# Low Voltage Supplementary Fuses

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
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<td>ANL Time-delay limiter</td>
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#### \(\frac{3}{8}\) X 1 ½" Fuses

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<tr>
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<td>75</td>
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<tr>
<td>KTK</td>
<td>600V</td>
<td>75</td>
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<tr>
<td>KLM</td>
<td>600V/80Vdc</td>
<td>75</td>
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<tr>
<td>FNM</td>
<td>250V</td>
<td>76</td>
</tr>
<tr>
<td>FNQ</td>
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<td>76</td>
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#### Holders

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## Holders & Blocks for Low Voltage Supplementary Fuses

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<td>GLD 1/4&quot; X 1 1/4&quot;</td>
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<td>MIC 1/4&quot; X 1 1/4&quot;</td>
<td>.250V</td>
<td>78</td>
</tr>
<tr>
<td>MIN 1/4&quot; X 1 1/4&quot;</td>
<td>.250V</td>
<td>78</td>
</tr>
<tr>
<td>FNA 1/4&quot; X 1 1/4&quot;</td>
<td>.250V</td>
<td>78</td>
</tr>
<tr>
<td>MIS 1/4&quot; X 2&quot;</td>
<td>600V</td>
<td>79</td>
</tr>
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<td>KAZ 1/4&quot; X 2&quot;</td>
<td>600V</td>
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**Holders**
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- 1/4" X 2": 3-Pole signal block cat. # 2838 (not shown in catalog)*

*Call our customer satisfaction team at 636-527-3877 for more information.

### Automotive Blade-type Fuses

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<thead>
<tr>
<th>Catalog Numbers</th>
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<tr>
<td>ATC</td>
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<td>ATM</td>
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<td>MAX</td>
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<td>80</td>
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<tr>
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<td>GRF non-rejecting fuse</td>
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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Cable Limiters & Welder Limiters

K Series

Specifications
Description: Cable limiters.
Ratings:
Volts — 600Vac
IR — 200kA RMS Sym. @ 600Vac
Agency Information: UL
Listing: KDM, KDR, KDP and KFM, KCM, KCM-B and KCR.

Features and Benefits
• Sizes and ratings available to meet many applications.

Typical Applications
• Protecting low voltage distribution and service entrance cables against short-circuit currents.

Catalog Numbers
Copper Cable Limiter — 600 Volts

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Cable Size</th>
<th>Catalog Number</th>
<th>Cable Size</th>
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<tr>
<td>KCY</td>
<td>#4</td>
<td>KCF</td>
<td>4/0</td>
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<tr>
<td>KCM</td>
<td>#3</td>
<td>KCH</td>
<td>250 MCM</td>
</tr>
<tr>
<td>KCM-B</td>
<td>#2</td>
<td>KCM-B</td>
<td>350 MCM</td>
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<tr>
<td>KCC</td>
<td>1/0</td>
<td>KCV</td>
<td>600 MCM</td>
</tr>
<tr>
<td>KCD</td>
<td>2/0</td>
<td>KCR</td>
<td>750 MCM</td>
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<tr>
<td>KCE</td>
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<td>KCS</td>
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<th>Cable Size</th>
<th>Catalog Number</th>
<th>Cable Size</th>
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<tr>
<td>KQT</td>
<td>#10</td>
<td>KDE</td>
<td>3/0</td>
</tr>
<tr>
<td>KCF</td>
<td>#8</td>
<td>KDF</td>
<td>4/0</td>
</tr>
<tr>
<td>KDG</td>
<td>#6</td>
<td>KDH</td>
<td>250 MCM</td>
</tr>
<tr>
<td>KDU</td>
<td>#4</td>
<td>KDU</td>
<td>350 MCM</td>
</tr>
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<td>KDR</td>
<td>#2</td>
<td>KDM, KDM-B</td>
<td>500 MCM</td>
</tr>
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<td>KDC</td>
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Compression Connector Rod and Tubular Terminals

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<th>Cable Size</th>
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<th>Cable Size</th>
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<tr>
<td>RFH-A</td>
<td>250 MCM</td>
<td>RDF</td>
<td>500 MCM</td>
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*Center Bolt-Type Terminal and Off-Set Bolt-Type Terminal

<table>
<thead>
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<th>Cable Size</th>
<th>Catalog Number</th>
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<tr>
<td>KPF</td>
<td>4/0</td>
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<td>500 MCM</td>
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<tr>
<td>KFT</td>
<td>250 MCM</td>
<td>KFM</td>
<td>750 MCM</td>
</tr>
<tr>
<td>KEW</td>
<td>350 MCM</td>
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</tr>
</tbody>
</table>

*Copper or aluminum cable; sizes of all other limiters pertain to copper only. KFM copper only.
1UL Listed (File E90818).
2Available with shrink tube "V" suffix.
3Available with molded rubber boots. Add "-B" to end of part number.

