse Normal Opening (Fast-acting)**: Opens circuit without deliberate time-delay.
**Fuse Time-delay**: Fuse that has its total clearing time deliberately delayed in overload current range.

**Fuse Very Fast-acting**: Fuse that opens circuit without deliberate time delay and whose short-circuit opening time is faster than normal opening fuse.

**Instantaneous Trip (Opening)**: “Instantaneous” indicates delay is not introduced purposely into action of device.

**Insulator (or Dielectric)**: Material that is very poor conductor of electricity. Mica, glass, porcelain, rubber, paper, plastic, oils and varnishes are considered good insulators.

**Interrupting Capacity**: Maximum short-circuit current at rated voltage which protective device is required to interrupt under operating duty specified and with normal frequency recovery voltage not less than rated voltage. (See Rupture Capacity.)

**Inverse-time**: (See Time-inverse.)

**Kilowatthour (KWH)**: Electrical energy expended if 1 kilowatt is used for 1 hour.

**Let-through Current**: Current that actually passes through protective device after initiation of fault.

**Minimum Fusing Current**: Smallest value of current that will melt current responsive element at specified ambient temperature.

**Overcurrent**: Any current exceeding rated current of protective device (exceeding maximum ultimate trip current for circuit breakers.) This includes both overload and short-circuit currents.

**Overload Current**: Overcurrent in excess of current rating. Overload range is considered to be greater than rated current up to approximately ten times rated current.

**Panelboard**: Single group of assembled panels which include fuses. Assembled with or without switches and/or automatic overcurrent protective devices for control of light, heat or power circuits of small individual and aggregate capacity. Usually placed in or against wall or partition and accessible only from front.

**Phase-to-phase**: Voltage measured between any two “corners” of delta connection or between any two “legs” of wye connection.

**Protective Device**: Devices which respond to harmful abnormal conditions in electric distribution system and function to open parts of circuit which will isolate cause of disturbances and so permit remainder of system to function normally.

**Recovery Voltage**: Voltage impressed across protective device after circuit has been interrupted and after high frequency transients have subsided.

**Rupture Capacity**: Applied to reusable protective devices. (See Interrupting Capacity.)

**Selective System**: System in which protective device closest to faulted circuit opens and isolates that circuit without disturbing remainder of system. (See Coordination.)

**Short-circuit Current (Fault Current)**: Maximum current that system can produce at point of application of protective device.

**Time-delay**: Qualifying term indicating that there is introduced purposely delayed action.

**Time-inverse**: Time-current relationship where protective device opening time decreases as current increases.

**Total Clearing Time**: Time measured from beginning of specified overcurrent condition until permanent interruption of circuit. Total clearing time for fuse of limiter is equal to sum of melting item and arcing time.

**Ultimate Trip Current**: Minimum current which will provide a reliable trip on the breaker (typically 115 percent of rated current.)

**Voltage Drop**: Fall of voltage along conductor due to its resistance.

**Voltage Drop (Distribution System)**: Difference at any instant between voltages at source and utilization ends of feeder, branch circuit or transformer.

**Voltage Rating**: Maximum alternating current and/or direct current voltage at which protective device is designed to operate.

**Voltage Regulation**: Measure of change in voltage between no load and full load in terms of full load voltage.

**Voltage Peak**: Voltage or current of AC sinusoidal wave when it reaches its peak or maximum level twice in cycle. These peaks are only a point of each 1/2 cycle. Direct current voltage is really peak voltage at all times.

**Watt (W or P)**: Unit of electrical power which represents amount of power of circuit when current in that circuit is 1 ampere and voltage is 1 volt.