

# Molded Case Circuit Breakers

## E<sup>2</sup> Mining Service Breakers



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**Note:** Supplement to Publication No. CA08101001E—Tab 12.

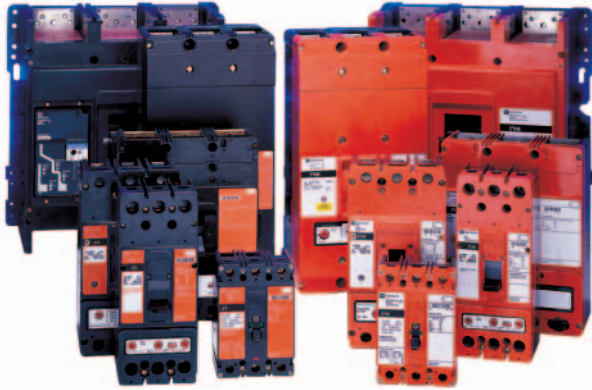


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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup> Mining Service Breakers



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### E<sup>2</sup> Mining Service Breakers

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#### Product Overview

State-of-the-art E<sup>2</sup> mining service breakers incorporate the rigid specifications and testing procedures developed by a focus group led by engineers from several large coal companies and Eaton design engineers. Additionally, the performance of these breakers was proven and verified during hundreds of hours of field testing in harsh mine environments.

E<sup>2</sup> mining breakers are available in 600 Vac and I000Y/577 Vac. Interchangeable trip units can be used on either 600 or 1000 Vac frames.

The E<sup>2</sup> mining breaker family is designed especially for trailing cable application per MSHA 30 CFR 75. Field interchangeable electronic rms sensing trip units are available from 150 to 2000 amperes with instantaneous pickup settings conforming to the code of Federal Regulations 30 CFR 75.601-2. Electromechanical trip units are also available with a wide range of magnetic pickup ranges.

E<sup>2</sup> electronic trip units are the first to provide the mining industry with true rms sensing, made possible by the patented custom ASIC microprocessor in each electronic trip unit.

E<sup>2</sup> breakers are designed to be physically and electrically interchangeable with Classic Mining Service Breakers and supersede Series C<sup>®</sup> Mining Service Breakers. The table to the right outlines direct replacements.

#### 600 Vac Mining Breaker Replacement Chart

Classic	Series C	E <sup>2</sup>
FBM	FDBM	E <sup>2</sup> F
HFBM	FDM	E <sup>2</sup> F
	HFDM (mag. only)	E <sup>2</sup> F
—	JDM	E <sup>2</sup> J
KAM	KDM	E <sup>2</sup> K
KAMH	KDM	E <sup>2</sup> K
LAM	LDM	E <sup>2</sup> L
LAMH	LDM	E <sup>2</sup> L
LCM	LDM	E <sup>2</sup> L
LCMH	LDM	E <sup>2</sup> L
MAM	—	E <sup>2</sup> M
MAMH	—	E <sup>2</sup> M
MCM	—	E <sup>2</sup> M
MCMH	—	E <sup>2</sup> M
NBM	—	E <sup>2</sup> N
NBMH	—	E <sup>2</sup> N
NCM	—	E <sup>2</sup> N
NCMH	—	E <sup>2</sup> N

#### 1000 Vac Mining Breaker Replacement Chart

Classic	Series C	E <sup>2</sup> M
HFM	—	E <sup>2</sup> FM
—	JDCM	E <sup>2</sup> JM
HKAM	KDCM	E <sup>2</sup> KM
HLAM	LDCM	E <sup>2</sup> LM
HLCM	LDCM	E <sup>2</sup> LM
HMAM	—	E <sup>2</sup> MM
HMCM	—	E <sup>2</sup> MM
HNBM	—	E <sup>2</sup> NM
HNBMH	—	E <sup>2</sup> NM
HNCM	—	E <sup>2</sup> NM
HLCLM	—	E <sup>2</sup> NM
HPBM	—	E <sup>2</sup> RM ①

#### Additional Information on Mining Breakers

Source	Description
TD01217001E	E <sup>2</sup> Mining Circuit Breaker Dimensional Data
BR01217001E	E <sup>2</sup> Mining Circuit Breaker Brochure
TC01217001E	E <sup>2</sup> Mining Circuit Breaker Time Current Curves
www.eaton.com/mining	Mining and Metals

#### Note

① E<sup>2</sup>R/E<sup>2</sup>RM is a new frame physically different than the HPBM. See DS29-170MS.

Eaton's mining service circuit breakers provide short circuit protection as specified in the code of Federal Regulations 30 CFR 75.601-2. E<sup>2</sup> 225/400 ampere K frame and 400/600 ampere L frame electronic trip units feature specifically designed instantaneous pickup settings to conform exactly with the code of

Federal Regulations 30 CFR 75.601-2. Electromechanical trip units are also available with a wide range of magnetic pickup ranges.

The tables below list the conductor size maximum allowable circuit breaker instantaneous setting and the E<sup>2</sup> breaker that meets that setting.

### Interrupting Capacity Rating

Circuit Breaker Type	Interrupting Capacity (Symmetrical kA)				Vdc <sup>①</sup>
	Vac (50/60 Hz)				
	240	480	600	1000V/577	
E <sup>2</sup> F	65	25	18	—	10
E <sup>2</sup> J	65	35	18	—	10
E <sup>2</sup> K	65	35	25	—	10
E <sup>2</sup> LME	100	65	35	—	42
E <sup>2</sup> L	65	35	25	—	22
E <sup>2</sup> M	65	35	25	—	22
E <sup>2</sup> N	65	50	25	—	—
E <sup>2</sup> R	125	65	50	—	—
E <sup>2</sup> FM	65	25	18	10	10
E <sup>2</sup> JM	65	35	18	10	22
E <sup>2</sup> KM	65	35	25	14	10
E <sup>2</sup> LMZ	100	65	35	10	42
E <sup>2</sup> LM	—	35	25	18	22
E <sup>2</sup> MM	—	35	25	18	22
E <sup>2</sup> NM <sup>②</sup>	—	50	25	25	—
E <sup>2</sup> RM	—	65	50	25	—

### Trailing Cable Setting Per 30 CFR 75

Conductor Size	Maximum Breaker Instantaneous Setting	Maximum Ampere 75°C Insulated Conductor	E <sup>2</sup> /E <sup>2</sup> M Instantaneous Only	Setting
14	50	15	E <sup>2</sup> K 150A	A
12	75	20	E <sup>2</sup> K 150A	B
10	150	30	E <sup>2</sup> K 150A	C
8	200	50	E <sup>2</sup> K 225A	A
6	300	65	E <sup>2</sup> K 225A	B
4	500	85	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	C/A
3	600	100	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	D/B
2	800	115	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	E/C
1	1000	130	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	F/D
1/0	1250	150	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	G/E
2/0	1500	175	E <sup>2</sup> K 225A/E <sup>2</sup> L 400A	H/F
3/0	2000	200	E <sup>2</sup> L 400A	G
4/0	2500	230	E <sup>2</sup> L 400A	H
250	2500	255	E <sup>2</sup> L 400A	H
300	2500	285	E <sup>2</sup> L 400A	H
350	2500	310	E <sup>2</sup> L 400A	H
400	2500	335	E <sup>2</sup> L 400A	H
500	2500	380	E <sup>2</sup> L 400A	H

### Auxiliary Switch Electrical Rating Data

Maximum Voltage	Frequency	Maximum Current Amperes
600	50/60 Hz	6.0
125	DC	0.5 (non-inductive load)
250	DC	0.25 (non-inductive load)

### Alarm (Signal/Lockout Switch) Electrical Rating Data

Maximum Voltage	Frequency	Maximum Current Amperes
600	50/60 Hz	6.0
125	DC	0.5 (non-inductive load)
250	DC	0.25 (non-inductive load)

#### Notes

- <sup>①</sup> Two poles in series. DC rating applies to breakers with thermal-magnetic trip unit. Breakers with electronic trip units are not DC rated.
- <sup>②</sup> Series rated for application with Eaton's E<sup>2</sup>KM and E<sup>2</sup>LM breakers.

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### Mining Service Circuit Breakers

#### Undervoltage Release Mechanism Electrical Rating Data

Breaker Type	Supply Voltage	Dropout Voltage		Pickup Voltage	VA			
		Minimum	Maximum	Maximum				
E2F/E2FM	110 Vac	44.5	77	93.5	1.3			
	120 Vac				1.5			
	127 Vac				1.7			
	110 Vdc				1.5			
	120 Vdc				1.7			
	125 Vdc				1.9			
E2J/E2JM	110 Vac	44.5	77	93.5	1.8			
	120 Vac				2.1			
	127 Vac				2.4			
	110 Vdc				1.6			
	120 Vdc				1.9			
	125 Vdc				2.2			
E2K/E2KM	110 Vac	44.5	77	93.5	1.8			
	120 Vac				2.1			
	127 Vac				2.4			
	110 Vdc				1.6			
	120 Vdc				1.9			
	125 Vdc				2.2			
E2LME/E2LMZ	110 Vac	44.5	77	93.5	0.96			
	120 Vac				1.13			
	127 Vac				1.25			
	110 Vdc	43.8	77	93.5	0.94			
	120 Vdc				1.12			
	125 Vdc				1.21			
E2L/E2LM/E2M/ E2MM	110 Vac	44.5	77	93.5	1.8			
	120 Vac				2.1			
	127 Vac				2.4			
	110 Vdc				1.6			
	120 Vdc				1.9			
	125 Vdc				2.2			
E2N/E2NM	110 Vac	44.5	77	93.5	1.8			
	120 Vac				2.1			
	127 Vac				2.4			
	110 Vdc				1.6			
	120 Vdc				1.9			
	125 Vdc				2.2			
E2R/E2RM	110 Vac	44.5	77	93.5	3.3			
	120 Vac				3.6			
	127 Vac				3.8			
	110 Vdc				43.8	77	93.5	3.3
	120 Vdc							3.6
	125 Vdc							3.8

