RED indicates **NEW** information

Contents

Low voltage supplementary fuses

3

Low voltage, supplementary fuses

Holders and blocks for low voltage supplementary fuses

Limiters

Holders

Blocks

Blocks

Limiter blocks - ANN and ANL

CH

Safety J™

Modular Type

HM250

Modular knifeblade

HM600

JM600

JP

BH

4164 and 4164-FR

13/32″ X 1 1/2″ Fuses

Holders

Blocks

OPM-NG-SC3

OPM-1038R and OPM-1038RSW

CH

HPG

HPC-D

HPM

HPS

HPF

HEB

HEX and HEY

NDNF1-WH

BCM

CCP Class CC

13/32″ X 1 3/8″ Fuses

HPS-L

BCM

Pin indicating fuses

HLD

HK

8000

Automotive blade-type fuses

*easy*ID™
illuminating holders

HHC, HHD, HHF
and HHG

HHL and
HHM

HHX
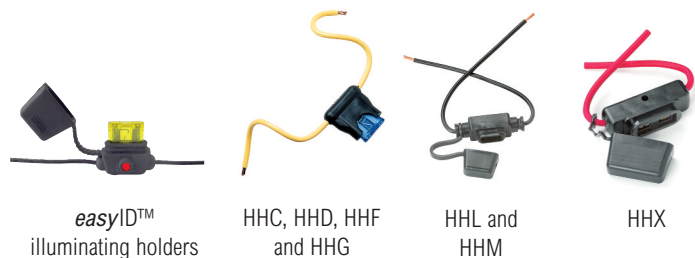
In-line rejecting and non-rejecting fuses

HLQ[3] fuse holders

HLR fuse holder

K 600V

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

Catalog number	Cable size	Catalog number	Cable size
*Tubular terminals			
KCY	#4	KCF	4/0
KCZ	#3	KCH	250kcmil
KCA	#2	KCJ[1, 2]	350kcmil
KCB	#1	KCM[1, 2, 3]	500kcmil
KCC	1/0	KCV	600kcmil
KCD[1, 2]	2/0	KCR[1, 2]	750kcmil
KCE	3/0	KCS	1000kcmil
*Tubular terminal and offset bolt-type terminal			
KQV	#12	KDD	2/0
KQT	#10	KDE	3/0
KFZ	#8	KDF	4/0
KIG	#6	KDH	250kcmil
KDY	#4	KDJ[3]	350kcmil
KDA	#2	KDM[1, 3]	500kcmil
KDB	#1	KDU	600kcmil
KDC	1/0	KDR[1, 2]	750kcmil
*Compression connector rod and tubular terminals			
KEX	4/0	KQO	350kcmil
KFH-A	250kcmil	KDT	500kcmil
**Center bolt-type terminal and off-set bolt-type terminal			
KPF	4/0	KDP[1]	500kcmil
KFT	250kcmil	KFM[1]	750kcmil
KEW	350kcmil		

*Copper conductors only.
**Copper or aluminum conductors.
[1] UL Listed (File E90818), 600Vac, 200k A I.R..
[2] Available with shrink tube "_V" suffix.
[3] Available with molded rubber boots. Boot can be purchased separately, order Part# - BOOT-KCM.

Accessories
Boots can be purchased separately.
For KCM BOOT-KCM   For KDM BOOT-KDM

Installation tools can be purchased separately from Thomas and Betts
• Crimp Tool: TBM-14M   • Die: 15506 KDM/15515 KDR

UH 250V

Specifications:
Description: Cable limiters.
Ratings:

Volts — up to 250Vac

IR — 100kA RMS Sym.

Terminals:
• Center bolt-to-offset bolt – copper or aluminum conductors.

Conductors:
• Copper or aluminum conductors are permitted per the listed
cable size. Select the catalog symbol for the system
conductor size. See data sheet 1042 for dimensions.

Typical applications:
• Designed specifically for use in resdental applications.

Catalog numbers
Center bolt-type terminal and off-set bolt-type terminal

Catalog number	Copper cable size	Aluminum cable size
UHA	2/0AWG	4/0AWG
UHJ-M	3/0AWG	250kcmil
UHJ-T	350kcmil	500kcmil
UHJ-W	600kcmil	800kcmil
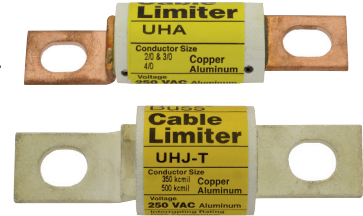
64000 and 68000

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

Catalog numbers

Catalog numbers	Fuse holder type	Nominal amp rating
68300	Class H	300
68600	Class H	600
64200	Class J	200
64300	Class J	300

Recommended fuse blocks for 68000 and 64000 limiters

Data Sheet: 1042

Data Sheet: 1045

BAF

Description:

Fast-acting, supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak™ Class CC fuses. See data sheet # 1023.