Accessories
Boots can be purchased separately.
For KCM BOOT-KCM
Installation tools can be purchased separately from Thomas and Betts
• Crimp Tool: TBM-14M
• Die: 55556 KDM/15515 KDR

Recommended Fuse Blocks For 68000 & 64000 Series limiters
• See page 72

64000 & 68000 Series

Specifications
Description: Welder limiters.
Ratings:
Volts — 600Vac (or less)
IR — 200kA RMS Sym.

Features and Benefits
• Current-limiting devices designed specially for use on welder circuits only
• Time-current characteristics are designed to hold on the intermittent overloading encountered in welder operation, while providing short-circuit protection to the circuit and equipment
• Welder limiters have excess current capacity in the operating range as needed for this type of service

Typical Applications
• Welder circuits
• Because welder limiters have special characteristics, they are not intended for application on general-use circuits

Catalog Numbers

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<th>Fuse Holder Type</th>
<th>Nominal Amp Rating</th>
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<td>68300</td>
<td>Class H</td>
<td>300</td>
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<tr>
<td>68600</td>
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<tr>
<td>64300</td>
<td>Class J</td>
<td>300</td>
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Data Sheet: 1042

Data Sheet: 1045
Low Voltage Supplementary Fuses

**BAF**

**Specifications**
- **Class:** Supplemental
- **Description:** Fast-acting supplementary fuse.
- **Dimensions:** \(\frac{3}{32}” \times 1 \frac{1}{2}”\) (10.3 x 38.1mm).

**Ratings:**
- Volts — 250Vac (or less)
- Amps — \(\frac{1}{8}-30\)A
  - IR — 10kA @ 125Vac
  - 35A (\(\frac{1}{8}-1\)A @ 250Vac)
  - 100A (\(1-3\)A @ 250Vac)
  - 200A (\(4-10\)A @ 250Vac)
  - 750A (12A- 15A @ 250Vac)
  - 200A (20-30A @ 250Vac)

**Agency Information:** CE, UL Listed, Guide JDYX, File E19180.

**Features and Benefits**
- Low cost supplemental protection of 125V and 250V non-inductive circuits.
- Upgrade with LP-CC product to reduce SKU investment and minimize potential arc-flash hazards. (and minimize potential for misapplying fuse.)

**Typical Applications**
- Control Circuits
- Lighting Circuit Protection
- Meter Circuits

**Catalog Numbers (Amps)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Amps</th>
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<tr>
<td>BAF-%</td>
<td>BAF-2%</td>
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<tr>
<td>BAF-%</td>
<td>BAF-3</td>
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<td>BAF-%</td>
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<td>BAF-6</td>
</tr>
<tr>
<td>BAF-%</td>
<td>BAF-7</td>
</tr>
</tbody>
</table>

*All have interrupting rating of 10,000A at 125V.

For superior electrical protection, Bussmann recommends upgrading BAF and fuse applications to Low-Peak LP-CC fuses. See page 23.

**Data Sheet:** 2011 (0-30)

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**KTK**

**Specifications**
- **Class:** Supplemental
- **Description:** Fast-acting supplementary fuse.
- **Dimensions:** \(\frac{3}{32}” \times 1 \frac{1}{2}”\) (10.3 x 38.1mm).

**Ratings:**
- Volts — 600Vac (or less)
- Amps — \(\frac{1}{8}-30\)A
  - IR — 100kA RMS Sym. (UL)
  - 200A (2-10A @ 250Vac)
  - 500A (20A-30A @ 250Vac)

**Agency Information:** CE, UL Listed, Guide JDYX, File E19180.

**Features and Benefits**
- Low cost supplemental protection of 600V or less non-inductive circuits.
- Upgrade with LP-CC product to reduce SKU investment and minimize potential arc flash hazards.

**Typical Applications**
- Control Circuits
- Lighting Circuit Protection
- Meter Circuits

**Catalog Numbers (Amps)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Amps</th>
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<tbody>
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<td>KTK-1</td>
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</tr>
<tr>
<td>KTK-%</td>
<td>KTK-2</td>
</tr>
<tr>
<td>KTK-%</td>
<td>KTK-3</td>
</tr>
<tr>
<td>KTK-%</td>
<td>KTK-4</td>
</tr>
</tbody>
</table>

*Rated for no more than 24A continuous.

For superior electrical protection, Bussmann recommends upgrading KTK fuse applications to Low-Peak LP-CC fuses. See page 23.

**Data Sheet:** 1011

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**KLM**

**Specifications**
- **Class:** Supplemental
- **Description:** Full range, fast-acting, DC midget fuse.
- **Dimensions:** \(\frac{3}{32}” \times 1 \frac{1}{2}”\) (10.3 X 38.1mm).