## Shunt Trip Electrical Rating Data

Breaker Type	Supply Voltage	Operating Voltage		
		Minimum	VA	
E2F/E2FM	48 Vac	33.6	92	
	60 Vac		140	
	110 Vac		480	
	120 Vac		570	
	127 Vac		640	
	208 Vac	146	180	
	220 Vac		200	
	230 Vac		240	
	48 Vdc		33.6	100
	60 Vdc			160
	110 Vdc	77		55
	120 Vdc			66
	125 Vdc		71	
	E2J/E2JM	110 Vac	60.5	66
120 Vac		84		
127 Vac		102		
110 Vdc		77	112	
120 Vdc			138	
125 Vdc	150			
E2K/E2KM	110 Vac	60	100	
	120 Vac		120	
	127 Vac		140	
	110 Vdc		77	110
	120 Vdc			130
	125 Vdc	140		
	24 Vac	41		
	48 Vac	18		139
	60 Vac		210	
	E2LME/E2LMZ	110 Vac	60	83
120 Vac		92		
127 Vac		117		
24 Vdc		120		
48 Vdc		18	475	
60 Vdc			720	
110 Vdc			82	99
120 Vdc				120
125 Vdc	121			

Breaker Type	Supply Voltage	Operating Voltage		
		Minimum	VA	
E2L/E2LM/E2M/ E2MM	48 Vac	34	830	
	60 Vac		1280	
	110 Vac		100	
	120 Vac	60	120	
	127 Vac		140	
	48 Vdc		34	710
	60 Vdc			1105
	110 Vdc			77
	120 Vdc		130	
	125 Vdc		140	
E2N/E2NM	110 Vac	60	100	
	120 Vac		120	
	127 Vac		140	
	110 Vdc	77	110	
	120 Vdc		130	
125 Vdc	140			
E2R/E2RM	110 Vac	60.5	330	
	120 Vac		390	
	127 Vac		430	
	110 Vdc	77	370	
	120 Vdc		440	
125 Vdc	480			

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## Molded Case Circuit Breakers

Mining Service Circuit Breakers

### Product Selection

E<sup>2</sup>F/E<sup>2</sup>FM

*Thermal-Magnetic Circuit Breakers—Sealed Breakers with Non-Interchangeable Trip Unit—Include Line/Load Terminals*

#### 600 Vac Maximum, 250 Vdc, 25 kA at 480 Vac, Three-Pole <sup>①</sup>

Maximum Continuous Ampere Rating at 40°C	Catalog Number
15	E2F3015
20	E2F3020
25	E2F3025
30	E2F3030
35	E2F3035
40	E2F3040
45	E2F3045
50	E2F305
60	E2F3060
70	E2F3070
80	E2F3080
90	E2F3090
100	E2F3100
125	E2F3125
150	E2F3150

#### 1000Y/577 Vac Maximum, 250 Vdc, 10 kA at 1000 Vac, Three-Pole

E<sup>2</sup>F/E<sup>2</sup>FM



Maximum Continuous Ampere Rating at 40°C	Catalog Number
15	—
20	E2FM3020
25	E2FM3025
30	—
35	—
40	E2FM3040
45	—
50	E2FM3050
60	E2FM3060
70	E2FM3070
80	E2FM3080
90	E2FM3090
100	E2FM3100
125	E2FM3125
150	E2FM3150

**Note**

<sup>①</sup> For two-pole application, use outer poles.

**E<sup>2</sup>F/E<sup>2</sup>FM**

**Magnetic Only Circuit Breakers—Sealed Breakers with Non-Interchangeable Trip Unit—Include Line/Load Terminals**

**600 Vac Maximum, 250 Vdc, 25 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
3	9–30	E2F003AM
7	21–70	E2F007CM
15	45–150	E2F015EM
30	90–300	E2F030HM
	50–150	E2F030EM
50	150–500	E2F050KM
	66–190	E2F050YM
70	210–700	E2F070MM
100	150–500	E2F100KM
	300–1000	E2F100RM
150	450–1500	E2F150TM
	750–2500	E2F150UM

**1000Y/577 Vac Maximum, 250 Vdc, 10 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
3	9–30	—
7	21–70	—
15	45–150	—
30	90–300	—
	50–150	—
50	150–500	E2FM050KM
	66–190	E2FM050YM
70	210–700	E2FM070MM
100	150–500	E2FM100KM
	300–1000	E2FM100RM
150	450–1500	E2FM150TM
	750–2500	E2FM150UM

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## Molded Case Circuit Breakers

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### E<sup>2</sup>J/E<sup>2</sup>JM

*Circuit Breakers with Interchangeable Thermal-Magnetic Trip Unit*

#### 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
70	300–650	E2J3070W	E2J3250F	E2J3070T
90	450–900	E2J3090W	E2J3250F	E2J3090T
100	500–1000	E2J3100W	E2J3250F	E2J3100T
125	625–1250	E2J3125W	E2J3250F	E2J3125T
150	750–1500	E2J3150W	E2J3250F	E2J3150T
175	875–1750	E2J3175W	E2J3250F	E2J3175T
200	1000–2000	E2J3200W	E2J3250F	E2J3200T
225	300–650	E2J3225AW	E2J3250F	E2J3225TA
	500–1000	E2J3225DW	E2J3250F	E2J3225TD
	1125–2250	E2J3225W	E2J3250F	E2J3225T
250	1250–2500	E2J3250W	E2J3250F	E2J3250T

#### 1000Y/577 Vac Maximum, 250 Vdc, 10 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
70	300–650	E2JM3070W	E2JM3250F	E2J3070T
90	450–900	E2JM3090W	E2JM3250F	E2J3090T
100	500–1000	E2JM3100W	E2JM3250F	E2J3100T
125	625–1250	E2JM3125W	E2JM3250F	E2J3125T
150	750–1500	E2JM3150W	E2JM3250F	E2J3150T
175	875–1750	E2JM3175W	E2JM3250F	E2J3175T
200	1000–2000	E2JM3200W	E2JM3250F	E2J3200T
225	300–650	E2JM3225AW	E2JM3250F	E2J3225TA
	500–1000	E2JM3225DW	E2JM3250F	E2J3225TD
	1125–2250	E2JM3225W	E2JM3250F	E2J3225T
250	1250–2500	E2JM3250W	E2JM3250F	E2J3250T

E<sup>2</sup>J/E<sup>2</sup>JM





**E<sup>2</sup>J/E<sup>2</sup>JM*****Circuit Breakers with Interchangeable Magnetic Only Trip Unit*****600 Vac Maximum, 250 Vdc, 25 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
250	300–650	E2J3250MAW	E2J3250F	E2J3250TMA
	450–900	E2J3250MCW	E2J3250F	E2J3250TMC
	500–1000	E2J3250MDW	E2J3250F	E2J3250TMD
	625–1250	E2J3250MFW	E2J3250F	E2J3250TMF
	750–1500	E2J3250MGW	E2J3250F	E2J3250TMG
	875–1750	E2J3250MJW	E2J3250F	E2J3250TMJ
	1000–2000	E2J3250MKW	E2J3250F	E2J3250TMK
	1125–2250	E2J3250MLW	E2J3250F	E2J3250TML
	1250–2500	E2J3250MW	E2J3250F	E2J3250TM

**1000Y/577 Vac Maximum, 250 Vdc, 10 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
250	300–650	E2JM3250MAW	E2JM3250F	E2J3250TMA
	450–900	E2JM250MCW	E2JM3250F	E2J3250TMC
	500–1000	E2JM3250MDW	E2JM3250F	E2J3250TMD
	625–1250	E2JM3250MFW	E2JM3250F	E2J3250TMF
	750–1500	E2JM3250MGW	E2JM3250F	E2J3250TMG
	875–1750	E2JM3250MJW	E2JM3250F	E2J3250TMJ
	1000–2000	E2JM3250MKW	E2JM3250F	E2J3250TMK
	1125–2250	E2JM3250MLW	E2JM3250F	E2J3250TML
	1250–2500	E2JM3250MW	E2JM3250F	E2J3250TM

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E<sup>2</sup>K/E<sup>2</sup>KM

*Circuit Breakers with Interchangeable Thermal-Magnetic Trip Unit*

### 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
100	500–1000	E2K3100W	E2K3400F	E2K3100T
125	625–1250	E2K3125W	E2K3400F	E2K3125T
150	750–1500	E2K3150W	E2K3400F	E2K3150T
175	875–1750	E2K3175W	E2K3400F	E2K3175T
200	1000–2000	E2K3200W	E2K3400F	E2K3200T
225	300–650	E2K3225AW	E2K3400F	E2K3225TA
	500–1000	E2K3225DW	E2K3400F	E2K3225TD
	1125–2250	E2K3225W	E2K3400F	E2K3225T
250	1250–2500	E2K3250W	E2K3400F	E2K3250T
300	1500–3000	E2K3300W	E2K3400F	E2K3300T
350	1750–3500	E2K3350W	E2K3400F	E2K3350T
400	2000–4000	E2K3400W	E2K3400F	E2K3400T