Catalog symbol – color code:

· BAF - Green (250Vac max 1/4 to 30A)

Ratings:

Fuse amp range	Interrupting rating at system voltage		Agency information	
	250 Vac	125 Vac	UL	CSA
1/4 to 1	35A	10kA	-	X
1-1/2 to 2-1/2	100A	10kA	-	X
3	100A	10kA	X	X
4 to 10	200A	10kA	X	X
12 to 15	750A	10kA	X	X
20 to 30	200A	10kA	-	-

Agency information:

· CE

· UL Listed, Std. 248-14, 250Vac (3 to 15A) Guide JDYX, File E19180

· CSA Certified, 250Vac (1/4 to 15A) Class 1422-01, File 53787

Catalog numbers (amps)

BAF-1⁄4	BAF-1-8⁄10	BAF-6	BAF-12
BAF-1⁄2	BAF-2	BAF-6-1⁄4	BAF-15
BAF-6⁄10	BAF-2-1⁄2	BAF-7	BAF-20
BAF-8⁄10	BAF-3	BAF-8	BAF-25
BAF-1	BAF-4	BAF-9	BAF-30
BAF-1-1⁄2	BAF-5	BAF-10	

Features:

· Color coded green for 250Vac maximum voltage rating

· Fiber tube construction

· Nickel-plated brass endcaps.

Typical applications:

· General purpose circuits

· Lighting circuit protection

· Meter circuits

For superior electrical protection, Eaton recommends upgrading BAF fuse applications to Bussmann series Low-Peak LP-CC fuses See page 1-7.

Data Sheet: 2011 (0-30)

KTK

Description:

Fast-acting supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak™ Class CC fuses. See data sheet # 1023.

Catalog symbol / color code:

· KTK - Black (600Vac maximum voltage)

Ratings:

Fuse amp range	Interrupting rating at rated voltage	Agency information	
	600Vac	UL	CSA
1/10 to 30	100kA	X	X

Agency information:

· CE, RoHS compliant

· UL Listed, Std. 248-14, Guide JDYX, File E19180

· CSA Certified: C22.2 No. 248.14, Class 1422-01, File 53787, HRC-MISC

Catalog numbers (amps)

KTK-1/10	KTK-3/4	KTK-4	KTK-12
KTK-1/8	KTK-1	KTK-5	KTK-15
KTK-2/10	KTK-1-1/4	KTK-6	KTK-20
KTK-1/4	KTK-1-1/2	KTK-7	KTK-25
KTK-3/10	KTK-2	KTK-7-1/2	KTK-30
KTK-4/10	KTK-2-1/2	KTK-8	
KTK-1/2	KTK-3	KTK-9	
KTK-6/10	KTK-3-1/2	KTK-10	

Features:

· Color coded black for 600Vac voltage rating

· Fast-acting for resistive loads

· Melamine tube construction

· Nickel-plated bronze endcaps

Typical applications:

· Control circuits

· Lighting circuit protection

· Meter circuits

For superior electrical protection, Eaton recommends upgrading KTK fuse applications to Bussmann series Low-Peak LP-CC fuses See page 1-7.

Data Sheet: 1011

Low voltage supplementary fuses

RoHS

KLM

Description:

Fast-acting supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak™ Class CC fuses. See data sheet # 1023.

For protecting DC photovoltaic systems, Eaton recommends using Bussmann series PVM 10x30mm PV fuses. See data sheet # 10121.

Catalog symbol / color code:

· KLM - Black (600Vac/dc maximum voltage)

Ratings:

Fuse amp range	Interrupting rating at rated voltage		Agency information	
	600 Vac	600 Vdc	UL	CSA
1/10 to 30	100kA	50kA	X	X

Electrical characteristics:

% of amp rating	Opening time
110%	4 Hours minimum
135%	AC Opens within 1 hour

Agency information:

· CE, RoHS compliant

· UL Listed: Std. 248-14, Guide JDYX, File E19180

· CSA Certified, C22.2 No. 248. 14, Class 1422-01, File 53787

Catalog numbers (amps)

KLM-1⁄10	KLM-1	KLM-5	KLM-15
KLM-1⁄8	KLM-1-1⁄4	KLM-6	KLM-20
KLM-2⁄10	KLM-1-1⁄2	KLM-7	KLM-25
KLM-1⁄4	KLM-2	KLM-8	KLM-30
KLM-3⁄10	KLM-2-1⁄2	KLM-9	
KLM-1⁄2	KLM-3	KLM-10	
KLM-3⁄4	KLM-4	KLM-12	

Features:

· Color coded for 600Vac/dc

· A full range DC supplemental fuse

· Melamine tube construction

· Nickel-plated brass endcaps.

Recommended fuse blocks/fuse holders for ¹³⁄₃₂˝ x 1 ½˝ fuses
• See page 3-2

Data Sheet: 2020

FNM

Description:

Time-delay supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak™ Class CC fuses. See data sheet # 1023.