**Ratings:**
- Volts — 600Vac/dc
- Amps — \(\frac{1}{8}-30\)A
  - IR — 100kA AC
  - 50kA DC

**Agency Information:** CE, UL Listed: STD. 248-14, (FILE #E19180), CSA Certified, C22.2 NO. 248. 14 (CLASS #1422-01, FILE #53787).

**Features and Benefits**
- Full range, fast-acting, 600Vac/dc midget fuse.
- Minimum interrupting rating or 200% rated current at 600Vdc.

**Typical Applications**
- DC Control Circuits Requiring Fast-Acting Fuses.
- Solar power energy sources - use the Bussmann PVM fuse for DC ratings up to 600Vdc.

**Catalog Numbers (Amps)**

<table>
<thead>
<tr>
<th>Class</th>
<th>Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLM-%</td>
<td>KLM-4</td>
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<td>KLM-1</td>
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<td>KLM-%</td>
<td>KLM-1-%</td>
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<tr>
<td>KLM-%</td>
<td>KLM-2</td>
</tr>
<tr>
<td>KLM-%</td>
<td>KLM-3</td>
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</tbody>
</table>

*Rated for no more than 24A continuous.

For superior electrical protection, Bussmann recommends upgrading KTK fuse applications to Low-Peak LP-CC fuses. See page 23.

**Data Sheet:** 2020

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For superior electrical protection, Bussmann recommends upgrading BAF and fuse applications to Low-Peak LP-CC fuses. See page 23.

---

Recommended fuse blocks/fuse holders for \(\frac{3}{32}” \times 1 \frac{1}{2}”\) fuses
- See page 72

For product data sheets, visit www.cooperbussmann.com/DatasheetsEle

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Low Voltage Supplementary Fuses

13/32” x 1 ½” Time-delay Fuses

FNM Specifications
Class: Supplemental
Description: Time-delay supplementary fuse.
Dimensions: 13/32” x 1 ½” (10.3 x 38.1mm).
Ratings:
Volts — 250Vac (or less)
Amps — ⅛-30A
IR — 35A (⅛-1A @ 250Vac)
— 100A (1⅛-3A @ 250Vac)
— 200A (4-10A @ 250Vac)
— 10kA (⅛-10A @ 125Vac)
— 10kA (12-30A @ 250Vac)
Features and Benefits
• Low cost supplemental protection of 125V and 250V inductive circuits.
Typical Applications
• General Purpose Circuits
• Lighting Circuit Protection
• Meter Circuits
• Upgrading to LP-CC product will reduce SKU investment and minimize potential for misapplying fuse
Catalog Numbers (Amps)

|-------|-------|---------|-----------|-------------|---------------|

FNQ Specifications
Class: Supplemental
Description: Time-delay supplementary fuse.
Dimensions: 13/32” x 1 ½” (10.3 x 38.1mm).
Ratings:
Volts — 500Vac (or less)
Amps — ⅛-30A
IR — 10kA RMS Sym.
Features and Benefits
• Low cost supplemental protection of transformers and relays at 500V or less.
Typical Applications
• Control Transformer 480V Primary Protection
• Lighting Circuit Protection
• Meter Circuits
Catalog Numbers (Amps)

<table>
<thead>
<tr>
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For superior electrical protection, Bussmann recommends upgrading FNM and FNQ fuse applications to Low-Peak LP-CC fuses See page 23.
Recommended fuse blocks and fuse holders for 13/32” x 1 ½” fuses
• See page 72

Data Sheet: 2028

Data Sheet: 1012

For product data sheets, visit www.cooperbussmann.com/DatasheetsEle

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Low Voltage Supplementary Fuses

13/32” x 1 3/8” Fast-acting Fuses

BBS

Specifications
Class: Supplemental
Description: Fast-acting supplementary fuse.
Dimensions: 13/32” x 1 3/8” (10.3 x 34.9mm).
Construction: Fiber cartridge.

Ratings:
Volts — 600Vac (1/10-5A)
— 250Vac (6-10A)
— 48Vac (12-30A)
Amps — 1/10-30A
IR — 10kA RMS Sym.