### 1000Y/577 Vac Maximum, 250 Vdc, 14 kA at 1000 Vac, Three-Pole

E<sup>2</sup>K/E<sup>2</sup>KM



Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
100	500–1000	E2KM3100W	E2KM3400F	E2K3100T
125	625–1250	E2KM3125W	E2KM3400F	E2K3125T
150	750–1500	E2KM3150W	E2KM3400F	E2K3150T
175	875–1750	E2KM3175W	E2KM3400F	E2K3175T
200	1000–2000	E2KM3200W	E2KM3400F	E2K3200T
225	300–650	E2KM3225AW	E2KM3400F	E2K3225TA
	500–1000	E2KM3225DW	E2KM3400F	E2K3225TD
	1125–2250	E2KM3225W	E2KM3400F	E2K3225T
250	1250–2500	E2KM3250W	E2KM3400F	E2K3250T
300	1500–3000	E2KM3300W	E2KM3400F	E2K3300T
350	1750–3500	E2KM3350W	E2KM3400F	E2K3350T
400	2000–4000	E2KM3400W	E2KM3400F	E2K3400T

E<sup>2</sup>K/E<sup>2</sup>KM*Circuit Breakers with Interchangeable Magnetic Only Trip Unit***600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	300–650	E2K3400MAW	E2K3400F	E2K3400TMA
	500–1000	E2K3400MDW	E2K3400F	E2K3400TMD
	625–1250	E2K3400MFW	E2K3400F	E2K3400TMF
	750–1500	E2K3400MGW	E2K3400F	E2K3400TMG
	875–1750	E2K3400MJW	E2K3400F	E2K3400TMJ
	1000–2000	E2K3400MKW	E2K3400F	E2K3400TMK
	1125–2250	E2K3400MLW	E2K3400F	E2K3400TML
	1250–2500	E2K3400MWW	E2K3400F	E2K3400TMW
	1500–3000	E2K3400MNW	E2K3400F	E2K3400TMN
	1750–3500	E2K3400MRW	E2K3400F	E2K3400TMR
	2000–4000	E2K3400MW	E2K3400F	E2K3400TM

**1000Y/577 Vac Maximum, 250 Vdc, 14 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	300–650	E2KM3250MAW	E2KM3400F	E2K3400TMA
	500–1000	E2KM3400MDW	E2KM3400F	E2K3400TMD
	625–1250	E2KM3400MFW	E2KM3400F	E2K3400TMF
	750–1500	E2KM3400MGW	E2KM3400F	E2K3400TMG
	875–1750	E2KM3400MJW	E2KM3400F	E2K3400TMJ
	1000–2000	E2KM3400MKW	E2KM3400F	E2K3400TMK
	1125–2250	E2KM3400MLW	E2KM3400F	E2K3400TML
	1250–2500	E2KM3400MWW	E2KM3400F	E2K3400TMW
	1500–3000	E2KM3400MNW	E2KM3400F	E2K3400TMN
	1750–3500	E2KM3400MRW	E2KM3400F	E2K3400TMR
	2000–4000	E2KM3400MW	E2KM3400F	E2K3400TM

# 12.5

## Molded Case Circuit Breakers

Mining Service Circuit Breakers

E<sup>2</sup>K/E<sup>2</sup>KM

*Circuit Breakers with Interchangeable Electronic Trip Unit, Long/Instantaneous*

### 600 Vac Maximum, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
100	50–800	E2KE3100W	E2K3400F	KEM3100T
125	50–800	E2KE3125W	E2K3400F	KEM3125T
150	50–800	E2KE3150W	E2K3400F	KEM3150T
200	200–1500	E2KE3200W	E2K3400F	KEM3200T
225	200–1500	E2KE3225W	E2K3400F	KEM3225T
	500–2500	E2KE32252W	E2K3400F	KEM3225T2
400	200–1500	E2KE3400W	E2K3400F	KEM3400T
	500–2500	E2KE34002W	E2K3400F	KEM3400T2

### 1000Y/577 Vac Maximum, 14 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
100	50–800	E2KEM3100W	E2KM3400F	KEM3100T
125	50–800	E2KEM3125W	E2KM3400F	KEM3125T
150	50–800	E2KEM3150W	E2KM3400F	KEM3150T
200	200–1500	E2KEM3200W	E2KM3400F	KEM3200T
225	200–1500	E2KEM3225	E2KM3400F	KEM3225T
	500–2500	E2KEM32252W	E2KM3400F	KEM3225T2
400	200–1500	E2KEM3400W	E2KM3400F	KEM3400T
	500–2500	E2KEM34002W	E2KM3400F	KEM3400T2

**E<sup>2</sup>K/E<sup>2</sup>KM***Circuit Breakers with Interchangeable Electronic Trip Unit, Instantaneous Only***600 Vac Maximum, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
150	50–800	E2KE3150MW	E2K3400F	KEM3150TM
225	200–1500	E2KE3225MW	E2K3400F	KEM3225TM
	500–2500	E2KE3225M2W	E2K3400F	KEM3225TM2
400	200–1500	E2KE3400MW	E2K3400F	KEM3400TM
	500–2500	E2KE3400M2W	E2K3400F	KEM3400TM2

**1000Y/577 Vac Maximum, 14 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
150	50–800	E2KEM3150MW	E2KM3400F	KEM3150TM
225	200–1500	E2KEM3225MW	E2KM3400F	KEM3225TM
	500–2500	E2KEM3225M2W	E2KM3400F	KEM3225TM2
400	200–1500	E2KEM3400MW	E2KM3400F	KEM3400TM
	500–2500	E2KEM3400M2W	E2KM3400F	KEM3400TM2

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup>LME/E<sup>2</sup>LMZ (Series G)

##### Circuit Breakers with Magnetic Only Trip Unit

###### 600 Vac Maximum, 250 Vdc, 65 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	3600–4400	E2LME3400KMW	E2LME3400NN	LT3400KM

###### 1000Y/577 Vac Maximum, 250 Vdc, 10 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	3600–4400	E2LMZ3400KMW	E2LMZ3400NN	LT3400KM

##### Circuit Breakers with Interchangeable Electronic Trip Unit

###### 600 Vac Maximum, 65 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
160	320–1920	E2LME340031W	E2LME3400NN	LT340031M
200	400–2400	E2LME340031W	E2LME3400NN	LT340031M
225	450–2700	E2LME340031W	E2LME3400NN	LT340031M
250	500–3000	E2LME340031W	E2LME3400NN	LT340031M
300	600–3600	E2LME340031W	E2LME3400NN	LT340031M
315	630–3780	E2LME340031W	E2LME3400NN	LT340031M
350	700–4200	E2LME340031W	E2LME3400NN	LT340031M
400	800–4800	E2LME340031W	E2LME3400NN	LT340031M

###### 1000Y/577 Vac Maximum, 10 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
160	320–1920	E2LMZ340031W	E2LMZ3400NN	LT340031M
200	400–2400	E2LMZ340031W	E2LMZ3400NN	LT340031M
225	450–2700	E2LMZ340031W	E2LMZ3400NN	LT340031M
250	500–3000	E2LMZ340031W	E2LMZ3400NN	LT340031M
300	600–3600	E2LMZ340031W	E2LMZ3400NN	LT340031M
315	630–3780	E2LMZ340031W	E2LMZ3400NN	LT340031M
350	700–4200	E2LMZ340031W	E2LMZ3400NN	LT340031M
400	800–4800	E2LMZ340031W	E2LMZ3400NN	LT340031M

E<sup>2</sup>L/E<sup>2</sup>LM

## Circuit Breakers with Interchangeable Thermal-Magnetic Trip Unit

## 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
300	1500–3000	E2L3300W	E2L3600F	E2L3300T
350	1750–3500	E2L3350W	E2L3600F	E2L3350T
400	2000–4000	E2L3400W	E2L3600F	E2L3400T
450	2250–4500	E2L3450W	E2L3600F	E2L3450T
500	2500–5000	E2L3500W	E2L3600F	E2L3500T
600	3000–6000	E2L3600W	E2L3600F	E2L3600T

## 1000Y/577 Vac Maximum, 250 Vdc, 18 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
300	1500–3000	E2LM3300W	E2LM3600F	E2L3300T
350	1750–3500	E2LM3350W	E2LM3600F	E2L3350T
400	2000–4000	E2LM3400W	E2LM3600F	E2L3400T
450	2250–4500	E2LM3450W	E2LM3600F	E2L3450T
500	2500–5000	E2LM3500W	E2LM3600F	E2L3500T
600	3000–6000	E2LM3600W	E2LM3600F	E2L3600T
	1125–2250	—	E2LM3600F	E2L3600TL <sup>①</sup>

**Note**

① 600 ampere thermal 1125–2250 T.A.

