This catalog is intended to present product data and provide technical information that will help the end user with design application. Bussmann reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Bussmann also reserves the right to change or update, without notice, any technical information contained in this catalog. Once a product has been selected, it should be tested by the user in all possible applications.
Overcurrent devices provide two main purposes in an electrical circuit:
1. To protect components, equipment, and associated wiring from costly damage.
2. To isolate sub-systems from the main system once a current fault has occurred.

Fuses and circuit breakers are commonly selected as the preferred overcurrent device.

**Fuses**
The key component of a fuse is the “element”, a short piece of metallic wire or strap made of a material with a relatively low and predictable melting point. Fuses are current sensitive devices and selected to be the weakest link in the circuit. Circuit protection is provided when the fuse link melts and safely interrupts the overcurrent demand. The key criteria to judge the performance of a fuse is the time versus current characteristic curve. This curve can be used to match the fuse with the anticipated overcurrent load expected in the application.

**Thermal Circuit Breakers**
The basic components of a thermal circuit breaker are the composite alloy reed, two precious metal contacts, and the interconnecting terminals. When an overcurrent occurs, heat is generated as the current flows through the reed causing the reed to deflect and snap open. This separates the contacts and safely interrupts the current flow. Two important parameters used to judge the performance of thermal circuit breakers are the time versus current characteristic curve, similar to the fuse, along with the speed at which the contacts snap open. The relative speed at which the contacts separate is a measure of the cycle life under electrical loading demands. Cooper Bussmann - Automotive Products carefully designs its snap acting reed element to insure long cycle performance for its products.

**TYPES OF OVERCURRENT**
Any current that exceeds the ampere rating of the fuse or circuit breaker should be considered an overcurrent. Overcurrent situations are generally classified as either a short circuit or an overload condition.

**Short Circuit**
Short circuit is a current condition that greatly exceeds the rating of the device. It is caused when a malfunction or accident creates a break in the normal path allowing electricity to flow directly to ground. This shorter current path bypasses the resistance offered by the circuit components connected in the normal current path. In this situation there is virtually no resistance to impede the current and the current will build to a level where the heat generated can cause insulation and/or equipment breakdown.

**Overload**
An overload is an overcurrent that is within the normal current path. Overloads occur when the current exceeds the value for which the equipment or associated wiring is rated. This typically occurs when too many devices are connected to the circuit or when a device connected to the circuit malfunctions. Sustained overloads may slowly cause overheating of the wiring and the components. The circuit protection device must open before these types of overloads cause damage.

**SELECTING OVERCURRENT PROTECTION**
During normal conditions, an overcurrent protection device must carry the current without nuisance openings. However, when an overload or short circuit occurs the device must interrupt the overcurrent and withstand the voltage across the device after arcing. To properly select an overcurrent device the following items must be carefully considered:
- **Voltage rating**: represents the maximum system voltage present in the circuit in which the overcurrent device is installed. The system voltage should not exceed this value for proper operation of the device during an overcurrent event.
- **Current rating**: This is the amperage value marked on the circuit protection device. The circuit protection device is designed to handle this value under steady operating conditions and at ambient temperatures near 25°C. Since field applications often deliver loading conditions and ambient temperatures that vary from ideal nominal settings, it is recommended that circuit designers select device ratings above the nominal circuit current to prevent nuisance trips.
- **Characteristics of equipment to be protected/in-rush characteristics**: During the operation of protected equipment, system current can significantly vary. This is particularly evident when motor or other inductive loads in the circuit cause large current surges during start-up or shut-down. Circuit protection designers should be aware of these surges and/or in-rush characteristics and select the overcurrent protection device to either accept or reject these current fluctuations as desired.
- **Available short circuit current**: During a fault or short circuit condition the fuse or circuit breaker may receive a burst of current due to a rapid discharge of available supply current into the circuit. Large DC battery supplies and high current rated electric distribution buses often have this potential for severe short circuits. In these situations the current protection device should be rated to safely clear these instantaneous peak current possibilities.
- **Ambient conditions**: The time it takes to interrupt the current is dependent upon the ambient current temperature characteristics. Ambient temperature refers to the temperature of the air immediately surrounding the circuit protection device. The effective fuse or circuit breaker ambient temperature to be considered can be appreciably different than the outside room or larger enclosure containing the device. This can occur when the device is contained in a tight area or it is mounted in or near a heat producing component such as a transformer or resistor. When selecting a fuse or circuit breaker at ambient temperatures significantly different from the stated nominal temperature, the circuit designer should adjust the selected overcurrent protection rating based on the published derating curves.

Fuses — may be preferred when fast response to a short circuit condition is required or when high available short circuit currents could occur. Fuses are also less sensitive to high ambient temperature conditions. Fuse characteristic curves can be used to carefully size the device to a critical or special application.