Features and Benefits
• Low cost supplemental protection of non-inductive circuits
• Reduced interchangeability with other supplemental fuses
  minimizes misapplication

Typical Applications
• Control Circuits
• Lighting Ballasts
• Meter Circuits

Catalog Numbers (Amps)

<table>
<thead>
<tr>
<th>BBS-1/10</th>
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<th>BBS-15</th>
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<td>BBS-1-1/2</td>
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Recommended fuse blocks/fuse holders for 13/32” x 1 3/8” fuses
• Page 73

Data Sheet: 2010 (0-30A)
Low Voltage Supplementary Fuses

Pin Indication Fuses

GBA

MIC & MIN

Specifications
Class: Supplemental
Description: Fast-acting, pin indication fuse.
Dimensions: 1/4" x 1 1/4" (6.6 x 31.7mm) 3AG.
Ratings:
Volts — See Agency Info below
Amps — 1/2-15A
IR — See Agency Info below
Agency Information: CE, Std. 248-14, UL Listed, 0-5A/125Vac, 10,000 AIC, Guide JDYX, File 53787.
Features and Benefits
• Type GBA has a "red" pin indicator providing visual identification of failed circuits, resulting in faster troubleshooting (reduced circuit downtime).
• Type GLD has a plated pin to activate transmitting a electrical signal to indicate the location of opened circuits, resulting in reduced downtime.

Typical Applications
• Control Circuits
• Electronic Circuits

GLD Catalog Numbers (Amps)
GBA Catalog Numbers (Amps)

GBA-1⁄2 GBA-2 GBA-8
GBA-3⁄4 GBA-3 GBA-10
GBA-1 GBA-4 GBA-15
GBA-1-1⁄2 GBA-5

Recommended fuse blocks/fuse holders for 1⁄4" x 1 1⁄4" indicating fuses
• Page 73
Data Sheet: 2047

MIN Catalog Numbers (Amps)

MIN-1 MIN-5 MIN-20
MIN-2 MIN-10 MIN-25
MIN-3 MIN-15 MIN-30

Recommended signal block for 1⁄4" x 1 1⁄4" indicating fuses
• Page 73
Data Sheet: 2029

FNA

Specifications
Class: Supplemental
Description: Time-delay, pin indication fuse.
Dimensions: ⅜" x 1 ⅞" (10.3 x 38.1mm).
Ratings:
Volts — 250Vac (1⁄10-8⁄10A)
— 125Vac (1-15A)
— 32Vac (20-30A)
Amps — 1⁄10-30A
IR — 35A (1⁄10-8⁄10A @ 250Vac)
— 10kA (1⁄10-15A @ 125Vac)
— 1kA (20-30A @ 32V)
Agency Information: CE, Std. 248-14, UL Listed 1⁄10-8⁄10A, IR 35A@ 250V, IR 10kA@ 125V, Guide JDYX, File 19180, CSA Certified, 0-8⁄10A/250V, 1-10A/125V, Class 1422-01, File 53787.
Features and Benefits
• FNA has a pin indicator providing visual identification of failed circuits, resulting in reduced circuit downtime.

Typical Applications
• Control Circuits
• Electronic Circuits

Catalog Numbers (Amps)
FNA-1⁄10 FNA-8⁄10 FNA-2-1⁄2 FNA-6-1⁄4
FNA-1⁄8 FNA-1 FNA-2 FNA-7
FNA-15⁄100 FNA-1-1⁄8 FNA-3 FNA-8
FNA-2⁄10 FNA-1-1⁄4 FNA-3-2⁄10 FNA-9
FNA-1⁄4 FNA-1-4⁄10 FNA-3-1⁄2 FNA-10
FNA-3⁄10 FNA-1-1⁄2 FNA-4 FNA-12*
FNA-4⁄10 FNA-1-6⁄10 FNA-4-1⁄2 FNA-15*
FNA-1⁄2 FNA-1-8⁄10 FNA-5 FNA-20*
FNA-6⁄10 FNA-2 FNA-5-6⁄10 FNA-25*
FNA-3⁄4 FNA-2-1⁄4 FNA-6 FNA-30
*12-30A versions are dual-tube construction

Recommended signal block for ⅜" x 1 ⅞" indicating fuses
• Page 73
Data Sheet: 2029

Recommended fuse blocks/fuse holders for ⅜" x 1 ⅞" indicating fuses
• Page 73
Data Sheet: 2029

For product data sheets, visit www.cooperbussmann.com/DatasheetsEle

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Low Voltage Supplementary Fuses

Pin Indication Fuse and Actuator, and Limiters

**ANN & ANL Limiters**

**Specifications**

**Description:** Circuit limiters.

**ANN:** Very fast-acting limiter.

**ANL:** Non-time delay limiter.

**Dimensions:** ¾” x 3 ¾” (22.2 x 81.0mm).

**Ratings:**

**ANN:**
- Volts — 125Vac
- Amps — 10-800A
- IR — 2500A @ 125Vac
- IR — 2700A @ 80Vdc

**ANL:**
- Volts — 80Vdc
- Amps — 35-750A
- IR — 2700A @ 80Vdc

**Agency Information:**

**ANN:** UL Recognized Guide JFHR2, File E56412, Class 1422-30, File 53787, CE for 35-400A.

**ANL:** UL Recognized, CSA Certified, 35-750A @ 80Vdc, IR = 2700A, Guide JFHR2, File E56412, Class 1422-30, File 53787, SAE J1171.