Catalog symbol / color code:

· FNM - Green (250Vac maximum voltage)

Ratings:

Fuse amp range	Interrupting rating at system voltage		Agency information	
	250Vac	125Vac	UL	CSA
1/10 to 1	35A	10kA	X	X
1-1/8 to 3-1/2	100A	10kA	X	X
4 to 10	200A	10kA	X	X
12 to 30	10kA	-	X	X

Agency information:

· CE, RoHS complaint
· UL Listed, Std. 248-14, Guide JDYX; File E19180
· CSA Certified, Class 1422-01, File 53787

Catalog numbers (amps)

FNM-1⁄10	FNM-8⁄10	FNM-2-1⁄2	FNM-6-1⁄4
FNM-1⁄8	FNM-1	FNM-2-8⁄10	FNM-7
FNM-15⁄100	FNM-1-1⁄8	FNM-3	FNM-8
FNM-2⁄10	FNM-1-1⁄4	FNM-3-2⁄10	FNM-9
FNM-1⁄4	FNM-1-4⁄10	FNM-3-1⁄2	FNM-10
FNM-3⁄10	FNM-1-1⁄2	FNM-4	FNM-12
FNM-4⁄10	FNM-1-6⁄10	FNM-4-1⁄2	FNM-15
FNM-1⁄2	FNM-1-8⁄10	FNM-5	FNM-20
FNM-6⁄10	FNM-2	FNM-5-6⁄10	FNM-25
FNM-3⁄4	FNM-2-1⁄4	FNM-6	FNM-30

Features:

· Color coded green for 250Vac maximum voltage rating
· Melamine tube construction
· Nickel-plated brass endcaps

Typical applications:

· Circuits with high inrush currents (motor/transformer loads)
· Supplemental protection for 125Vac and 250Vac inductive circuits.

RoHS

For superior electrical protection, Eaton recommends upgrading FNM and FNQ fuse applications to Bussmann series Low-Peak LP-CC fuses See page 1-7.

Recommended fuse blocks and fuse holders for
¹³⁄₃₂″ x 1 ½″ fuses • See page 3-2

Data Sheet: 2028

FNQ

Description:

Time-delay supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series FNQ-R Class CC fuses. See data sheet # 1014.

Catalog symbol / color code:

· FNQ - Orange (500Vac maximum voltage)

Ratings:

Fuse amp range	Interrupting rating at rated voltage	Agency information	
	500Vac	UL	CSA
1/10 to 30	10kA	X	X

Agency information:

· CE, RoHS compliant*
· UL Listed, Std. 248-14, Guide JDYX, File E19180
· CSA Certified: C22.2 No. 248.14, Class 1422-01, File 53787, HRC-MISC

* FNQ-1/8 not RoHS compliant.

Catalog numbers (amps)

FNQ-1/10	FNQ-8/10	FNQ-3-2/10	FNQ-9
FNQ-1/8	FNQ-1	FNQ-3-1/2	FNQ-10
FNQ-15/100	FNQ-1-1/8	FNQ-4	FNQ-12
FNQ-3/16	FNQ-1-1/4	FNQ-4-1/2	FNQ-14
FNQ-2/10	FNQ-1-1/2	FNQ-5	FNQ-15
FNQ-1/4	FNQ-1-6/10	FNQ-5-6/10	FNQ-20
FNQ-3/10	FNQ-2	FNQ-6	FNQ-25
FNQ-4/10	FNQ-2-1/4	FNQ-6-1/4	FNQ-30
FNQ-1/2	FNQ-2-1/2	FNQ-7	
FNQ-6/10	FNQ-3	FNQ-8	

Features:

· Color coded for 500Vac maximum voltage rating
· Fiber tube construction
· Nickel-plated brass endcaps

Typical applications:

· Motor control transformers
· Circuits with in-rush currents.

Carton quantity

Amps	Qty.
1/10 to 30	10

RoHS

For superior electrical protection, Eaton recommends upgrading FNM and FNQ fuse applications to Bussmann series Low-Peak LP-CC fuses See page 1-7.

Recommended fuse blocks and fuse holders for
¹³⁄₃₂″ x 1 ½″ fuses • See page 3-2

Data Sheet: 1012

BBS

Description:

Fast-acting supplemental fuse.

For superior protection, Eaton recommends upgrading to Bussmann series Low-Peak™ Class CC fuses. See data sheet # 1023.

Catalog symbol / color code:

- BBS - Black (600Vac max voltage 1/10 to 6A)
        - Green (250Vac max voltage 7 to 10A)
        - Purple (48Vac max voltage 12 to 30A)

Ratings:

Fuse amp range	Interrupting rating at system voltage			Agency information	
	600 Vac	250 Vac	48 Vac	UL	CSA
1/10 to 6	10kA	-	-	X	X
7 to 10	-	10kA	-	X	X
12 to 30*	-	-	-	-	-

* For interrupting rating, contact factory.