Circuit Breakers — may be preferred for mild overload and short circuit faults. They have a clear advantage of resetability. Four different methods for reset are generally available:
- **Type I (automatic reset)**: the circuit breaker cycles continuously during an overload condition until the overload is removed or corrected.
- **Type II (modified reset)**: the circuit breaker contains an additional resistive component that causes the device to remain open as long as power is available.
- **Type III (manual reset)**: the circuit breaker contains a trip indicator button or lever that must be manually activated to return the device to normal operation.
- **Type III (switchable)**: same as the manual Type III with the option of allowing the user to disable the circuit using an external trip button.
MINI Blade Fuses

Bussmann®

**MINI® Blade Fuses**

**Fast Acting**

**SPECIFICATIONS**

- **Ampere Ratings:** 2 to 30 Amperes
- **Voltage Rating:** 32 Volts DC (or less)
- **Housing Material:** UL Rated 94VO Thermoplastic
- **Terminals:** Silver plated
- **Interrupting Rating:** 1,000 Amperes
- **Marking:** Amperage marking is OCR Compliant
- **Agency Approvals:** UL Recognized (3-30A)

Guide JFHR2, File E56412

![Dimensions Diagram](image)

**Dimensions**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Amp Rating</th>
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<tr>
<td>ATM-30</td>
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See page 13 for more information.
MINI Circuit Breakers

Series 21X Mini Circuit Breakers
Auto & Modified Reset

SPECIFICATIONS

Single Pole Thermal Type Breakers
Ratings: 7.5A, 10A, 15A, 20A, 25A, 30A; Voltage of 14VDC.
Operating Temperature: –40°F (–40°C) to 185°F (85°C).
Storage Temperature: –40°F (–40°C) to 260°F (125°C).
Cover: Gray 94VO Thermoplastic housing with standard gold cover (Type I) or silver cover (Type II).
Marking: Standard marking includes amp/volt ratings, part number, and date code. OCR marking available.
Termination Type: Compatible with 280 Type fuse blocks using 8.1mm centerline.
Approvals: Complies with SAE standard J553 Type I and Type II Circuit Breakers.

Dimensions

MINI Circuit Breaker Puller - Part Number 32002

See page 13 for more information.

PART NUMBERING SYSTEM

Series
211 – Type I, 14VDC
212 – Type II

Rating
7.5 – 7.5 amps
10 – 10 amps
15 – 15 amps
20 – 20 amps
25 – 25 amps
30 – 30 amps

Marking
00 – Std. Marking
(Consult Factory for Special Options)

Special Options
(Consult Factory for Special Options)
Series 3000 VEC
The Series 3000 VEC is a state of the art electrical distribution module for DC powered vehicles.

The VEC utilizes a patented programmable 3-D matrix technology which can easily be modified to accommodate changes in your electrical systems.

The module has been designed to accept automotive components having 2.8MM wide terminals on 8.1MM centerline spacing.

The Series 3000’s compact size, only 4” x 4”, provides the ultimate in component density. These dimensions match many commonly available devices (mini fuses, relays, circuit breakers, etc.) which are installed as plug-in components into the housing.

The internal design consists of multi-layer metal grids, each which can be readily customized to accommodate a wide range of circuit options. Layer spacing is designed to allow for direct plug-in of input and output connectors on any of three sides of the panel. Up to two 800 Series (2 position) input connectors can be provided, and up to four 280 Series (8 position) input/output connectors can be selected.

Harness designs can be simplified and cost reduced because jumpers and splices in the harness are eliminated by internally programming them into the grid matrix.

The Series 3000 is ideal for distributed power and auxiliary “add-on” applications. Larger distribution designs can be accommodated with multiple VEC’s.

Current VEC applications include: Class 3-8 trucks, buses, RV’s, CON-AG equipment and automotive power distribution systems.

The Series 3000 VEC detailed specifications and performance test results are available upon request.

Part numbers and custom labels are assigned by the Bussmann Engineering Department as each design is customer specific.

VEC options include covers (sealed or unsealed), outboard mounting bases, and input/output connectors (see page 6).

- **Reduce**
  - Tooling Costs & Lead Times
  - Number of External Splices.
  - Need for jumper wires.
- **Allows for internal bussing to relays.**
- **Low Profile Mounting.**

**SPECIFICATIONS**

Electrical Ratings, Amperage:

**VEC Housing and Connector Material:** Black, UL rated 94VO Thermoplastic, -40°C to 125°C

**Input Capacity For All Circuits:** 200 Amps maximum

**Input Terminal Rating:** Accepts industry standard 8.0mm blade terminals; 60 Amps per terminal max.

**Output Terminal Rating:** Accepts industry standard 2.8mm blade terminals; 30 Amps per terminal max.

**Recommended Wire Size:** Input Wires (unsealed) — #8-18; Input Wires (sealed) — #8; Output Wires (sealed and unsealed) — #10-22

**Top Level Plug-in Components:** 30 Amps max. device rating.
**MALE INPUT CONNECTOR**

32004-XX

- Sealed / Non-Sealed Configuration
  1 = for Non-Sealed Version
  2 = for Sealed Version

- Color of Part
  A = Black
  B = Gray

**TERMIAL POSITION ASSURANCE**

32004-TPX

- Sealed / Non-Sealed Configuration
  1 = for Non-Sealed Version
  2 = for Sealed Version

**CONNECTOR POSITION ASSURANCE**

32004-CP (Ship in Bulk)

*Note:* Terminals and Terminal Seal Components are not provided with connectors. Available from Delphi-Packard. Contact factory for part list. Sealed connector option includes outer body seal.