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## Molded Case Circuit Breakers

Mining Service Circuit Breakers

E<sup>2</sup>L/E<sup>2</sup>LM

*Circuit Breakers with Interchangeable Magnetic Only Trip Unit*

### 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
600	1125–2250	E2L3600MLW	E2L3600F	E2L3600TML
	1500–3000	E2L3600MNW	E2L3600F	E2L3600TMN
	1750–3500	E2L3600MRW	E2L3600F	E2L3600TMR
	2000–4000	E2L3600MXW	E2L3600F	E2L3600TMX
	2250–4500	E2L3600MYW	E2L3600F	E2L3600TMY
	2500–5000	E2L3600MPW	E2L3600F	E2L3600TMP
	3000–6000	E2L3600MW	E2L3600F	E2L3600TM

### 1000Y/577 Vac Maximum, 250 Vdc, 18 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
600	1125–2250	E2LM3600MLW	E2LM3600F	E2L3600TML
	1500–3000	E2LM3600MNW	E2LM3600F	E2L3600TMN
	1750–3500	E2LM3600MRW	E2LM3600F	E2L3600TMR
	2000–4000	E2LM3600MXW	E2LM3600F	E2L3600TMX
	2250–4500	E2LM3600MYW	E2LM3600F	E2L3600TMY
	2500–5000	E2LM3600MPW	E2LM3600F	E2L3600TMP
	3000–6000	E2LM3600MW	E2LM3600F	E2L3600TM



E<sup>2</sup>L/E<sup>2</sup>LM*Circuit Breakers with Interchangeable Electronic Trip Unit, Long/Instantaneous***600 Vac Maximum, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
300	500–2500	E2LE3300W	E2L3600F	LEM3300T
350	500–2500	E2LE3350W	E2L3600F	LEM3350T
400	500–2500	E2LE3400W	E2L3600F	LEM3400T
	1000–4000	E2LE34002W	E2L3600F	LEM3400T2
600	500–2500	E2LE3600W	E2L3600F	LEM3600T
	2500–5000	E2LE36002W	E2L3600F	LEM3600T2

**1000Y/577 Vac Maximum, 18 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
300	500–2500	E2LEM3300W	E2LM3600F	LEM3300T
350	500–2500	E2LEM3350W	E2LM3600F	LEM3350T
400	500–2500	E2LEM3400W	E2LM3600F	LEM3400T
	1000–4000	E2LEM34002W	E2LM3600F	LEM3400T2
600	500–2500	E2LEM3600W	E2LM3600F	LEM3600T
	2500–5000	E2LEM36002W	E2LM3600F	LEM3600T2

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*Circuit Breakers with Interchangeable Electronic Trip Unit, Instantaneous Only***600 Vac Maximum, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	500–2500	E2LE3400MW	E2L3600F	LEM3400TM
	1000–4000	E2LE3400M2W	E2L3600F	LEM3400TM2
600	500–2500	E2LE3600MW	E2L3600F	LEM3600TM
	1000–4000	E2LE3600M2W	E2L3600F	1483D53G50

**1000Y/577 Vac Maximum, 18 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
400	500–2500	E2LEM3400MW	E2LM3600F	LEM3400TM
	1000–4000	E2LEM3400M2W	E2LM3600F	LEM3400TM2
600	500–2500	E2LEM3600MW	E2LM3600F	LEM3600TM
	1000–4000	E2LEM3600M2W	E2LM3600F	1483D53G50

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup>M/E<sup>2</sup>MM

##### Circuit Breaker with Interchangeable Thermal-Magnetic Trip Unit

###### 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
600	1500–3000	E2M3600W	E2M3800F	E2M3600TN
800	2000–4000	E2M3800W	E2M3800F	E2M3800TX

#### E<sup>2</sup>M/E<sup>2</sup>MM



###### 1000Y/577 Vac Maximum, 250 Vdc, 18 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
600	1500–3000	E2MM3600W	E2MM3800F	E2M3600TN
800	2000–4000	E2MM3800W	E2MM3800F	E2M3800TX

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##### Circuit Breaker with Interchangeable Magnetic Only Trip Unit

###### 600 Vac Maximum, 250 Vdc, 35 kA at 480 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	1500–3000	E2M3800MNW	E2M3800F	E2M3800TMN
	2000–4000	E2M3800MXW	E2M3800F	E2M3800TMX
	2500–5000	E2M3800MPW	E2M3800F	E2M3800TMP
	3000–6000	E2M3800MWW	E2M3800F	E2M3800TMW

###### 1000Y/577 Vac Maximum, 250 Vdc, 18 kA at 1000 Vac, Three-Pole

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	1500–3000	E2MM3800MNW	E2MM3800F	E2M3800TMN
	2000–4000	E2MM3800MXW	E2MM3800F	E2M3800TMX
	2500–5000	E2MM3800MPW	E2MM3800F	E2M3800TMP
	3000–6000	E2MM3800MWW	E2MM3800F	E2M3800TMW

**E<sup>2</sup>M/E<sup>2</sup>MM*****Circuit Breaker with Interchangeable Electronic Trip Unit, Long/Instantaneous*****600 Vac Maximum, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	500–2500	E2ME3800W	E2M3800F	MEM3800T
	1000–4000	E2ME38002W	E2M3800F	MEM3800T2

**1000Y/577 Vac Maximum, 18 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	500–2500	E2MEM3800W	E2MM3800F	MEM3800T
	1000–4000	E2MEM38002W	E2MM3800F	MEM3800T2

***Circuit Breaker with Interchangeable Electronic Trip Unit, Instantaneous Only*****600 Vac Maximum, 35 kA at 480 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	500–2500	E2ME3800MW	E2M3800F	MEM3800TM
	1000–4000	E2ME3800M2W	E2M3800F	MEM3800TM2

**1000Y/577 Vac Maximum, 18 kA at 1000 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Complete Breaker	Frame Only	Trip Unit Only
		Catalog Number	Catalog Number	Catalog Number
800	500–2500	E2MEM3800MW	E2MM3800F	MEM3800TM
	1000–4000	E2MEM3800M2W	E2MM3800F	MEM3800TM2

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup>N/E<sup>2</sup>NM

##### *Circuit Breakers with Electronic Trip Unit, Long/Instantaneous*

###### 600 Vac Maximum, 50 kA at 480 Vac, Three-Pole Frame

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
400	500–2500	E2N3400W
500	500–2500	E2N3500W
600	500–2500	E2N3600W
700	500–2500	E2N3700W
800	500–2500	E2N3800W
900	1250–5000	E2N3900W
1000	1250–5000	E2N310W
1200	1250–5000	E2N312W

###### 1000Y/577 Vac Maximum, 25 kA at 1000 Vac, Three-Pole Frame

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
400	500–2500	E2NM3400W
500	500–2500	E2NM3500W
600	500–2500	E2NM3600W
700	500–2500	E2NM3700W
800	500–2500	E2NM3800W
900	1250–5000	E2NM3900W
1000	1250–5000	E2NM310W
1200	1250–5000	E2NM312W

##### *Circuit Breakers with Electronic Trip Unit, Instantaneous Only*

###### 600 Vac Maximum, 50 kA at 480 Vac, Three-Pole Frame

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
800	500–2500	E2N3800MW
1200	1250–5000	E2N312MW

###### 1000Y/577 Vac Maximum, 25 kA at 1000 Vac, Three-Pole Frame

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
800	500–2500	E2NM3800MW
1200	1250–5000	E2NM312MW

**E<sup>2</sup>R/E<sup>2</sup>RM****Circuit Breakers with Electronic Trip Unit, Long/Instantaneous (Does Not Include Rating Plugs) <sup>①</sup>****600 Vac Maximum, 50 kA at 480 Vac, Three-Pole Frame**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
<b>LS</b>		
1600	2–8 x I <sub>n</sub>	E2R316T33W
2000	2–8 x I <sub>n</sub>	E2R320T33W
<b>LSI</b>		
1600	2–8 x I <sub>n</sub>	E2R316T32W
2000	2–8 x I <sub>n</sub>	E2R320T32W

**1000Y/577 Vac Maximum, 25 kA at 1000 Vac, Three-Pole Frame**

Maximum Continuous Ampere Rating at 40°C	Magnetic Trip Range	Catalog Number
<b>LS</b>		
1600	2–8 x I <sub>n</sub>	E2RM316T33W
2000	2–8 x I <sub>n</sub>	E2RM320T33W
<b>LSI</b>		
1600	2–8 x I <sub>n</sub>	E2RM316T32W
2000	2–8 x I <sub>n</sub>	E2RM320T32W

**Note**<sup>①</sup> Rating plugs: 1600 amperes **16RES16T**; 2000 amperes **20RES20T**.

## Accessories

## Line and Load Terminals

Breaker Type	Maximum Breaker Amperes	Wire Type	AWG Wire Range (No. Conductors)	Catalog Number
E <sup>2</sup> F/E <sup>2</sup> FM	100	Cu/Al	#14–1/0 (1)	<b>3T100FB</b> (package of three)
	150	Cu	#4–4/0 (1)	<b>3T150FB</b> (package of three)
E <sup>2</sup> J/E <sup>2</sup> JM	250	Cu	#4–350 (1)	<b>T250KB</b>
E <sup>2</sup> K/E <sup>2</sup> KM	225	Cu	#3–350 (1)	<b>T300K</b>
	350	Cu	250–500 (1)	<b>T350K</b>
	400	Cu	2/0–250 (2)	<b>3T400K</b> (three-pole kit)
E <sup>2</sup> LME/E <sup>2</sup> LMZ	400	Cu/Al	500–750 (1)	<b>3TA631LK</b>
E <sup>2</sup> L/E <sup>2</sup> LM	400	Cu/Al	4/0–600 (1)	<b>3TA401LDK</b> (three-pole kit)
	600	Cu	250–350 (2)	<b>T602LD</b>
E <sup>2</sup> M/E <sup>2</sup> MM	600	Cu	(2) 2/0–500 kcmil	<b>T600MA1</b>
	600	Cu/Al	(2) 1–500 kcmil	<b>TA700MA1</b>
	800 std.	Cu/Al	(3) 3/0–400 kcmil	<b>TA800MA2</b>
	800	Cu/Al	(2) 500–750 kcmil	<b>TA801MA</b>
	800	Cu	(3) 3/0–300 kcmil	<b>T800MA1</b>
E <sup>2</sup> N/E <sup>2</sup> NM	700	Cu	2/0–500 (2)	<b>T700NB1</b>
	1000	Cu	3/0–500 (3)	<b>T1000NB1</b>
	1200	Cu	3/0–400 (4)	<b>T1200NB3</b>
	1600	Cu/Al	500–1000 (4)	<b>TA1600RD</b>
	2000	Cu/Al	2–600 (6)	<b>TA2000RD</b>