Agency information:

- CE
- UL Listed, Std. 248-14 (1/10-6A@600Vac, 7-10A@250Vac), Guide JDYX, File E19180
- CSA Certified, C22.2 No. 248.14 (1/10-6A@600Vac, 7-10A@250Vac), Class 1422-01, File 53787

Catalog numbers (amps)

BBS-1/10	BBS-8/10	BBS-4	BBS-15
BBS-2/10	BBS-1	BBS-5	BBS-20
BBS-1/4	BBS-1-1/2	BBS-6	BBS-25
BBS-4/10	BBS-1-6/10	BBS-7	BBS-30
BBS-1/2	BBS-1-8/10	BBS-8	
BBS-6/10	BBS-2	BBS-10	
BBS-3/4	BBS-3	BBS-12	

Features:

- Color coded for 600Vac (black) 250Vac (green) and 48Vac (purple) for maximum voltage ratings
- Fiber tube construction
- Nickel-plated brass endcaps.

Typical applications:

- Control circuits
- Gaseous vapor fixtures
- HID ballasts
- Electronic circuits
- Hand-held meters

600Vac
1/10 to 6A

250Vac
7 to 10A

48Vac
12 to 30A

Recommended fuse blocks/fuse holders for ¹³⁄₃₂″ x 1 ⅜″ fuses
- Page 3-3

Data Sheet: 2010 (0-30A)

GBA

GLD

Specifications:
Class: Supplemental
Description: Fast-acting, pin indication fuse.
Dimensions: ¼″ x 1 ¼″ (6.6 x 31.7mm) 3AG.

Ratings:
Volts — See Agency Info below
Amps — ½-15A
IR — See Agency Info below

Agency information: CE,
Std. 248-14, UL Listed, 0-5A/125Vac, 10,000 AIC, Guide JDYX, File E19180, UL Recognized, 6A/125Vac, 1000AIC 8-15A/50Vac/dc, 300 AIC Guide JDYX2, File E19180, CSA Certified: 0-5A/125Vac, 10,000 AIC Class 1422-01, 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)

GLD-½	GLD-2	GLD-6
GLD-¾	GLD-3	GLD-10
GLD-1	GLD-4	GLD-12
GLD-1-½	GLD-5	GLD-15

GBA catalog numbers (amps)

GBA-½	GBA-2	GBA-8
GBA-¾	GBA-3	GBA-10
GBA-1	GBA-4	GBA-15
GBA-1-½	GBA-5	

Recommended fuse blocks/fuse holders for ¼″ x 1 ¼″ indicating fuses
- Page 3-3

Data Sheet: 2012

MIC

Description:

Fast-acting supplemental fuse.

Catalog symbol / color code:

· MIC   - Green (250Vac max 1 to 15A)
          - Grey (32Vac max 20 to 30A)

250Vac
1 to 15A

32Vac
20 to 30A

Ratings:

Fuse amp range	Interrupting rating at voltage rating		Agency information	
	250 Vac	32 Vac	UL	CSA
1	35A	-	X	-
2 to 3	100A	-	X	-
5 to 10	200A	-	X	-
15	750A	-	X	-
20 to 30	-	10kA	-	-

Electrical characteristics:

% of fuse rating	Opening time
110%	Indefinitely
135%	1 hour max.

Agency information:

· CE
· UL Listed, Std. 248-14, 1-15A, Guide JDYX, File E19180

Features:

· Color coded by maximum voltage rating
· Pin indication for visual indication of open fuse condition
· Silver-plated pin for positive, electrical signal activation
· Fiber tube construction
· Nickel-plated bronze endcaps

Typical applications:

· Power electronic circuits in which fuse opening must be quickly apparent
· Control circuits
· PLC Circuits

Catalog numbers (amps)

MIC-1	MIC-8	MIC-25
MIC-2	MIC-10	MIC-30
MIC-3	MIC-15	–
MIC-5	MIC-20	–

Recommended signal block for, ¹³⁄₃₂″ x 1 ½″ indicating fuses
• Page 3-3

Data Sheet: 10246

FNA

Description:

Pin indicating time-delay supplemental fuse.

Catalog symbol / color code:

· FNA   - Green (250Vac max voltage 1/10 to 6A)
          - Blue (125Vac max voltage 6-1/4 to 15A)
          - Grey (32Vac max voltage 20 to 30A)

250Vac
1/10 to 6A

Ratings:

Fuse amp range	Interrupting rating at system voltage			Agency information	
	250 Vac	125 Vac	32 Vac	UL	CSA
1/10 to 8/10	35A	10kA	-	X	X
1 to 6	200A	10kA	-	X	X
6-1/4 to 15	-	10kA	-	X	X
20 to 30	-	-	1kA	-	-

Dual-tube construction 12A and up

Agency information:

· CE
· UL Listed 1/10 to 8/10A @ 125/250Vac, 1-15A @ 125Vac, Guide JDYX, File E19180
· CSA Certified 1/10 to 10A @ 125Vac, Class 1422-01, File 53787

Catalog numbers (amps)

FNA-1/10	FNA-1	FNA-3	FNA-9
FNA-1/8	FNA-1-1/8	FNA-3-2/10	FNA-10
FNA-15/100	FNA-1-1/4	FNA-3-1/2	FNA-12
FNA-2/10	FNA-1-4/10	FNA-4	FNA-15
FNA-1/4	FNA-1-1/2	FNA-4-1/2	FNA-20
FNA-3/10	FNA-1-6/10	FNA-5	FNA-25
FNA-4/10	FNA-1-8/10	FNA-5-6/10	FNA-30
FNA-1/2	FNA-2	FNA-6	
FNA-6/10	FNA-2-1/4	FNA-6-1/4	
FNA-3/4	FNA-2-1/2	FNA-7	
FNA-8/10	FNA-2-8/10	FNA-8	

Features:

· Color coded by maximum voltage rating
· Pin indication for visual indication of open fuse condition
· Dual-element, time-delay performance permits close sizing on control transformers and relays
· Silver-plated pin for positive, electrical signal activation
· 12 amp and more versions are dual-tube construction

Recommended signal block for ¹³⁄₃₂″ x 1 ½″ indicating fuses
• Page 3-3

Data Sheet: 2029

ANN and ANL Limiters

Specifications:
Description: Circuit limiters.

ANN: Very fast-acting limiter.

ANL: Non-time-delay limiter.

Dimensions: ⅞″ x 3 ³⁄₁₆″ (22.2 x 81.0mm).

Ratings:
ANN:

Volts — 125Vac
— 80Vdc

Amps — 10-800A

IR — 2500A @ 125Vac
— 2700A @ 80Vdc

ANL:

Volts — 80Vdc

Amps — 35-750A

IR — 2700A @ 80Vdc

Agency information:

ANN: 35-400A @ 125Vac, IR=2500A and 500A @ 80Vdc, IR=2700A: UL Recognized Guide JFHR2, File E56412; CSA Certified 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-60	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	

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

MIS

Specifications:
Class: Supplemental

Description: Non time-delay pin indication fuse.

Dimensions: ¹³⁄₃₂″ 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

Fuse	Load	Opening time
All	110%	4 hrs. (min.)
1-5A	150%	6 min. (max.)
6-12A	150%	12 min. (max.)

Recommended signal block for ¹³⁄₃₂″ x 2″ indicating fuses
• Page 3-3

Data Sheet: 2021

KAZ

Specifications:
Description: Non-fuse actuator.

Dimensions: ¹³⁄₃₂″ x 2″ (10.3 x 50.8mm).

Ratings:

Volts — 600Vac

Amps — N/A

IR — 200kA

Agency information:
CE, UL Listed, Guide JDVS, File E58836.

Features and benefits:
• Bussmann series 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 ¹³⁄₃₂″ x 2″ indicating fuses
• Page 3-3

Data Sheet: 2021

4164 and 4164-FR limiter blocks

Specifications
Description: Limiter fuse blocks for ANL and 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
— 80Vdc
— 32Vdc (self certified)

Amps — 10-800A

Poles: 1 - stud terminal

Data Sheet: 2133

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, UL Listed Std. 248-14, (Guide JDYX, File E19180), CSA Certified C22.2 No. 248.14, (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

Fuse	Holder[1, 2]	Fuse	Holder[1, 2]
GLQ-1	HLQ-1-$\frac{6}{10}$	GLQ-3	HLQ-3-$\frac{2}{10}$
GLQ-1-½	HLQ-1-$\frac{6}{10}$	GLQ-4	HLQ-5
GLQ-1-$\frac{6}{10}$	HLQ-1-$\frac{6}{10}$	GLQ-5	HLQ-5
GLQ-2	HLQ-3-$\frac{2}{10}$	GLQ-9	HLQ-10
GLQ-2-½	HLQ-3-$\frac{2}{10}$	GLQ-10	HLQ-10

1) Carrier is UL Recognized, Guide IZLT2, 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 (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".
- 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 — ½-6¼A

IR — 10kA

Agency information: CE, UL Listed Std. 248-14, (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

Fuse	Holders[1, 2]	Fuse	Holders[3, 4]
GMQ-½	HLQ-½	GMQ-2-½	HLQ-3-$\frac{2}{10}$
GMQ-$\frac{6}{10}$	HLQ-1-$\frac{6}{10}$	GMQ-3	HLQ-3-$\frac{2}{10}$
GMQ-$\frac{8}{10}$	HLQ-1-$\frac{6}{10}$	GMQ-3-$\frac{2}{10}$	HLQ-3-$\frac{2}{10}$
GMQ-1	HLQ-1-$\frac{6}{10}$	GMQ-4	HLQ-5
GMQ-1-¼	HLQ-1-$\frac{6}{10}$	GMQ-5	HLQ-5
GMQ-1-$\frac{6}{10}$	HLQ-1-$\frac{6}{10}$	GMQ-6-¼	HLQ-8
GMQ-2	HLQ-3-$\frac{2}{10}$		

1) Carrier is UL Recognized, Guide IZLT2, 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 (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"
- Do not put tension on line (rear) terminal of fuse holder.