---

**MALE OUTPUT CONNECTOR**

32006-XXX

- Sealed / Non-Sealed Configuration
  1 = for Non-Sealed Version
  2 = for Sealed Version

- Connector Cavity Configuration
  1 = for Tang-less Female Connector
  2 = for with Tang Female Connector

- Color of Part
  A = Black
  B = Gray
  C = Green
  D = Blue

**TERMIAL POSITION ASSURANCE**

32006-TPX

- Sealed / Non-Sealed Configuration
  1 = for Non-Sealed Version
  2 = for Sealed Version

**CONNECTOR POSITION ASSURANCE**

32006-CP (Ship in Bulk)

*Note:* Terminals and Terminal Seal Components are not provided with connectors. Available from Delphi-Packard. Contact factory for part list. Sealed connector option includes outer body seal.
ATC® Blade – Type Fuse
Fast Acting

**SPECIFICATIONS**

- **Ampere Rating**: 1 to 40 Amperes
- **Voltage Rating**: 32 Volts DC (or less)
- **Housing Material**: UL Rated 94V0 Thermoplastic
- **Terminal Material**: Tin plated
- **Interrupting Rating**: 1,000 Amperes
- **Marking**: Amperage marking is OCR Compliant
- **Agency Approvals**: UL Recognized, (3-40A)
  (Guide JFHR2, File E56412)

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---

ATC® Fuse Puller - Part Number 32003

See page 13 for more information.
Series 22X ATC® Circuit Breakers
Auto & Modified Reset

**SPECIFICATIONS**

**Single Pole Thermal Type Breakers**

**Ratings:** 7.5A, 10A, 15A, 20A, 25A, 30A;
Voltage of 14VDC; 24VDC on 223 Series.

**Operating Temperature:** -40°F (−40°C) to 185°F (85°C).
**Storage Temperature:** -40°F (−40°C) to 260°F (125°C).

**Cover:** Gray 94VO Thermoplastic housing with standard gold cover (Type I) or silver cover (Type II and Type III).

**Marking:** Standard marking includes amp/volt ratings, part number, and date code. Type III Reset Buttons are color-coded to amperage ratings. OCR marking is available.

**Termination Type:** Compatible with 280 Type or ATC fuse blocks.

**Approvals:** Complies with the requirements of SAE standard J553 Type I, Type II, and Type III Circuit Breakers.

---

**DIMENSIONS - TERMINAL OPTION**

**Amperage Marking:**

- **0** (Tripped) Reset Button
- **25°** (6.59) Typ
- **10°** (2.50) Typ
- **1.17°** (29.82)
- **1.08°** (27.40)
- **.21°** (5.25) TYP

**Termination Options**

- **0:**
  - Standard Marking Location
  - .21° (5.25) TYP
  - .16° (4.00) TYP
  - .10° (2.50) Typ
- **0.25°** (6.59) TYP
- **.03°** (0.80) TYP
- **20°** (5.00)
- **25°** (6.40) TYP
- **57°** (14.50) TYP

- **1.17°** (29.82)
- **1.08°** (27.40)
- **.21°** (5.25) TYP

**Part Numbering System**

**Series**

- **221** – Type I, 14VDC
- **222** – Type II, 14VDC
- **223** – Type III, 24VDC

**Rating**

- 7.5 – 7.5 amps
- 10 – 10 amps
- 15 – 15 amps
- 20 – 20 amps
- 25 – 25 amps
- 30 – 30 amps

**Terminal**

- **0** – ATC Fuse, 4mm Insertion Depth
- **1** – 16.2mm Centerline 280
- **2** – 8.1mm Centerline 280 (MINI)
- **3** – ATC Fuse, Delphi Packard
- **4** – ATC Fuse, Blocks with Raised Shrouds, 8.4mm Insertion Depth

**Marking**

- **q**

- **00** – Std. Marking

---

See page 13 for more information.
**ATC® Blade-Type Fuse Panels**

**SPECIFICATIONS**

**Interchangeable Blade Terminals:** Accepts ATC® blade-type fuses or Series 22X circuit breakers.

**Wiring:** Output terminals - .250" x .032" QC rated 30A max. per circuit; Input terminals - #10-32 stud input rated 100A max.

**Recommended Wire Size:** Input Power #4-6; Output Circuits #12-16.

**Positions:** Provides 4 to 20 output circuits.

**Material:** Black, UL rated 94VO thermoplastic, –20°F to 150°F (0°C to 65°C).

**Applications:** Compact and lightweight, yet rugged enough for use in trucks, buses, boats, RV's, etc. Recommended for supplemental accessory power requirements. See 15700 Series or 3000 Series VEC for main power distribution systems.