**Features and Benefits**

- Fast-acting circuit protection (ANN).
- Time-delay sizing for inductive circuits (ANL).
- Window shows limiter status.

**Typical Applications**

- Fork lifts, Marine, Aviation

**ANN Catalog Numbers (Amps)**

- ANN-10
- ANN-90
- ANN-225
- ANN-400
- ANN-35
- ANN-100
- ANN-250
- ANN-500
- ANN-40
- ANN-125
- ANN-275
- ANN-600
- ANN-50
- ANN-150
- ANN-300
- ANN-700
- ANN-50
- ANN-175
- ANN-325
- ANN-800
- ANN-80
- ANN-200
- ANN-350

**ANL Catalog Numbers (Amps)**

- ANL-35
- ANL-125
- ANL-250
- ANL-500
- ANL-40
- ANL-130
- ANL-275
- ANL-600
- ANL-50
- ANL-150
- ANL-300
- ANL-675
- ANL-60
- ANL-175
- ANL-325
- ANL-750
- ANL-80
- ANL-200
- ANL-350
- ANL-100
- ANL-225
- ANL-400

**MIS**

**Specifications**

**Class:** Supplemental

**Description:** Non time-delay pin indication fuse.

**Dimensions:** ¾” x 2” (10.3 x 50.8mm).

**Ratings:**

- Volts — 600Vac
- Amps — 1-12A
- IR — 200kA

**Features and Benefits**

- Type MIS has a pin indicator providing visual identification of failed circuits, resulting in faster troubleshooting (reduced circuit downtime).
- Type MIS can be used in circuits rated 600V or less.
- Type MIS has an interrupting rating of 200kA.

**Typical Applications**

- 480V Control Circuits
- PLC Circuits

**Catalog Numbers (Amps)**

- MIS-1
- MIS-4
- MIS-10
- MIS-2
- MIS-5
- MIS-12
- MIS-3
- MIS-8

**Test Specifications**

<table>
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<tr>
<th>Fuse</th>
<th>Load</th>
<th>Opening Time</th>
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<td>110%</td>
<td>0 4 hrs. (min.)</td>
</tr>
<tr>
<td>1-5A</td>
<td>150%</td>
<td>0 6 min. (max.)</td>
</tr>
<tr>
<td>6-12A</td>
<td>150%</td>
<td>12 min. (max.)</td>
</tr>
</tbody>
</table>

**Recommended signal block for ¾” x 2” indicating fuses**

- Page 73

**KAZ**

**Specifications**

**Description:** Non-fuse actuator.

**Dimensions:** ¾” x 2” (10.3 x 50.8mm).

**Ratings:**

- Volts — 600Vac
- Amps — N/A
- IR — 200kA

**Agency Information:**


**Features and Benefits**

- Bussmann signal blocks 2778, 2837 or 2838 with KAZ actuators mounted in parallel with fuses having a rating of 50A or larger to provide blown fuse dropout of shunt-trip fused switches.
- Type KAZ can be used in circuits rated 600V or less.
- Type KAZ has an interrupting rating of 200kA.

**Typical Applications**

- Large, Shunt-Trip Fused Switches
- Fuse Protected Circuits Rated 50A or Larger With Shunt-Trip Devices

**Catalog Number:** KAZ

**Recommended signal block for ¾” x 2” indicating fuses**

- Page 73

**Data Sheet:** 2021

**4164 & 4164-FR Limiter Blocks**

**Specifications**

**Description:** Limiter fuse blocks for ANL & ANN.

- 4164 furnished with nylon inserted locknuts
- 4164-FR furnished with standard hex nuts

**Dimensions:**

- Length: 3.38”
- Width: 0.95”
- Height: 1.62”

- Studs center to center: 2.43”

**Ratings:**

- Volts — 125Vac
- Amps — 10-800A

**Poles:** 1 - stud terminal

**Data Sheet:** 2133

Data Sheets: 2023 (ANN), 2024 (ANL)

For product data sheets, visit [www.cooperbussmann.com/DatasheetsEle](http://www.cooperbussmann.com/DatasheetsEle)

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
In-line Size Rejecting Fuses and Fuse Holders

**GLQ**

**Specifications**
- **Class:** Supplemental
- **Description:** Fast-acting, size-rejecting in-line fuse.
- **Construction:** Glass tube.