Data Sheet: 2030

**HLQ[3] fuse holders
for both GLQ and GMQ fuses.**

Low voltage, supplementary 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 — 3/16-15A

IR — 10kA

Agency information: CE, UL Listed Std. 248-14, 0-15A/300Vac (Guide JDYX, File E19180), CSA Certified C22.2, No. 248-14, 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

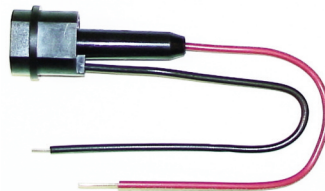| Fuse	Holder[1, 2*]	Fuse	Holder[1, 2*]
GLR-½	HLR	GLR-6	HLR
GLR-1	HLR	GLR-7	HLR
GLR-1-½	HLR	GLR-8	HLR
GLR-1-6/10	HLR	GLR-9	HLR
GLR-2	HLR	GLR-10	HLR
GLR-3	HLR	GLR-12	HLR
GLR-4	HLR	GLR-15	HLR-2A
GLR-5	HLR		

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 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: 2032

GMF

GRF

Specifications:

Class: Supplemental

Description: Time-delay, non-rejection, in-line fuse.

Construction: Glass tube.

Ratings:

Volts — 300Vac (or less)

Amps — 3/10-10A

IR — 10kA

Agency information: CE, UL Listed Std. 248-14 0-10A, (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

Fuse	Holder[1, 2*]	Fuse	Holder[1, 2*]
GMF-3/10	HLR	GMF-3	HLR
GMF-½	HLR	GMF-3-2/10	HLR
GMF-6/10	HLR	GMF-4	HLR
GMF-8/10	HLR	GMF-5	HLR
GMF-1	HLR	GMF-6-¼	HLR
GMF-1-¼	HLR	GMF-7	HLR
GMF-1-6/10	HLR	GRF-8	HLR
GMF-2	HLR	GMF-10	HLR
GMF-2-½	HLR	GRF-10	HLR
GMF-2-8/10	HLR		

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

HLR-2A fuse holder

HLR fuse holder

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

RoHS

Agency information: UL Recognized, (1-40A) (Guide JFHR2, File E56412), SAE Standard J1284.

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

Typical applications:
• Automotive

Catalog numbers (amps)

Non-indicating	*Indicating	Color
ATC-1	—	Black
ATC-2	—	Gray
ATC-3	ATC-3ID	Violet
ATC-4	—	Pink
ATC-5	ATC-5ID	Tan
ATC-7-1/2	ATC-7-1/2ID	Brown
ATC-10	ATC-10ID	Red
ATC-15	ATC-15ID	Blue
ATC-20	ATC-20ID	Yellow
ATC-25	ATC-25ID	Clear
ATC-30	ATC-30ID	Green
ATC-35	ATC-35ID	Blue-Green
ATC-40	ATC-40ID	Orange

*Call Eaton customer satisfaction for ordering information.

HHA, HHC, HHD, HHF, HHG, HHR, HHS and ATC-FHID
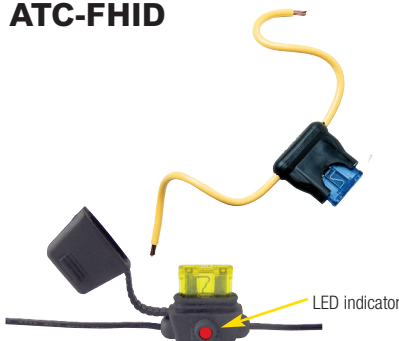
LED indicator

***easy* ID™ LED indicating holder**

Specifications:

Description: In-line fuse holders for ATC™ blade-type fuses.

Dimensions: See dimensions illustration.
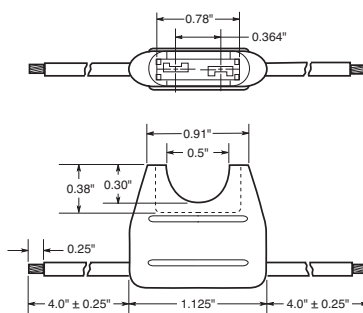
Ratings:

Volts: — 32Vdc

Amps: — 80% continuous of fuse rating. See catalog numbers table for individual fuses sizes.