**Other Features:** No top cover needed; recessed trifurcated fuse contacts. Recessed mounting holes.

---

**Dimensions**

- **15600 Series**
  - 1.25" TYP (31.75)
  - 1.00" (25.40)
  - 0.62" (15.75)
  - 0.62" TYP (15.75)
  - .250" QC (COPPER ALLOY - TIN PLATED)

- **15602 Series**
  - 2.50" (63.50)
  - 1.22" (30.98)
  - 0.62" (15.75)

**Ground Terminal Base Option**

- (12) .250" QC TERMINALS W/COMMON WIRING STUD, ADD 1.300" TO "L" FOR OVERALL LENGTH

---

**PART NUMBERING SYSTEM**

<table>
<thead>
<tr>
<th>Series</th>
<th>No. of Fuses &amp;/or Circuit Breaker Positions</th>
<th>Hardware Options</th>
<th>Ground Terminal Base</th>
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<tbody>
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0 – Single Stud, Single Supply Circuit
2 – Double Stud, Split Supply Circuits

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<th>&quot;L&quot;</th>
<th>15602</th>
<th>&quot;L&quot;</th>
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Dimensions in inches. Multiply by 25.4 for metric.
Rear Terminal ATC® Fuse Block

**SPECIFICATIONS**

- **Blade Terminals:** Accepts ATC® blade-type fuses or Series 220 ATC® circuit breakers.
- **Power Input:** 1/4–20 stud for ring terminal. 200 amp max. input.
- **Positions:** Provides 8 to 24 output circuits.
- **Material:** 94VO Thermoplastic.
- **Ambient Temperature:** −40°C to 125°C.
- **Recommended Wire Size:** Input Power #4-6; Output Circuits #10-16.
- **Applications:** Power distribution system for trucks, buses, boats, RV's etc. 15702-product line allows for two separate powered circuits.
- **Other Features:** Splash resistant cover. Rear terminal wiring for through panel mounting. No wiring or connections exposed to front of panel. Secondary lock feature for securing of output terminals. Packard style output terminals can be removed from 15700 product with use of special tool. Does not require distribution block removal for replacement or rearrangement of wires. Accepts Delphi Pack-Con Terminals in output positions. Consult factory for other terminal options and information. Output terminals are not supplied with fuse block.

**PART NUMBERING SYSTEM**

<table>
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<tr>
<th>Series</th>
<th>No. of Positions</th>
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1 – Single Stud, Single Supply Circuit
2 – Double Stud, Split Supply Circuit

For 8-24 pole option consult factory.
FEATURES / BENEFITS

• Custom Configurable Design
  Get Only the Extractors You Need

• Common Platform for any Style
  Eliminates Design Changes When Protection
  Requirements Change

• Center Snap-Lock Mounting Hole
  Easy Mounting Using Simple Split-Ball Snap-Lock Post

• Positive Stop Locking Action
  Tight Grip Allows Devices to be Removed and Inserted

• High Temperature Resilient Nylon 6/6 (105°C)

DIMENSIONS

PART NUMBERING SYSTEM

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<td>MINI FUSE</td>
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<td>3</td>
<td>ATC CB</td>
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<td>ATC FUSE</td>
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</table>
MAXI Blade Fuses

MAXI™ – Fuse
Time Delay – Fast-Acting

SPECIFICATIONS

Ampere Rating: 20 to 80 Amperes
Voltage Rating: 32Volts DC (or less)
Housing Material: UL Rated 94VO Thermoplastic
Terminal Material: Silver plated
Interrupting Rating: 1,000 Amperes
Marking: Amperage marking is OCR Compliant.

<table>
<thead>
<tr>
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<td>MAX-80</td>
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Dimensions

MAXI Blade Fuses
Bussmann®
Series 19X MAXI® Circuit Breakers
Auto, Manual & Modified Reset

SPECIFICATIONS

Single Pole Thermal Type Breakers

Ratings: 8A to 50A; Series 191 & 192
12 VDC; Series 193, 194 & 195 24 VDC.

Operating Temperature: −20°F (−10°C) to 150°F (65°C).

Housing Material: Gray 94VO Thermoplastic

Storage Temperature: −20°F (−10°C) to 200°F (93°C).

Applications: Autos, trucks, RV’s, buses, boats, portable generators, welding equipment, etc.

Interchangeable Blade Terminals: with MAXI® blade fuse.

Approvals: Complies with SAE standard J553.

Dimensions

Reset Button (Series 193 only)

Maximum button extension in tripped position

01 MAXI

Terminal Options

PART NUMBERING SYSTEM

Series | Rating | Terminal | Cover | Button (193 Series Only) | Marking
--- | --- | --- | --- | --- | ---
q q q | q q | q q | q | q
191 – Auto Reset (12 VDC) | 08 – 8 amps | 10 – 10 amps | 15 – 15 amps | Blank – No button | 1 – Black
192 – Modified Reset (12 VDC) | 10 – 10 amps | 15 – 15 amps | 20 – 20 amps | 1 – Black | 2 – White

* Metal cover aids heat dissipation.
Mandatory for Modified Resets (192 & 195).
Recommended, but not mandatory on Auto Resets (191 & 194).
Not available on Manual Resets (193).
In-Line Fuseholders for Blade-Type Fuses

**HHC and HHD**

In-Line Fuseholders for ATC® Blade-Type Fuses.  
**Voltage Rating:** 32V, See table for max. amp.  
“Write-in” space for circuit identification on HHC holder. Plastic cover fits both HHC and HHD holders.