**Ratings:**
- Volts — 300Vac (or less)
- Amps — 1-10A
- IR — 10kA

**Agency Information:** CE, Std. 248-14, UL Listed (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787).

**Features and Benefits**
- In-Line, fast-acting circuit protection.
- Rejection feature prevents overfusing.

**Typical Applications**
- In-line Lighting Ballast Protection

**Catalog Numbers (Amps) and Rejection Holders**

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<tr>
<th>Fuse</th>
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</table>

1) Carrier is UL Recognized, Guide G2LT2, File E14853 and CSA Certified, Class 6225-01, File 47235 10A, 300Vac.
2) Units can be panel-mounted either in a knockout hole with a separate steel clip (B1/A-104) or in a keyhole punch using separate mounting clip #6374 for panels of thickness 0.043” to 0.062” or #4909 for thickness 0.030” to 0.042”.
- Do not put tension on line (rear) terminal of fuse holder.

Data Sheet: 2033

**GMQ**

**Specifications**
- **Class:** Supplemental
- **Description:** Time-delay, size-rejecting in-line fuse.
- **Construction:** Ceramic tube.

**Ratings:**
- Volts — 300Vac (or less)
- Amps — 1/2-61/4A
- IR — 10kA

**Agency Information:** CE, Std. 248-14, UL Listed (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787)

**Features and Benefits**
- In-line, fast-acting circuit protection.
- Rejection feature prevents overfusing.

**Typical Applications**
- In-Line Lighting Ballast Protection

**Catalog Numbers (Amps) and Rejection Holders**

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<thead>
<tr>
<th>Fuse</th>
<th>GMQ-1/2</th>
<th>GMQ-6/10</th>
<th>GMQ-1</th>
<th>GMQ-1-1/4</th>
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</table>

1) Carrier is UL Recognized, Guide G2LT2, File E14853 and CSA Certified, Class 6225-01, File 47235 10A, 300Vac.
2) Units can be panel-mounted either in a knockout hole with a separate steel clip (B1/A-104) or in a keyhole punch using separate mounting clip #6374 for panels of thickness 0.043” to 0.062” or #4909 for thickness 0.030” to 0.042”.
- Do not put tension on line (rear) terminal of fuse holder.

Data Sheet: 2030

**HLQ**

Fuse Holders for both GLQ & GMQ fuses.
In-line Non-rejecting Fuses and Fuse Holders

**GLR**

**Specifications**
- **Class:** Supplemental
- **Description:** Fast-acting, non-rejection, in-line fuse.
- **Construction:** Glass tube.
- **Ratings:**
  - Volts — 300Vac (or less)
  - Amps — \( \frac{1}{8}\)-15A
  - IR — 10kA
- **Agency Information:** CE, Std. 248-14, UL Listed, 0-15A/300Vac (Guide JDYX, File E19180), CSA Certified, 0-10A/300V (Class 1422-01, File 53787).

**Features and Benefits**
- In-line, fast-acting circuit protection.

**Typical Applications**
- In-Line Lighting Ballast Protection

**Catalog Numbers (Amps) and Non-Rejection Holders**

<table>
<thead>
<tr>
<th>Fuse</th>
<th>Holder1, 2*</th>
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<td>GLR-1/2</td>
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<td>GLR-5</td>
<td>HLR</td>
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1) Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235-12A, 300Vac.

2) Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip #6374 for panels of thickness 0.043” to 0.062” or #4909 for thickness 0.030” to 0.042”.

*For two leads (one each for line and loadside) order HLR-2A, 15A, 300V

- An alternative to the HLR fuse holder is the A fuse holder. The A fuse holder comes **WITHOUT** leads. The customer inserts #18 insulated solid copper wire into the line side receptacle as well as into the load side receptacle. It has the same body dimensions, utilizes the same mounting holes, and takes the same mounting clips as the HLR. The A fuse holder is UL Recognized, 10A, 300Vac, Guide IZLT2, File E14853 and CSA Certified, 10A, 300Vac, Class 6225-01, File 47235.

- Do not put tension on line (rear) terminal of fuse holder.

Data Sheet: 2032

**GMF**

**Specifications**
- **Class:** Supplemental
- **Description:** Time-delay, non-rejection, in-line fuse.
- **Construction:** Glass tube.
- **Ratings:**
  - Volts — 300Vac (or less)
  - Amps — \( \frac{1}{8}\)-10A
  - IR — 10kA
- **Agency Information:** CE, Std. 248-14 0-10A, UL Listed (Guide JDYX, File E19180), CSA Certified, (Class 1422-01, File 53787).

**Features and Benefits**
- In-line, time-delay circuits protection.

**Typical Applications**
- In-Line Lighting Ballast Protection

**Catalog Numbers (-Amps) and Non-Rejection Holders**

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<thead>
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<th>Fuse</th>
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</table>

1) Carrier is UL Recognized, Guide IZLT2, File E14853 and CSA Certified, Class 6225-01, File 47235-12A, 300Vac.

2) Units can be panel-mounted either in a knockout hole with a separate steel clip (BK/A-104) or in a keyhole punch using separate mounting clip #6374 for panels of thickness 0.043” to 0.062” or #4909 for thickness 0.030” to 0.042”.