Catalog numbers

Catalog numbers	Fuse holder description	Fuse amps	Electrical connection
HHA	Black w/ cover	1-40	#16 red leadwire
HHC	Yellow	1-20	#16 black leadwire
HHD	Black	1-30	#12 yellow leadwire
HHF	Black w/ cover	1-20	#16 yellow leadwire
HHG	Black w/ cover	1-30	#12 yellow leadwire
HHR	Black w/ cover	1-30	#12 red leadwire
HHS	Blue w/ cover	1-20	#18 to 14 black leadwire
ATC-FHID	Indicating holder Black w/ cover	1-20	#16 black leadwire

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 and HHD dimensions - in

0.78"
0.364"
0.91"
0.5"
0.38" 0.30"
0.25"
4.0" ± 0.25"   1.125"   4.0" ± 0.25"

ATM fuse

ATM
(actual size)

Available with indication

ATM-LP

Specifications:

Description: Fast-acting blade fuse.

Construction: Colored plastic housing with zinc fuse element.

Ratings:

Volts — 32Vdc

Amps — 1-30A

IR — 1000A

RoHS

Agency information: UL Listed Guide FHXT, File AU 169 (2-30A non-indicating ATM).

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

Typical applications:
• Automotive

Catalog numbers (amps)

Non-indicating	*Indicating	Low-profile	Color
ATM-1	—	—	Black
ATM-2	—	—	Gray
ATM-3	ATM-3ID	—	Violet
ATM-4	—	—	Pink
ATM-5	ATM-5ID	ATM-5LP	Tan
ATM-7-1/2	ATM-7-1/2ID	ATM-7-1/2LP	Brown
ATM-10	ATM-10ID	ATM-10LP	Red
ATM-15	ATM-15ID	ATM-15LP	Blue
ATM-20	ATM-20ID	ATM-20LP	Yellow
ATM-25	ATM-25ID	ATM-25LP	Clear
ATM-30	ATM-30ID	ATM-30LP	Green

*Call Eaton customer satisfaction for ordering information.

Data Sheet: 2009

Data Sheet: 2107

Data Sheet: 2048 (ATM), 2050 (ATM-LP)

HHH, HHL, HHLP, HHM and ATM-FHID

LED indicator

easy ID™ LED indicating holder

Specifications:

Description: In-line fuse holders for ATM Fuses.
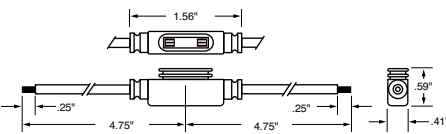
Ratings:

Volts — 32Vdc

Amps — 80% continuous of fuse rating. See catalog numbers table for individual fuses sizes.

Catalog numbers

| Catalog numbers	Fuse holder description	Fuse amps	Electrical connection
HHH	Black w/ cover	1-30	#16 black leadwire, 5″ length
HHL	Black w/ cover	1-20	#16 black leadwire, 4″ length stripped to ¼″
HHLP	Black w/ cover	1-30	#16 black leadwire, 5″ length
HHM	Black w/ cover	1-30	#12 red leadwire, 4″ length stripped to ¼″
HHU	Black w/ cover	1-30	#16 black leadwire,
ATM-FHID	Indicating holder Black w/ cover	1-20	#16 black leadwire

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 and HHM dimensions - in
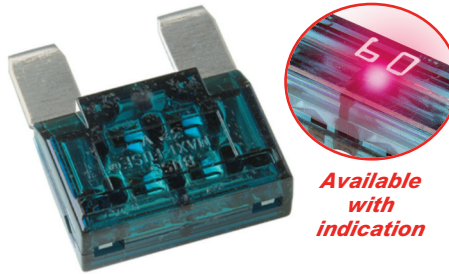
1.56"
.25" 4.75" 4.75" .25" .59" .41"

MAX Maxi–fuse

Available with indication

(actual size)

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)

Non-indicating	*Indicating	Color
MAX-20	MAX-20ID	Yellow
MAX-25	—	Gray
MAX-30	MAX-30ID	Green
MAX-35	—	Brown
MAX-40	MAX-40ID	Orange
MAX-50	MAX-50ID	Red
MAX-60	MAX-60ID	Blue
MAX-70	MAX-70ID	Tan
MAX-80	MAX-80ID	Clear
—	MAX-100ID	Purple

*Call Eaton customer satisfaction for ordering information.

Recommended in-line fuse holder for blade type fuses

HHX, MAX-FHID

Specifications:

Description: In-line fuse holders for MAXI Fuses.
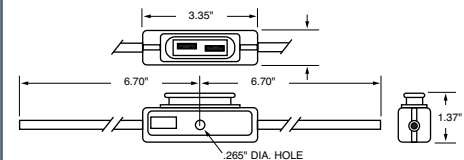
Ratings:

Volts — 32Vdc

Amps — 80% continuous of fuse rating. See catalog numbers table for individual fuses sizes.

Catalog numbers

Catalog numbers	Fuse holder description	Fuse amps	Electrical connection
HHX	Black w/ cover	20-60	#6 red leadwire, 5″ with blunt ends
MAX-FHID	Indicator black w/ cover	20-60	#6 red leadwire, 5″ with blunt ends

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

3.35"
6.70" 6.70"
.265" DIA. HOLE
1.37"

Data Sheet: 2128

Data Sheet: 2129

ATR micro fuse

RoHS

Specifications:

Description: Fast-acting color coded 2-leg micro blade fuse.