**HHL and HHM**

In-Line Fuseholders for MINI® Fuses.  
**Voltage Rating:** 32V, See table for max. amp.  
Body material withstands high temps. Protective cover has removable straps.

**HHX**

In-Line Fuseholder for MAXI™ Fuses.  
**Voltage Rating:** 32V, 60A Max.  
Firewall mounting hole permits two or more holders to be mounted together. Cover comes with a removable strap.

---

### Dimensions in inches. Multiply by 25.4 for metric.

#### ATC® Blade Type Holder

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Fuse Size</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHC</td>
<td>Yellow fuseholder</td>
<td>3–20 amps</td>
<td>#16 lead wire, black wire</td>
</tr>
<tr>
<td>HHD</td>
<td>Black fuseholder</td>
<td>3–30 amps</td>
<td>#12 lead wire, yellow wire</td>
</tr>
<tr>
<td>HHD-C</td>
<td>Cover only</td>
<td></td>
<td>Fits both HHC &amp; HHD Clear polycarbonate</td>
</tr>
</tbody>
</table>

*Cover for ATC® Circuit Breaker — consult factory.

#### MINI® Fuse Blade Type Holder

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Fuse Size</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHL</td>
<td>Fuseholder w/cover</td>
<td>2–20 amps</td>
<td>#16 lead wire; 4&quot; length</td>
</tr>
<tr>
<td>HHL-B</td>
<td>Body only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHM</td>
<td>Fuseholder w/cover</td>
<td>2–30 amps</td>
<td>#12 lead wire; 4&quot; length</td>
</tr>
<tr>
<td>HHM-B</td>
<td>Body only</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHM-C</td>
<td>Cover only</td>
<td></td>
<td></td>
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</table>

*Cover for Mini® Circuit Breaker — consult factory.

#### MAXI™ Fuse Blade Type Holder

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Description</th>
<th>Fuse Size</th>
<th>Electrical Connection</th>
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</thead>
<tbody>
<tr>
<td>HHX</td>
<td>Fuseholder w/cover</td>
<td>20–60 amps</td>
<td>#6 lead wire; 5&quot; length</td>
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<tr>
<td>HHX-B</td>
<td>Body only</td>
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<tr>
<td>HHX-C</td>
<td>Cover only</td>
<td></td>
<td></td>
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</tbody>
</table>
Auto, Manual & Switchable Reset Circuit Breakers

**SPECIFICATIONS**

**Single Pole Thermal Type Breakers**

*Ratings*: 25A to 150A; 30 VDC, 3000 Amp Interrupt Capacity.

*Operating Temperature*: –25°F (–32°C) to 180°F (82°C).

*Storage Temperature*: –30°F (–34°C) to 300°F (149°C).

*Applications*: Typically used in auxiliary and accessory circuits -- trucks, buses, RV's and marine applications. Others might include battery chargers and DC audio systems. Series 181, 184 & 185 are sealed for engine compartment and bilge area applications.

**Housing**: Thermoset plastic; UL rated 94VO; 311°F (155°C). Stud insulators are provided on covered units with F (Surface Mount) bases.

**Mounting**: Panel or surface.

**Indicator**: Series 184 & 185 have a unique reset mechanism which provides visible indication of tripped condition.

**Approvals**: Complies with SAEJ1625

---

**Dimensions**

**Surface Mount**

- .26" (6.60) dia.
- Mtg holes (2)
- 2.89" (73.41)
- 2.23" (56.64)
- 1.90" (48.26)
- 1.05" (26.67)
- 1.44" (36.58)
- 1/4"-28 Studs
- 40" (101.6)

**Panel Mount**

- .26" (6.60) dia. Mtg holes (2)
- 2.91" (73.91)
- 2.41" (61.21)
- 1.30" (33.02)
- 1.06" (26.92)
- 1.44" (36.58)

** Overall heights of Series 181 &183**

---

**TIME VS. PERCENT OF RATED CURRENT**

<table>
<thead>
<tr>
<th>% of Rated Current</th>
<th>0%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature in Degrees F</td>
<td>50</td>
<td>100</td>
<td>150</td>
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</tbody>
</table>

**TEMPERATURE DERATING CURVES**

<table>
<thead>
<tr>
<th>% of Rated Current</th>
<th>0%</th>
<th>100%</th>
<th>200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature in Degrees F</td>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
</tbody>
</table>

**Return to Index**
Manual Reset Circuit Breakers

SPECIFICATIONS
Single Pole Thermal Type Breakers

Ratings: 7A to 40A; 200A @ 250 VAC Interrupt Capacity.

Operating Temperature: –10°F (–23°C) to 150°F (65°C).

Housing Material: Gray 94VO Thermoplastic.

Storage Temperature: –20°F (–29°C) to 200°F (93°C).