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## End Cap Terminals—For Use with Ring Type Terminals

Breaker Type	Maximum Breaker Amperes	Catalog Number	Metric Catalog Number	Imperial
E <sup>2</sup> F/E <sup>2</sup> FM	150	<b>KPEK1</b>	<b>KPEMK1</b>	—
E <sup>2</sup> J/E <sup>2</sup> JM	250	<b>KPEK2</b>	<b>KPEMK2</b>	—
E <sup>2</sup> K/E <sup>2</sup> KM	400	<b>KPEK3</b>	<b>KPEMK3</b>	—
E <sup>2</sup> LME/E <sup>2</sup> LMZ	400	—	<b>L3RTWK</b>	—
E <sup>2</sup> L/E <sup>2</sup> LM	600	<b>KPEK4</b>	<b>KPEMK4</b>	—

## External Accessories

## Padlockable Handle Lock Hasp

Breaker Type	Catalog Number
E <sup>2</sup> F/E <sup>2</sup> FM	<b>PLK1</b>
E <sup>2</sup> J/E <sup>2</sup> JM	<b>PLK3</b>
E <sup>2</sup> K/E <sup>2</sup> KM	<b>PLK3</b>
E <sup>2</sup> LME/E <sup>2</sup> LMZ	<b>LPHL</b>
E <sup>2</sup> L/E <sup>2</sup> LM	<b>HLK4</b>
E <sup>2</sup> M/E <sup>2</sup> MM	<b>HLK4</b>
E <sup>2</sup> N/E <sup>2</sup> NM	<b>PLK5</b>
E <sup>2</sup> R/E <sup>2</sup> RM	<b>HLK6</b>

**Internal Accessories****Undervoltage Release** ①

Breaker Type	UVR Type	Voltage Rating	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> F/E <sup>2</sup> FM	Handle reset	208–240 Vac	Left pole	UVH1LP11K (thermal/magnetic only) ②	U18
	Handle reset	110–127 Vdc	Left pole	UVH1LP26K (thermal/magnetic only) ②	U42
E <sup>2</sup> J/E <sup>2</sup> JM	Handle reset	110–127 Vac	Left pole	UVH2LP08K ②	U18
	Handle reset	208–240 Vac	Left pole	UVH2LP11K ②	U22
	Handle reset	110–125 Vdc	Left pole	UVH2LP26K ②	T14
E <sup>2</sup> K/E <sup>2</sup> KM	120 volt handle reset with LED	120 Vac	Left pole	UVM3LP08K ②③	U66
	120 volt handle reset with LED	120 Vac	Left pole	UVM3LP08KT ②④	U68
	Handle reset	110–127 Vac	Left pole	UVH3LP08K ②	U18
	Handle reset	208–240 Vac	Left pole	UVH3LP11K ②	U22
	Handle reset	110–125 Vdc	Left pole	UVH3LP26K ②	T14
E <sup>2</sup> LME/E <sup>2</sup> LMZ	Handle reset	110–127 Vac	Left pole	UVR120APK	U5
	Handle reset	110–125 Vdc	Left pole	UVR125DPK	U6
E <sup>2</sup> L/E <sup>2</sup> LM/E <sup>2</sup> M/E <sup>2</sup> MM	120 volt handle reset with LED	120 Vac	Left pole	UVM4LP08K ②③	U66
	120 volt handle reset with LED	120 Vac	Left pole	UVM4LP08KT ②④	U68
	Handle reset	110–127 Vac	Left pole	UVH4LP08K ②	U18
	Handle reset	208–240 Vac	Left pole	UVH4LP11K ②	U22
	Handle reset	110–125 Vdc	Left pole	UVH4LP26K ②	T14
E <sup>2</sup> N/E <sup>2</sup> NM	120 volt handle reset with LED	120 Vac	Left pole	UVM5LP08K ③	U66
	120 volt handle reset with LED	120 Vac	Left pole	UVM5LT08K ④	U68
	Handle reset	110–127 Vac	Left pole	UVH5LP08K ②	U18
	Handle reset	208–240 Vac	Left pole	UVH5LP11K ②	U22
	Handle reset	110–125 Vdc	Left pole	UVH5LP26K ②	T14
E <sup>2</sup> R/E <sup>2</sup> RM	120 volt handle reset with LED	120 Vac	Right pole	UVM6RP08K ③⑤	U58
	Handle reset	110–127 Vac	Right pole	UVH6RP08K ⑤	U49
	Handle reset	208–240 Vac	Right pole	UVH6RP11K ⑤	U53
	Handle reset	110–125 Vdc	Right pole	UVH6RP26K ⑤	T33

**Notes**

- ① Contact Eaton for internal accessory voltage ratings not listed.  
 ② LH (RH also available).  
 ③ Pigtail leads.  
 ④ Terminal blocks.  
 ⑤ RH only.

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### Shunt Trip <sup>①</sup>

Breaker Type	Voltage Rating	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> F/E <sup>2</sup> FM	48–127 Vac or 48–60 Vdc	Left pole	<b>SNT1LP08K</b> <sup>②</sup>	S06
	208–230 Vac or 110–127 Vdc	Left pole	<b>SNT1LP12K</b> <sup>②</sup>	S10
E <sup>2</sup> J/E <sup>2</sup> JM	110–240 Vac or 110–125 Vdc	Left pole	<b>SNT2P11K</b> <sup>③</sup>	S10
E <sup>2</sup> K/E <sup>2</sup> KM	110–240 Vac or 110–125 Vdc	Left pole	<b>SNT3P11K</b> <sup>③</sup>	S10
E <sup>2</sup> LME/E <sup>2</sup> LMZ	24–60 Vac/Vdc	Left pole	<b>SNT060CPK</b>	S1
	110–240 Vac/Vdc	Left pole	<b>SNT120CPK</b>	S2
E <sup>2</sup> L/E <sup>2</sup> LM/E <sup>2</sup> M/E <sup>2</sup> MM	48–60 Vac	Left pole	<b>SNT4LP05K</b> <sup>②</sup>	S06
	48–60 Vdc	Left pole	<b>SNT4LP23K</b> <sup>②</sup>	S86
	110–240 Vac	Left pole	<b>SNT4LP11K</b> <sup>②</sup>	S10
	110–125 Vdc	Left pole	<b>SNT4LP26K</b> <sup>②</sup>	S42
E <sup>2</sup> N/E <sup>2</sup> NM	110–240 Vac	Left pole	<b>SNT5LP11K</b> <sup>②</sup>	S10
	110–125 Vdc	Left pole	<b>SNT5LP26K</b> <sup>②</sup>	S42
E <sup>2</sup> R/E <sup>2</sup> RM	110–240 Vac	Right pole	<b>SNT6P11K</b> <sup>④</sup>	S29
	110–125 Vdc	Right pole	<b>SNT6P26K</b> <sup>④</sup>	S45

#### Alarm (Signal/Lockout Switch)

Breaker Type	Number of Sets of Contacts (Make and Break)	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> F/E <sup>2</sup> FM	1	Right	<b>A1L1LPK/A1L1RPK</b>	B06
	2	Right	<b>A2L1LPK/A2L1RPK</b>	B13
E <sup>2</sup> J/E <sup>2</sup> JM	1	Right	<b>A1L2LPK/A1L2RPK</b>	B06
E <sup>2</sup> K/E <sup>2</sup> KM	1	Right	<b>A1L3LPK/A1L3RPK</b>	B06
	2	Right	<b>A2L3LPK/A2L3RPK</b>	B13
E <sup>2</sup> LME/E <sup>2</sup> LMZ	1	Right	<b>ALM1M1BJPK</b>	B1
	2	Right	<b>ALM2M2BJPK</b>	B3
E <sup>2</sup> L/E <sup>2</sup> LM/E <sup>2</sup> M/E <sup>2</sup> MM	1	Right	<b>A1L4LPK/A1L4RPK</b>	B06
	2	Right	<b>A2L4LPK/A2L4RPK</b>	B13
E <sup>2</sup> N/E <sup>2</sup> NM	1	Right	<b>A1L5LPK/A1L5RPK</b>	B06
	2	Right	<b>A2L5LPK/A2L5RPK</b>	B13
E <sup>2</sup> R/E <sup>2</sup> RM	1	Right	<b>A1L6RPK</b>	B05
	2	Right	<b>A2L6RPK</b>	B12

#### Notes

- ① Contact Eaton for internal accessory voltage ratings not listed.
- ② LH (RH also available).
- ③ LH or RH.
- ④ RH only.

#### Auxiliary Switch

Breaker Type	Number of Sets of Contacts (1A and 1B)	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> F/E <sup>2</sup> FM	1	Right	<b>A1X1PK</b>	A06
	2	Right	<b>A2X1RPK</b>	A13
E <sup>2</sup> J/E <sup>2</sup> JM	1	Right	<b>A1X2PK</b>	A06
	2	Right	<b>A2X2PK</b>	A13
E <sup>2</sup> K/E <sup>2</sup> KM	1	Right	<b>A1X3PK</b>	A06
	2	Right	<b>A2X3PK</b>	A13
E <sup>2</sup> LME/E <sup>2</sup> LMZ	1	Right	<b>AUX1A1BPK</b>	A1
	2	Right	<b>AUX2A2BPK</b>	A2
E <sup>2</sup> L/E <sup>2</sup> LM/E <sup>2</sup> M/E <sup>2</sup> MM	1	Right	<b>A1X4PK</b>	A06
	2	Right	<b>A2X4PK</b>	A13
E <sup>2</sup> N/E <sup>2</sup> NM	1	Right	<b>A1X5PK</b>	A06
	2	Right	<b>A2X5PK</b>	A13
E <sup>2</sup> R/E <sup>2</sup> RM	2	Right	<b>A2X6RPK</b>	A12
	4	Right	<b>A4X6RPK</b>	A19



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### Classic Mining Breakers

#### Product Overview

Classic mining service circuit breakers continue to be manufactured and are primarily applied to achieve an exact physical and electronic replacement of previously Cutler-Hammer

installed Westinghouse equipment. To upgrade to the current offering of E<sup>2</sup> mining circuit breakers, consult the cross reference information on **Page 34**.