Construction: Colored plastic housing with zinc fuse element.

Ratings:

Volts — 32Vdc

Amps — 5-30A

IR — 1000A

Features and benefits:
- Space-savings size
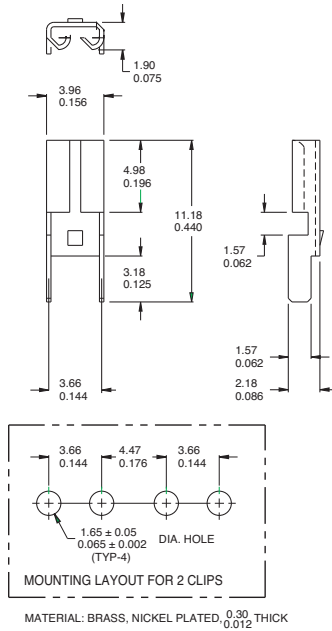- Industry standard color coding for easy identification of fuse ratings

Typical applications:
- Automotive

Catalog numbers - (amps)

Catalog numbers	Color
ATR-5	Tan
ATR-7-1/2	Brown
ATR-10	Red
ATR-15	Blue
ATR-20	Yellow
ATR-25	Clear
ATR-30	Green

ATM fuses - 1A5778

Dimensional data

Data Sheet: 2131

1A5779
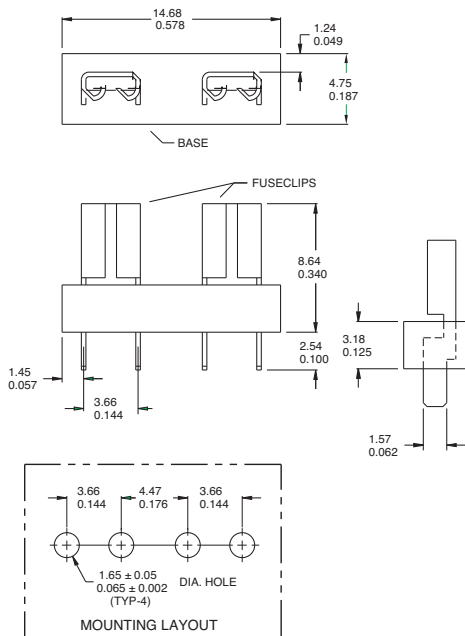
SPECIFICATIONS

FUSECLIPS	BRASS, NICKEL PLATED
BASE MATERIAL	GLASS FILLED NYLON, UL RATED 94V-0
CURRENT RATING	15 AMPS
VOLTAGE RATING	500V AC
TEMPERATURE RATING . .	-50°C TO 145°C -58°F 292°F

Data Sheet: 2131

ATC fuses (0 to 20 amps)

1A5600

Dimensional data

RoHS
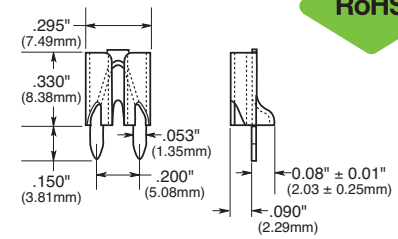
Catalog Number	Clip Mat.*	Finish
1A5600	Cart. Brass	Satin Finish Tin

Data Sheet: 2131

1A5780

Dimensional data
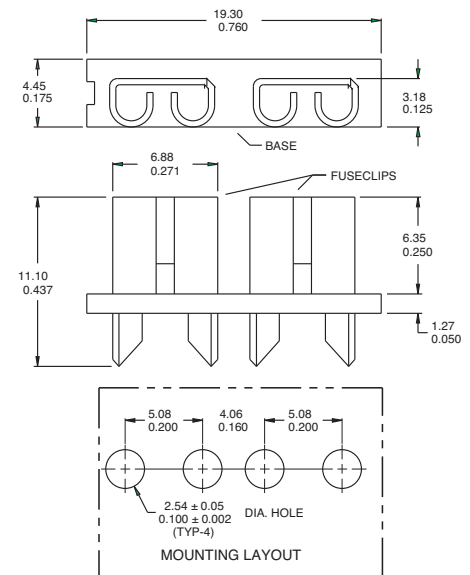
SPECIFICATIONS

FUSECLIPS	BRASS, NICKEL PLATED
BASE MATERIAL	GLASS FILLED NYLON, UL RATED 94V-0
CURRENT RATING	15 AMPS
VOLTAGE RATING	500V AC
TEMPERATURE RATING . .	-50°C TO 145°C -58°F 292°F

*Spg. Br. - spring bronze; BeCu - beryllium copper; cart. brass - cartridge brass

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

Data Sheet: 2131

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Control circuit fuses

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Control Circuits

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