Applications: Branch circuit protection for multiple power outlet strips, trucks, RV’s, boats, buses, portable generators, building equipment, etc.

Approvals: Series 174 is rated to 250VAC/32VDC and meets UL Standard 1077 and CSA C22.2 No. 5.1-M91; UL E74569; CSA LR60443; see individual terminal styles for specific rating approvals.

TERMINAL / BASE STYLES

BUSHING / NECK STYLES

BUTTON MARKING OPTIONS

HARDWARE VARIATIONS

SNAP - ON

RECOMMENDED BUSHING PANEL CUTOUT

PLASTIC KNURL NUT (STANDARD)

PALNUT

.625" (15.88) ALUMINUM KNURL NUT OPTIONAL (S,T,V,W OPTIONS)

.75" (19.04) .12" (3.00)

.437" (Ø9.92) .375" (Ø9.52) .335" (8.51) .390" (9.91)


.005" (0.127) .005" (0.127) .005" (0.127) .005" (0.127)

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**PART NUMBERING SYSTEM**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>174 – Type III</td>
<td>07 – 7 amps</td>
<td>1 – 25* Quick Connect</td>
<td>1 – 7/16-28 thread</td>
<td>A – White w/ no marking</td>
<td>1 – Pack bulk (standard)</td>
<td>0 – No hardware</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08 – 8 amps</td>
<td>2 – 10-32 screw - 90° bend</td>
<td>2 – 3/8-24 thread</td>
<td>B – Red w/ no marking</td>
<td>2 – Assemble to bushing</td>
<td>1 – Bulk brass screws for screw terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 – 10 amps</td>
<td>3 – 6-32 screw - 90° bend</td>
<td>3 – Snap-on</td>
<td>C – Black w/ no marking**</td>
<td>3 – No hardware included</td>
<td>2 – Bulk brass screws and lockwashers for screw terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 – 15 amps</td>
<td>4 – 25* Quick Connect with 6-32 screw - 90° bend</td>
<td></td>
<td>D – White w/amp marking</td>
<td></td>
<td>3 – Assembled brass screws for screw terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 – 20 amps</td>
<td></td>
<td>Fig. A</td>
<td>E – White w/amp marking</td>
<td></td>
<td>4 – Assembled brass screws and lockwashers for screw terminals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25 – 25 amps</td>
<td></td>
<td>Fig. B</td>
<td>F – Red w/amp marking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 – 30 amps</td>
<td></td>
<td>Fig. A</td>
<td>G – Red w/amp marking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>35 – 35 amps*</td>
<td></td>
<td>Fig. B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 – 40 amps*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>**No marking available on Black</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*#2 Terminal Style Only.

**No marking available on Black

---

**Special Options**

0 – No hardware
1 – Bulk brass screws for screw terminals
2 – Bulk brass screws and lockwashers for screw terminals
3 – Assembled brass screws for screw terminals
4 – Assembled brass screws and lockwashers for screw terminals
Auto, Manual & Modified Reset Circuit Breakers

**SPECIFICATIONS**

**Single Pole Thermal Type Breakers**
- **Ratings:** 8A to 50A; 12 VDC; 24 VDC.
- **Operating Temperature:** $-10^\circ F$ ($-23^\circ C$) to $150^\circ F$ ($65^\circ C$).
- **Storage Temperature:** $-20^\circ F$ ($-29^\circ C$) to $200^\circ F$ ($93^\circ C$).
- **Applications:** Battery chargers, trucks, buses, RV’s, trolling motors, etc.
- **Approvals:** Complies with SAE Standard J553.

**Terminal Options**

**Cover & Bracket Options**

**Hardware**

<table>
<thead>
<tr>
<th>Series</th>
<th>Terminal</th>
<th>Rating</th>
<th>Bracket</th>
<th>Mtg. Holes</th>
<th>Cover*</th>
<th>Options</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>A</td>
<td>08-8</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>WA</td>
</tr>
<tr>
<td>122</td>
<td>B</td>
<td>10-10</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>WB</td>
</tr>
<tr>
<td>123</td>
<td>C</td>
<td>12-12</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>HA</td>
</tr>
<tr>
<td>124</td>
<td>D</td>
<td>15-15</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>HB</td>
</tr>
<tr>
<td>125</td>
<td>E</td>
<td>20-20</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>KA</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>25-25</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>KB</td>
</tr>
</tbody>
</table>

*Series 123 available in plastic cover only. Series 122 & 125 available in metal cover only.

**PART NUMBERING SYSTEM**

<table>
<thead>
<tr>
<th>Series</th>
<th>Terminals</th>
<th>Rating</th>
<th>Bracket</th>
<th>Mtg. Holes</th>
<th>Cover*</th>
<th>Options</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>QA, QB</td>
<td>08-8</td>
<td>0</td>
<td>0-8 bracket</td>
<td>M-Metal*</td>
<td>P-Plastic*</td>
<td>WA</td>
</tr>
</tbody>
</table>

**Applications:**
- Battery chargers, trucks, buses, RV’s, trolling motors, etc.
AMI Series

Bolt In Automotive Fuses

SPECIFICATIONS

Bolt In Terminals: 0.8mm thick blades for secure mounting.