*For two leads order HLR-2A, 15A, 300V

- An alternative to the HLR fuse holder is the A fuse holder. The A fuse holder comes **WITHOUT** leads. The customer inserts #18 insulated solid copper wire into the line side receptacle as well as into the load side receptacle. It has the same body dimensions, utilizes the same mounting hole, and takes the same mounting clips as the HLR. The A fuse holder is UL Recognized, 10A, 300Vac, Guide IZLT2, File E14853 and CSA Certified, 10A, 300Vac, Class 6225-01, File 47235.

- Do not put tension on line (rear) terminal of fuse holder.

Data Sheet: 2031
Low Voltage Supplementary Fuses

Automotive Blade-type Fuses & Holders

ATC Fuse

(Actual Size)

Available With Indication

Specifications
Description: Fast-acting blade fuse.

Construction: Colored plastic housing with zinc fuse element.

Ratings:
Volts — 32Vdc
Amps — 1-40A
IR — 1000A


Features and Benefits
• Color coded plastic housing for easy identification of fuse ratings

Typical Applications
• Automotive

Catalog Numbers (Amps)

<table>
<thead>
<tr>
<th>Non-Indicating</th>
<th>*Indicating</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHC Yellow 1-20</td>
<td>#16 black leadwire</td>
<td></td>
</tr>
<tr>
<td>HHD Black 1-30</td>
<td>#12 yellow leadwire</td>
<td></td>
</tr>
<tr>
<td>HHF Black w/ cover 1-20</td>
<td>#16 yellow leadwire</td>
<td></td>
</tr>
<tr>
<td>HHG Black w/ cover 1-30</td>
<td>#12 yellow leadwire</td>
<td></td>
</tr>
<tr>
<td>ATC-FHID Indicating Holder Black w/ cover 1-20</td>
<td>#16 black leadwire</td>
<td></td>
</tr>
</tbody>
</table>

HHC, HHD, HHF, HHG & ATC-FHID

easy ID™ LED Indicating Holder

Specifications
Description: In-line fuse holders for ATC™ Blade-Type fuses.

Dimensions: See Dimensions illustration.

Ratings:
Volts: — 32Vdc
Amps: — 80% continuous of fuse rating. See Catalog Numbers table for individual fuses sizes.

Catalog Numbers

<table>
<thead>
<tr>
<th>Catalog Numbers</th>
<th>Fuse Holder Description</th>
<th>Fuse Amps</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHC Yellow 1-20</td>
<td>#16 black leadwire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHD Black 1-30</td>
<td>#12 yellow leadwire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHF Black w/ cover 1-20</td>
<td>#16 yellow leadwire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHG Black w/ cover 1-30</td>
<td>#12 yellow leadwire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATC-FHID Indicating Holder Black w/ cover 1-20</td>
<td>#16 black leadwire</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A fuse must be properly and fully inserted into the holder to provide a solid connection. Poor or improper insertion of the fuse can result in failure of the fuse and holder, thus not protecting the device for which it was intended.

HHC & HHD Dimensions - in

ATM Fuse

(Actual Size)

Available With Indication

Specifications
Description: Fast-acting blade fuse.

Construction: Colored plastic housing with zinc fuse element.

Ratings:
Volts — 32Vdc
Amps — 2-30A
IR — 1000A

Features and Benefits
• Color coded plastic housing for easy identification of fuse ratings

Typical Applications
• Automotive

Catalog Numbers (Amps)

<table>
<thead>
<tr>
<th>Non-Indicating</th>
<th>*Indicating</th>
<th>Low-Profile</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATM-2</td>
<td>Gray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATM-3</td>
<td>ATM-3D</td>
<td>Violet</td>
<td></td>
</tr>
<tr>
<td>ATM-4</td>
<td>Pink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATM-5</td>
<td>ATM-5D</td>
<td>ATM-5LP</td>
<td>Tan</td>
</tr>
<tr>
<td>ATM-7-1/2</td>
<td>ATM-7-1/2D</td>
<td>ATM-7-1/2LP</td>
<td>Brown</td>
</tr>
<tr>
<td>ATM-10</td>
<td>ATM-10D</td>
<td>ATM-10LP</td>
<td>Red</td>
</tr>
<tr>
<td>ATM-15</td>
<td>ATM-15D</td>
<td>ATM-15LP</td>
<td>Blue</td>
</tr>
<tr>
<td>ATM-20</td>
<td>ATM-20D</td>
<td>ATM-20LP</td>
<td>Yellow</td>
</tr>
<tr>
<td>ATM-25</td>
<td>ATM-25D</td>
<td>ATM-25LP</td>
<td>Clear</td>
</tr>
<tr>
<td>ATM-30</td>
<td>ATM-30D</td>
<td>ATM-30LP</td>
<td>Green</td>
</tr>
</tbody>
</table>

*Call Bussmann Customer Satisfaction for ordering information.