#### AC Interrupting Capacity, Symmetrical Amperes

60 Hz AC Volts	Breaker Type				All Other 1000 Volt Breakers <sup>②</sup>
	KAM	LAM, MAM, NBM	HKAM	HLAM <sup>②</sup>	
240	25,000	42,000	—	—	—
480	22,000	30,000	—	—	—
600	22,000	22,000	—	—	—
1000 <sup>①</sup>	—	—	10,000	12,000	14,000

#### Special DC Interrupting Capacity

Breaker Type	Maximum Ampere Rating	Interrupting Capacity (Amperes) at 300–330 Vdc			
		Single-Pole		Two Poles in Series <sup>④</sup>	
		0.0–0.15 mH Inductance <sup>③</sup>	0.15–0.5 mH Inductance	0.5–0.9 mH Inductance	2.4 mH Inductance
KAM	225	15,000	10,000	15,000	5000
LAM	400/600	15,000	10,000	15,000	5000
MAM	800	15,000	10,000	15,000	5000
NBM	1200	15,000	10,000	15,000	5000

#### Notes

- ① Based on circuit power factor of 50% or greater.
- ② HLAM must be rear stud connected. If front connected, interrupting capacity rating is 10,000 amperes.
- ③ Resistive circuit.
- ④ Two poles in electrical series in ungrounded leg of circuit.

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### Classic Circuit Breakers For Mining Service

##### Undervoltage Release Data

Undervoltage releases are calibrated to pick up at 72 to 85% of rated voltage dropout between 35 to 70% of rated voltage.

Breaker Type	Volts	Line Amperes	Series Resistors <sup>①</sup>	Total VA
KAM, HKAM <sup>①</sup>	480/60	0.021	10,000	10.1
	240/60	0.019	—	4.6
	120/60	0.021	—	2.5
	120/60 <sup>②</sup>	0.13	—	15.6
LAM, HLAM, MAM, HMAM, NBM, HNB M <sup>①</sup>	480/60	0.033	12,000 <sup>③</sup>	15.9
	240/60	0.028	6,000	6.7
	120/60	0.029	—	3.5
	120/60 <sup>②</sup>	0.13	—	15.6

##### Shunt Trip Coil Data

Breaker Type	Volts	Amperes	VA
KAM, HKAM, LAM, HLAM, MAM, HMAM, NBM, HNB M	480/60	0.085	40.8
	240/60	1.7	408
	120/60	0.88	105.6
	48 DC	8.0	384

##### Notes

- ① Supplied for external customer mounting.
- ② New design electrical reset UVR.
- ③ 16,000 for Type MAM and HMAM.

**Product Selection**

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page 34**.

**Classic Mining Service Circuit Breakers**

Breaker Type	Frame Style Numbers <sup>①②</sup>	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes <sup>③</sup>
KAM	2609D60G64	2	180	M	None	200–400
	1291C26G07	2	180	M	UVR <sup>④</sup>	200–400
	2609D60G66	2	180	M	Standard shunt trip <sup>③</sup>	200–400
	1291C26G01	2	225	TM	UVR <sup>④</sup>	300–700
	1291C26G02	2	225	TM	UVR <sup>④</sup>	500–1000
	2609D60G67	3	180	M	None	200–400
	1291C26G08	3	180	M	UVR <sup>④</sup>	200–400
	2609D60G69	3	180	M	Standard shunt trip <sup>③</sup>	200–400
	5685D48G75	3	225	TM	None	300–700
	5685D48G74	3	225	TM	None	500–1000
	1291C26G03	3	225	TM	UVR <sup>④</sup>	300–700
	1291C26G04	3	225	TM	UVR <sup>④</sup>	500–1000
	2609D60G01	3	225	TM	Standard shunt trip <sup>③</sup>	300–700
	2609D60G02	3	225	TM	Standard shunt trip <sup>③</sup>	500–1000
	2609D60G40	3	225	M	None	300–700
	2609D60G41	3	225	M	None	500–700
	1291C26G05	3	225	M	UVR <sup>④</sup>	300–700
	1291C26G06	3	225	M	UVR <sup>④</sup>	500–1000
LAM	1291C32G01	2	400	TM	UVR <sup>④</sup>	500–1000
	2609D60G61	2	400	M	Shunt trip (48 Vdc)	750–1500
	1291C32G03	3	400	TM	UVR <sup>④</sup>	500–1000
	5685D48G73	3	400	TM	None	800–1600
	1291C32G02	3	400	TM	UVR <sup>④</sup>	800–1600
	2609D60G03	3	400	TM	Standard shunt trip <sup>③</sup>	800–1600
	2609D60G44	3	400	M	None	800–1600
	1291C32G04	3	400	M	UVR <sup>④</sup>	800–1600

**Notes**

- ① Terminals not included in style number.
- ② All breakers listed are complete with accessories indicated.
- ③ Rated 120 volts/60 Hz: undervoltage release is handle reset type.
- ④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page 34**.

#### Classic Mining Service Circuit Breakers, continued





Breaker Type	Frame Style Numbers <sup>①②</sup>	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes <sup>③</sup>
MAM	2609D60G17	2	600	TM	UVR <sup>③</sup>	750–1500
	2609D60G18	2	800	TM	UVR <sup>③</sup>	1000–2000
	2609D60G63	3	400	TM	UVR <sup>③</sup>	2000–4000
	5685D48G72	3	600	TM	None	1500–3000
	2609D60G19	3	600	TM	UVR <sup>③</sup>	1500–3000
	2609D60G04	3	600	TM	Standard shunt trip <sup>③</sup>	1500–3000
	2609D60G05	3	800	TM	Standard shunt trip <sup>③</sup>	2000–4000
	5685D48G71	3	800	TM	None	2000–4000
	2609D60G20	3	800	TM	UVR <sup>③</sup>	2000–4000
	2609D60G46	3	800	M	None	1500–3000
	2609D60G47	3	800	M	UVR <sup>③</sup>	1500–3000
	2609D60G48	3	800	M	None	2000–4000
	2609D60G49	3	800	M	UVR <sup>③</sup>	2000–4000
	NBM	1229C37G13	2	1000	TM	UVR <sup>④</sup>
1229C37G14		2	1200	TM	UVR <sup>④</sup>	2000–4000
1227C36G10		3	1000	TM	None	2500–5000
1229C37G15		3	1000	TM	UVR <sup>④</sup>	2500–5000
1227C36G13		3	1000	TM	Standard shunt trip <sup>③</sup>	2500–5000
1227C36G14		3	1200	TM	Standard shunt trip <sup>③</sup>	2500–5000
1227C36G09		3	1200	TM	None	2500–5000
1229C37G16		3	1200	TM	UVR <sup>④</sup>	2500–5000
1227C36G19		3	1200	M	None	2500–5000
1229C37G17		3	1200	M	UVR <sup>④</sup>	2500–5000

#### Notes

- ① Terminals not included in style number.
- ② All breakers listed are complete with accessories indicated.
- ③ Rated 120 volts/60 Hz; undervoltage release is handle reset type.
- ④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.

## 1000 Volt Classic Mining Service Circuit Breakers

Breaker Type	Frame Style Numbers	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes <sup>①</sup>	
<b>HKAM</b> 	HKAM	<b>2609D60G70</b>	3	180	M	None	200–400
		<b>1291C26G16</b>	3	180	M	UVR <sup>②</sup>	200–400
		<b>5685D48G87</b>	3	225	TM	None	300–700
		<b>1291C26G12</b>	3	225	TM	UVR <sup>②</sup>	300–700
		<b>5685D48G86</b>	3	225	TM	None	500–1000
		<b>1291C26G13</b>	3	225	TM	UVR <sup>②</sup>	500–1000
		<b>1291C26G14</b>	3	225	M	UVR <sup>②</sup>	300–700
		<b>1291C26G15</b>	3	225	M	UVR <sup>②</sup>	500–1000
<b>HLAM</b> 	HLAM	<b>5685D48G85</b>	3	400	TM	None	800–1600
		<b>1291C32G07</b>	3	400	TM	UVR <sup>②</sup>	800–1600
		<b>1291C32G09</b>	3	400	M	UVR <sup>②</sup>	800–1600
<b>HMAM</b> 	HMAM	<b>5685D48G84</b>	3	600	TM	None	1500–3000
		<b>2609D60G28</b>	3	600	TM	UVR <sup>③</sup>	1500–3000
		<b>5685D48G83</b>	3	800	TM	None	2000–4000
		<b>2609D60G29</b>	3	800	TM	UVR <sup>③</sup>	2000–4000
		<b>2609D60G57</b>	3	800	M	UVR <sup>③</sup>	1500–3000
		<b>2609D60G58</b>	3	800	M	UVR <sup>③</sup>	2000–4000
<b>HNAM</b> 	HNBM	<b>1227C36G12</b>	3	1000	TM	None	2500–5000
		<b>1229C37G19</b>	3	1000	TM	UVR <sup>②</sup>	2500–5000
		<b>1227C36G11</b>	3	1200	TM	None	2500–5000
		<b>1229C37G20</b>	3	1200	TM	UVR <sup>②</sup>	2500–5000
		<b>1229C37G18</b>	3	1200	M	UVR <sup>②</sup>	2500–5000

**Notes**

① The magnetic trip range does not change when rating plug is changed.