Material: Tin plated brass terminals with UL rated 94VO white thermoplastic housing.

Applications: Power distribution protection for automotive systems on 48VDC or less systems requiring interrupting ratings up to 1000A.

Time Current Specifications

<table>
<thead>
<tr>
<th>Amp Rating</th>
<th>150% of ( I_N )</th>
<th>200% of ( I_N )</th>
<th>300% of ( I_N )</th>
<th>500% of ( I_N )</th>
<th>100% ( I_N ) Carry</th>
<th>Millivolt Drop @ 100% ( I_N )</th>
<th>Interrupting Capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>90-3600 sec.</td>
<td>5-100 sec.</td>
<td>0.3-1 sec.</td>
<td>0.1-1 sec.</td>
<td>Min. 100 hrs.</td>
<td>Max. 110 mV</td>
<td>1KA @ 48VDC</td>
</tr>
<tr>
<td>80</td>
<td></td>
<td>10-20 sec.</td>
<td>0.2-0.5 sec.</td>
<td>0.05-0.2 sec.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART NUMBERING SYSTEM

Series Rating

qqq – qq q

050 – 50 amps
080 – 80 amps
100 – 100 amps
Bolt In Automotive Fuses

**SPECIFICATIONS:**

**Bolt-In Mounting Configurations:** Mounts on 8mm or less studs on 50.8mm centers.

**Material:** Copper terminals with UL Rated 94VO white thermoplastic housing

**Applications:** For high current (100A - 300A) applications on 48VDC or less systems requiring interrupting ratings up to 1000A.

For use with the Bussmann HMG Fuseholder - see page 21.

**Time Current Specifications**

<table>
<thead>
<tr>
<th>Amp Rating</th>
<th>135% of I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>200% of I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>350% of I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>600% of I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>100% I&lt;sub&gt;n&lt;/sub&gt; Carry</th>
<th>Millivolt Drop @ 100% I&lt;sub&gt;n&lt;/sub&gt;</th>
<th>Interrupting Capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>120-1800 sec</td>
<td>1-30 sec</td>
<td>0.1-5 sec</td>
<td>0.02-1 sec</td>
<td>Min. 4 hrs.</td>
<td>Max. 150 mV</td>
<td>1KA @ 48VDC</td>
</tr>
<tr>
<td>125</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
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</table>

**PART NUMBERING SYSTEM**

<table>
<thead>
<tr>
<th>Series</th>
<th>Rating</th>
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<tbody>
<tr>
<td>q q q</td>
<td>q q q</td>
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<tr>
<td>100</td>
<td>100 amps</td>
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<tr>
<td>125</td>
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<td>175</td>
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<td>200</td>
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<tr>
<td>250</td>
<td>250 amps</td>
</tr>
<tr>
<td>300</td>
<td>300 amps</td>
</tr>
</tbody>
</table>
HMG Fuseholder

Automotive Bolt-In Fuseholder for the AMG Fuse

**SPECIFICATIONS**

**Electrical:** Use with AMG Fuses from 100 to 300 Amps.

**Body:** Black 94VO Thermoplastic

**Cover With Tether:** Black 94VO Thermoplastic

**Recommended Wire Size:** #2-8

**Ambient Temperature:** −40°C to 125°C.

**Recommended Torque:** 17n.m

**Fuse Mounting:** M8 or 5/16-18 Threaded Studs and Hex Nuts.

**Cable Positions:** 6 total – location optional – Consult factory.

**Holder Mounting Dimensions:** See Below.

- **Side Stackable Feature.**
- **Bottom Side Insulated From Mounting Panel.**
- **Splash Resistant Cover.**

---

**Dimensions**

**Tie Wrap Mount**

- 4.54" (115.3)
- 1.22" (31.0)
- 3.68" (93.4)

**Offset Mount**

- Ø .27" (6.8)
- 4.22" (107.2)
- 1.53" (38.8)

**Center Mount**

- 4.93" (125.3)
- 4.27" (108.4)

---

**PART NUMBERING SYSTEM**

<table>
<thead>
<tr>
<th>Series</th>
<th>Base</th>
<th>Hardware</th>
<th>Style</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>q q q</td>
<td>q</td>
<td>1 – 5/16-18 Studs w/nuts installed</td>
<td>0 – No cover</td>
<td>Consult factory for Bus Bar options and sealed versions</td>
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<tr>
<td></td>
<td></td>
<td>2 – 5/16-18 Studs w/nuts bulk</td>
<td>1 – Cover installed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 – 5/16-18 Studs w/o nuts</td>
<td>2 – Cover bulk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 – M8 x 1.25 studs w/nuts installed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 – M8 x 1.25 studs w/nuts bulk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 – M8 x 1.25 studs w/o nuts</td>
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</tr>
</tbody>
</table>

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Cooper Bussmann Automotive Products | 7300 W. Wilson Ave | Chicago, IL 60706-4792 | Phone: 1-800-323-1226
Website: http://www.bussauto.com
**Stud Type Junction Blocks**

**SPECIFICATIONS**

**Material:** Studs on non-feed-thrus are steel plated; feed-thrus are copper alloy.

**Applications:** Heavy-duty ground or power connection points in AC or DC circuits. Feed-thru or stand alone mount options available for transformers, communication and computer power sections along with various vehicle electrical systems.