For product data sheets, visit www.cooperbussmann.com/DatasheetsEle

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Low Voltage Supplementary Fuses

Automotive Blade-type Fuses & Holders

HHL, HHM & ATM-FHID

Specifications
Description: In-line fuse holders for ATM Fuses.
Ratings:
Volts: — 32Vdc
Amps: — 80% continuous of fuse rating. See Catalog Numbers table for individual fuses sizes.

Catalog Numbers
<table>
<thead>
<tr>
<th>Catalog Numbers</th>
<th>Fuse Holder</th>
<th>Fuse Description</th>
<th>Amps</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHL</td>
<td>Black w/ cover</td>
<td>2-20</td>
<td>#16 black leadwire, 4&quot; length stripped to 1/4&quot;</td>
<td></td>
</tr>
<tr>
<td>HHM</td>
<td>Black w/ cover</td>
<td>2-30</td>
<td>#12 red leadwire, 4&quot; length stripped to 1/4&quot;</td>
<td></td>
</tr>
<tr>
<td>ATM-FHID</td>
<td>Indicating Holder</td>
<td>Black w/ cover</td>
<td>2-20</td>
<td>#16 black leadwire</td>
</tr>
</tbody>
</table>

A fuse must be properly and fully inserted into the holder to provide a solid connection. Poor or improper insertion of the fuse can result in failure of the fuse and holder, thus not protecting the device for which it was intended.

HHL & HHM Dimensions - in

Data Sheet: 2128

MAX Maxi–Fuse

Specifications
Description: Fast-acting blade fuse.
Construction: Colored plastic housing with zinc fuse element.
Ratings:
Volts: — 32Vdc
Amps: 20-80A (non-indicating)
20-100A (indicating)
IR: 1000A

Features and Benefits
• Color coded plastic housing for easy identification of fuse ratings

Typical Applications
• Automotive

Catalog Numbers (Amps)

<table>
<thead>
<tr>
<th>Non-Indicating</th>
<th>*Indicating</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-20</td>
<td>MAX-20ID</td>
<td>Yellow</td>
</tr>
<tr>
<td>MAX-25</td>
<td></td>
<td>Gray</td>
</tr>
<tr>
<td>MAX-30</td>
<td>MAX-30ID</td>
<td>Green</td>
</tr>
<tr>
<td>MAX-35</td>
<td></td>
<td>Brown</td>
</tr>
<tr>
<td>MAX-40</td>
<td>MAX-40ID</td>
<td>Orange</td>
</tr>
<tr>
<td>MAX-50</td>
<td>MAX-50ID</td>
<td>Red</td>
</tr>
<tr>
<td>MAX-60</td>
<td>MAX-60ID</td>
<td>Blue</td>
</tr>
<tr>
<td>MAX-70</td>
<td>MAX-70ID</td>
<td>Tan</td>
</tr>
<tr>
<td>MAX-80</td>
<td>MAX-80ID</td>
<td>Clear</td>
</tr>
<tr>
<td></td>
<td>MAX-100ID</td>
<td>Purple</td>
</tr>
</tbody>
</table>

*Call Bussmann Customer Satisfaction for ordering information.

Data Sheet: 2049

HHX

Specifications
Description: In-line fuse holders for MAXI Fuses.
Ratings:
Volts: — 32Vdc
Amps: — 80% continuous of fuse rating. See Catalog Numbers table for individual fuses sizes.

Catalog Numbers
<table>
<thead>
<tr>
<th>Catalog Numbers</th>
<th>Fuse Holder Description</th>
<th>Fuse Amps</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHX</td>
<td>Black w/ cover</td>
<td>20-60</td>
<td>#6 red leadwire, 5&quot; with blunt ends</td>
</tr>
</tbody>
</table>

A fuse must be properly and fully inserted into the holder to provide a solid connection. Poor or improper insertion of the fuse can result in failure of the fuse and holder, thus not protecting the device for which it was intended.

Dimensions - in

Data Sheet: 2129

For product data sheets, visit www.cooperbussmann.com/DatasheetsEle

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### Low Voltage Supplementary Fuses

#### Automotive Blade-type PCB Fuseclips

**ATM Fuses**

**1A5778 Series**

**ATM Fuses (0 to 20 Amps)**

**1A5600 Series**

**ATC Fuses (0 to 20 Amps)**

1A5600 Series

**1A5779 Series**

**1A5780 Series**

**Data Sheet: 2131**

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*Spg. Br. - Spring Bronze; BeCu - Beryllium Copper; Cart. Brass - Cartridge Brass

***For RoHS compliant version add "-R" option code suffix to part number.