② 120 volt, 60 Hz electrical reset type.

③ Rated 120 volts, 60 Hz; undervoltage release is handle reset type.

M = magnetic only; TM = thermal-magnetic.

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### Classic Mining Service Breaker Frames Only

Breaker Type	Frame Size, Amperes	Number of Poles	Style Numbers
KAM ①	225	2	2602D86G11
	225	3	2602D86G12
KAMH ①	225	2	2602D86G13
	225	3	2602D86G14
HKAM ①	225	3	1264C99G05
LAM ②	400	2	2602D99G05
	400	3	2602D99G06
LAMH ②	400	2	2602D99G07
	400	3	2602D99G08
HLAM ②	400	3	1264C99G02
LAM3600F	600	3	2603D48G07
LAMH3600F	600	3	2603D48G08
HLAM3600F	600	3	2603D48G09

Breaker Type	Frame Size, Amperes	Number of Poles	Style Numbers
MAM ②	800	2	2600D43G11
	800	3	2600D43G12
MAMH ②	800	2	2600D43G13
	800	3	2600D43G14
HMAM ②	800	3	1264C99G03
NBM ②	1200	2	2610D64G07
	1200	3	2610D64G08
NBMH ②	1200	2	2610D64G09
	1200	3	2610D64G10
HNBM ②	1200	3	2610D64G13

#### Trip Units for Classic Mining Circuit Breakers

Breaker Type	Conductor Size	Magnetic Trip Range, Amperes	Maximum Continuous Amperes	Thermal-Magnetic Three-Pole ③ Style Numbers	Magnetic Only Three-Pole Style Numbers
HKAM	#6	150–400	180	—	2609D99G22
	#4–#3	300–700	225	5685D48G40	2611D75G01
	#4–#1	500–1000	225	5685D48G34	2611D75G02
HLAM	#4–#1	750–1500	400	5685D48G97	2609D99G21
	#2–#2/0	800–1600	400	5685D48G28	2611D75G03
HLAM600	#2–2/0	750–1500	600	2609D99G20	—
	2/0–500 kcmil	1500–3000	600	2609D99G19	—
HMAM	#2–#2/0	750–1500	600	—	—
	2/0–500 kcmil	1500–3000	600	5685D48G22	2611D75G04 ④
	#1–3/0	1000–2000	800	—	—
	3/0–500 kcmil	2000–4000	800	5685D48G16	2611D75G05
HNBM	2/0–500 kcmil	1500–3000	1000	—	—
	4/0–500 kcmil	2500–5000	1000	5685D48G10	—
	3/0–500 kcmil	2000–4000	1200	—	—
	4/0–500 kcmil	2500–5000	1200	5685D48G04	2611D75G07

#### Notes

- ① Frame modified for left-hand mounting of UVR attachment.
- ② Frame modified for right-hand mounting of UVR attachment.
- ③ Three-pole trip units only are suitable for replacement in 1000 volt mining service circuit breakers.
- ④ 800 amperes.

**Terminals For Classic Mining Service Breakers**

Terminals are UL listed for wire type and range listed below.  
When used with aluminum conductors, use joint compound.

Breaker Type	Terminal Type	Maximum Amperes	Package of 3 Line Terminals Style Number	Wire Range, Type
FBM, HFBM	Style pressure type terminals	100	<b>624B100G02</b>	#14–1/0 Al/Cu
	Optional Al/Cu pressure terminals	50	<b>624B100G10</b>	#14–#4 Al/Cu
		100	<b>624B100G17</b>	# 4–4/0 Al/Cu

**Terminals For Mining Service Breakers**

Breaker Type	Terminal Type	Maximum Amperes	Terminal Catalog Number	Wire Range, Type Number of Cables
KAM, HKAM	Standard pressure terminals (copper only)	225	<b>T225LA</b>	(1) #6–350 kcmil
	Optional Al/Cu pressure terminals	225	<b>TA225LA1</b>	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al
LAM	Standard copper pressure terminals	225	<b>T225LA</b>	(1) #6–350 kcmil Cu
		400	<b>T401LA</b>	(1) #4–250 kcmil Cu plus (1) 3/0–600 kcmil Cu
	Optional Al/Cu pressure terminals	225	<b>TA225LA1</b>	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al
		400	<b>TA400LA1</b>	(1) #4–250 kcmil Al/Cu, plus (1) 3/0–600 kcmil Al/Cu
		400	<b>TA401LA</b>	(1) 600–750 kcmil Al
		400	<b>TA401LA</b>	(1) 600–750 kcmil Al
LAM-600, LAMH-600, HLAM-600	Standard copper pressure terminals	600	<b>T600LA</b>	(2) 250–500 kcmil Cu
	Optional Al/Cu pressure terminals	600	<b>TA600LA</b>	(2) 250–500 kcmil Al/Cu
MAM, HMAM, MAMH	Standard copper pressure terminals	350	<b>T350MA</b>	(1) #1–600 kcmil Cu
		600	<b>T600MA1</b>	(2) 2/0–500 kcmil Cu
		800	<b>T800MA1</b>	(3) 3/0–300 kcmil Cu
	Optional Al/Cu pressure terminals	600	<b>TA700MA1</b>	(2) #1–500 kcmil Al/Cu
		800	<b>TA800MA2</b>	(3) 3/0–400 kcmil Al/Cu
		800	<b>TA801MA</b>	(2) 500–750 kcmil Al/Cu
NBM, HNBM, NBMH	Standard copper pressure terminals	1000	<b>T1000NB1</b>	(3) 3/0–500 kcmil Cu
		1200	<b>T1200NB1</b>	(4) 3/0–400 kcmil Cu
	Optional Al/Cu pressure terminals	1000	<b>TA1000NB1</b>	(3) 3/0–400 kcmil Al/Cu
		1200	<b>TA1200NB1</b>	(4) 4/0–500 kcmil Al/Cu
		1200	<b>TA1201NB1</b>	(3) 500–750 kcmil Al/Cu

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## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### Accessories

##### Classic Mining Circuit Breakers

##### Rear Connected Studs <sup>①</sup>

For complete stud assembly, order a stud and tube based on thickness of customer's mounting panel. A short stud must be assembled adjacent to a long stud to maintain

clearances required by Underwriters Laboratories.<sup>②</sup> Two studs required per pole. For List Prices, see Eaton's Price and Availability Digest.

Mounting Panel Thickness In Inches (mm)	Stud		Tube	
	Length	Style Numbers	Length In Inches (mm)	Style Numbers
<b>KAM, HKAM Breakers</b>				
0.75 (19.1)–1.00 (25.4)	Short	<b>656D565G01</b>	0.84 (21.3)	<b>456D983H05</b>
	Long	<b>656D565G02</b>	3.78 (96.0)	<b>456D983H08</b>
0.50 (12.7)–0.75 (19.1)	Short	<b>656D565G01</b>	1.09 (27.7)	<b>456D983H06</b>
	Long	<b>656D565G02</b>	4.03 (102.4)	<b>456D983H09</b>
0.25 (6.4)–0.50 (12.7)	Short	<b>656D565G01</b>	1.34 (34.0)	<b>456D983H07</b>
	Long	<b>656D565G02</b>	4.28 (108.7)	<b>456D983H10</b>

##### Rear Connected Studs For Insulated Panels Only: Two Per Pole

Stud Ampere Number	Diameter, In Inches (mm) and Thread	Extension Back of Breaker In Inches (mm)	Stud Style Numbers
<b>LAM, HLAM Breakers</b>			
225 <sup>③</sup>	0.50 (12.7)–13	3.22 (81.8)	<b>1241 345</b>
	0.50 (12.7)–13	6.28 (159.5)	<b>1241 346</b>
225 <sup>③④</sup>	0.50 (12.7)–13	4.97 (126.2)	<b>1241 392</b>
400 <sup>③</sup>	0.75 (19.1)–16	5.47 (138.9)	<b>05B7383G22</b>
	0.75 (19.1)–16	7.97 (202.4)	<b>05B7383G23</b>
	0.75 (19.1)–16	10.47 (265.9)	<b>05B7383G24</b>
600	1.00 (25.4)–12	5.91 (150.1)	<b>314C960G16</b>
	1.00 (25.4)–12	8.41 (213.6)	<b>314C960G17</b>
	1.00 (25.4)–12	10.91 (277.1)	<b>314C960G18</b>
<b>MAM, HMAM, MAMH Breakers</b>			
225	0.50 (12.7)–13	3.66 (93.0)	<b>314C960G01</b>
400	0.75 (19.1)–16	5.91 (150.1)	<b>314C960G04</b>
	0.75 (19.1)–16	8.41 (213.6)	<b>314C960G05</b>
	0.75 (19.1)–16	10.91 (277.1)	<b>314C960G06</b>
600	1.00 (25.4)–12	5.91 (150.1)	<b>314C960G07</b>
	1.00 (25.4)–12	8.41 (213.6)	<b>314C960G08</b>
	1.00 (25.4)–12	10.91 (277.1)	<b>314C960G09</b>
800	1.13 (28.7)–12	4.91 (124.7)	<b>314C960G10</b>
	1.13 (28.7)–12	8.41 (213.6)	<b>314C960G11</b>
	1.13 (28.7)–12	10.91 (277.1)	<b>314C960G12</b>
<b>NBM, HNB, NBMH Breakers</b>			
800	1.13 (28.7)–12	5.50 (139.7)	<b>623B222G01</b>
	1.13 (28.7)–12	8.00 (203.2)	<b>623B222G02</b>
	1.13 (28.7)–12	10.50 (266.7)	<b>623B222G03</b>
1200	1.25 (31.8)–12	5.50 (139.7)	<b>373B375G04</b>
	1.25 (31.8)–12	10.50 (266.7)	<b>373B375G03</b>

##### Line and Load Terminal Shields <sup>⑤</sup>

Breaker Type	Description	Style Numbers
KAM	Line terminals	<b>1261C93G01</b>
	Load terminals	<b>1262C46G01</b>
LAM-400	Line terminals	<b>1261C95G01</b>
	Load terminals	<b>1262C48G01</b>
MAM	Line terminals	<b>1261C97G01</b>
	Load terminals	<b>1261C97G02</b>

##### Notes

- ① Not UL listed.
- ② 400 ampere LA studs of the same length have sufficient clearance; however, customer connections may make it necessary to use a short stud adjacent to a long stud.
- ③ 150, 300 and 400 ampere frames only.
- ④ This is a special stud that includes six contact nuts for use where bus contact nuts must be used.
- ⑤ For breakers used with terminals and cable connections. Sold in packages of 10.