**Benefits:** Modular design offers design and manufacturing flexibility.

**Suggested Max. Termination Ratings:**

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<th>Thread/Stud Sz.</th>
<th>Amperages</th>
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<tr>
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<td>#1/2</td>
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**Dimensions**

![Dimensions Diagram](image)

**Part** | **Fig** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** | **Material** | **Color** |
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*Feed-thru Options – Nuts & washers; consult factory.

Cooper Bussmann Automotive Products, 7300 W. Wilson Ave, Chicago, IL 60706-4792, Phone: 1-800-323-1226, Website: http://www.bussauto.com
Series C4559

**SPECIFICATIONS**

Rating: 30A, 600V

Operating Temperature: 250°F (120°C)

Standards: 2 to 16 steel studs with #10-24 threads on .750" centers and a "dog point" to guide nut onto thread.

Torque: Recommended 20 in/lb (25 in/lb max.).

Marking: Numbers and arrows molded on top of barriers indicate terminals.

Approvals: UL E62622; CSA LR15364.

Series C5237

**SPECIFICATIONS**

Rating: UL: 30A, 300V; CSA: 30A, 600V.

Operating Temperature: 250°F (120°C)

Standards: 1 to 15 brass studs on .625" centers with #10-32 thread and a "dog point" to guide nut onto thread.

Torque: Recommended 20 in/lb (25 in/lb max.).

Marking: Numbers and arrows molded on top of barriers indicate terminals.

Approvals: UL E62622; CSA LR15364.
### Glass Fuses

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</table>
SPECIFICATIONS

Small Dimension Fuse Panel
Accepts: 1/4” x 1-1/4” fuses. We recommend Buss® Series MDL/Time Delay; AGC/Non-Time Delay or GBB for Fast Acting fuse applications.
Poles: Standard panels with 1 to 12 poles.
Ratings: 300V.
Screw terminals: UL 30A, CSA 10A
Solder terminals: UL 25A, CSA 21A
.187” QC terminals: UL 15A, CSA 13A
.250” QC terminals: UL 20A, CSA 16A
Terminals: Solder, screw, .187” QC or .250” QC terminals, all tin plated.
Operating Temperature: –40°F (–40°C) to 175°F (80°C).
Material: UL rated 94VO thermoplastic.
Benefits: Patented design does not rely on fuse for solid, wobble-free mount. Subdivide multipole panels with simple finger pressure. Anti-pivot screw terminals prevent leads from twisting to the side when tightening. Insulating base seals periphery to reduce shorts to chassis from fuse clips.

Dimensions

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PART NUMBERING SYSTEM

Prefix   | Series | Terminal | Terminal Angle | Poles | Options  
----------|--------|----------|----------------|-------|----------
q q / q q  | q q    | q q      | q q            | q q   | q        
BK – Bulk Pack* | 0 – Solder | 01 – Straight (0°) | 01 to 12 | X – Minus anti-rotation pin under base**
1 – .187” QC | 02 – 40°
2 – .250” QC | 03 – Side**
3 – Screw

* Standard carton is 10 with total shelf package 100. Bulk Pack is 1,000 for single and 2 pole blocks; 200 for 3 to 8 pole blocks; 50 for 9 to 12 pole blocks.
** Available in single pole only.
**Battery Disconnect Switch**

**Specifications**
- **Ratings:** 50 VAC or VDC max; 400A continuous. Vehicle cranking and max. surge currents to 2000A (based on 20% duty cycle with ON times of 5 seconds max.).
- **Operating Temperature:** 300°F (150°C) max.
- **Storage Temperature:** -40°F (−40°C) to 150°F (65°C).
- **Applications:** A non-fused current interrupt disconnect designed for opening the circuit between a battery and the complete electrical load of a battery powered system.
- **Options:** Three handle styles, mounting brackets, lubricant-filled, silicone sealed.

**Part Numbering System**

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<th>Bracket Option</th>
<th>Lubricant Option</th>
<th>Sealant Option</th>
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- q1 - Bracket B
- q2 - Lubricant L
- q3 - Silicone Sealant R

**Dimensions (15250-1B Shown)**

**Handle Variations**

- **15250-1:**
  - Ref. Point A
  - 3.12” (79.4)

- **15250-2:**
  - Ref. Point A
  - 3.00” (76.2)

- **15250-3:**
  - Ref. Point A
  - 1.25” (31.7)
  - 4.50” (114.3)
This reference covers competitive part numbers of automotive circuit breakers, fuses and related accessories.

With the possibility of performance variations between Bussmann Products and those produced by other manufacturers, Bussmann recommends you verify all applicable specifications or request a sample before making a substitution. Contact your Bussmann representative for detailed information. Actual performance is dependent upon specific application parameters. Bussmann is unable to accept responsibility for any misapplication of Bussmann Products.

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