**Standard Handle Reset Undervoltage Release**

For Classic breakers field mountable on special frames listed on **Page 34**, or replacement on breakers originally equipped with this type UVR.

For undervoltage protection. A solenoid device mounts within breaker case. Coil must be energized before closing breaker. Trips breaker

when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 72 to 85% of coil rating. For line voltages up to 250 Vdc or 600 Vac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

Breaker Type	Volts	Style Numbers
<b>Right-Hand Mounting</b>		
LAM, HLAM	120 Vac	<b>4995D12G11</b>
	120 Vac <sup>①</sup>	<b>1228C76G03</b>
	240 Vac	<b>4995D12G13</b>
	480 Vac	<b>4995D12G14</b>
	125 Vdc	<b>4995D12G09</b>
MAM, HMAM, MAMH	120 Vac	<b>5672D69G11</b>
	120 Vac <sup>①</sup>	—
	240 Vac	<b>5672D69G13</b>
	480 Vac	<b>5672D69G14</b>
NBM, HNBM, NBMH	120 Vac	<b>4995D11G11</b>
	120 Vac <sup>①</sup>	<b>1229C35G03</b>
	240 Vac	<b>4995D11G13</b>
	480 Vac	<b>4995D11G14</b>
<b>Left-Hand Mounting</b>		
KAM, HKAM	120 Vac	<b>4995D10G01</b>
	120 Vac <sup>①</sup>	<b>1228C76G03</b>
	240 Vac	<b>4995D10G03</b>
	480 Vac	<b>4995D10G04</b>

**Shunt Trips**

For tripping breaker from a remote point. A solenoid device mounts within breaker case. Breaker trips when coil is energized. A cutoff switch breaks the circuit to the momentary rated coil when breaker opens. Available for

control voltages up to 250 Vdc or 600 Vac. Voltage and frequency must be specified. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

Breaker Type	Volts (50–60 Hz)	Style Numbers
<b>Right-Hand Mounting</b>		
KAM, HKAM	480 Vac	<b>2605D15G16</b>
	240 Vac	<b>2605D15G17</b>
	120 Vac	<b>2605D15G19</b>
LAM, HLAM	480 Vac	<b>2606D56G16</b>
	240 Vac	<b>2606D56G17</b>
	120 Vac	<b>2606D56G19</b>
	48 Vdc	<b>2606D56G07</b>
MAM, HMAM, MAMH	480 Vac	<b>2606D57G16</b>
	240 Vac	<b>2606D57G17</b>
	120 Vac	<b>2606D57G19</b>
NBM, HNBM, NBMH	480 Vac	<b>2606D58G16</b>
	240 Vac	<b>2606D58G17</b>
	120 Vac	<b>2606D58G19</b>
<b>Left-Hand Mounting</b>		
KAM, HKAM	480 Vac	<b>2605D15G02</b>
	240 Vac	<b>2605D15G03</b>
	120 Vac	<b>2605D15G05</b>
LAM, HLAM	480 Vac	<b>2606D56G02</b>
	240 Vac	<b>2606D56G03</b>
	120 Vac	<b>2606D56G05</b>
MAM, HMAM, MAMH	480 Vac	<b>2606D57G02</b>
	240 Vac	<b>2606D57G03</b>
	120 Vac	<b>2606D57G05</b>
NBM, HNBM, NBMH	480 Vac	<b>2606D58G02</b>
	240 Vac	<b>2606D58G03</b>
	120 Vac	<b>2606D58G05</b>

**Notes**

- ① Electrical reset UVR.
- ② Auto reset type.

## Reference Information

E<sup>2</sup> Cross-Reference

Series C Mining	Superseded by E <sup>2</sup> Mining
1491D72G31	E2J3070T
1491D72G32	E2J3090T
1491D72G33	E2J3100T
1491D72G37	E2J3200T
6622C87G27	E2K3225AWU66
6622C87G28	E2K3225DWU66
6622C87G32	E2K3400GWU66
E2KM3100	E2KEM3100W
E2KM3100U66	E2KEM3100WU66
E2KM3125	E2KEM3125W
E2KM3125U66	E2KEM3125WU66
E2KM3150	E2KEM3150W
E2KM3150MU66	E2KEM3150WU66
E2KM3150TM	E2KEM3150MW
E2KM3150U66	E2KEM3150MWU66
E2KM3200	E2KEM3200W
E2KM3200U66	E2KEM3200WU66
E2KM3225	E2KEM3225W
E2KM3225F	E2KM3400F
E2KM3225FUV	E2KM3400F
E2KM3225MU66	E2KEM3225MWU66
E2KM3225TM	E2KEM3225TM
E2KM3225U66	E2KEM3225WU66
E2LM3300U66	E2LEM3300WU66
E2LM3350U66	E2LEM3350WU66
E2LM3400U66	E2LEM3400WU66
E2LM3400F	E2LM3600F
E2LM3400FUV	E2LM3600F
E2LM3400M2U66	E2LEM3400M2WU66
E2LM3400MU66	E2LEM3400MWU66
E2LM3400U66	E2LEM3400WU66
FDBM3015	E2F3015
FDBM3015WU62	E2F3015WU62
FDBM3020	E2F3020
FDBM3025	E2F3025
FDBM3025U62	E2F3025U62
FDBM3030	E2F3030
FDBM3030U62	E2F3030WU62
FDBM3030WU62	E2F3030WU62
FDBM3035	E2F3035

Series C Mining	Superseded by E <sup>2</sup> Mining
FDBM3040	E2F3040
FDBM3045	E2F3045
FDBM3050	E2F3050
FDBM3050U62	E2F3050U62
FDBM3050WU62	E2F3050WU62
FDBM3060	E2F3060
FDBM3070	E2F3070
FDBM3070WU62	E2F3070WU62
FDBM3080	E2F3080
FDBM3090	E2F3090
FDBM3100	E2F3100
FDBM3100LM04U62	E2F3100M04U62
FDBM3125	E2F3125
FDBM3150	E2F3150
FDBM3150L	E2F3150L
FDM3015	E2F3015
FDM3015L	E2F3015L
FDM3015LU62	E2F3015LU62
FDM3020	E2F3020
FDM3020LU62	E2F3020LU62
FDM3025	E2F3025
FDM3025L	E2F3025L
FDM3025LS22	E2F3025LS22
FDM3025LU62	E2F3025LU62
FDM3030	E2F3030
FDM3030LS22	E2F3030LS22
FDM3040	E2F3040
FDM3040L	E2F3040L
FDM3040LU62	E2F3040LU62
FDM3050	E2F3050
FDM3050LU62	E2F3050LU62
FDM3050U62	E2F3050U62
FDM3060	E2F3060
FDM3060LU62	E2F3060LU62
FDM3070	E2F3070
FDM3070A02U62	E2F3070A02U62
FDM3080	E2F3080
FDM3090	E2F3090
FDM3100	E2F3100
FDM3100LS22	E2F3100LS22

**E<sup>2</sup> Cross-Reference, continued**

<b>Series C Mining</b>	<b>Superseded by E<sup>2</sup> Mining</b>
FDM3100LU62	E2FLU62
FDM3125	E2F3125
FDM3125LU62	E2F3125LU62
FDM3150	E2F3150
HFD003AM	E2F003AM
HFD003AML62	E2F003AML62
HFD007CM	E2F007CM
HFD007CMU62	E2F007CMU62
HFD015EM	E2F015EM
HFD015EMA02	E2F015EMA02
HFD015EMLU62	E2F015EMLU62
HFD015EMU62	E2F015EMU62
HFD030HM	E2F030HM
HFD030HMLU62	E2F030HMLU62
HFD030HMU62	E2F030HMU62
HFD050KM	E2F050KM
HFD050KML	E2F050KML
HFD050KMLU62	E2F050KMLU62
HFD050KMU62	E2F050KMU62
HFD070MM	E2F070MM
HFD070MMU62	E2F070MMU62
HFD1001M	E2F1001M
HFD1001MS22	E2F1001MS22
HFD100LM	E2F100LM
HFD100LMA02	E2F100LMA02
HFD100LMU62	E2F100LMU62
HFD100RM	E2F100RM
HFD100RML	E2F100RML
HFD100RMS22	E2F100RMS22
HFD100RMU62	E2F100RMU62
HFD150TM	E2F150TM
HFD150TML	E2F150TML
HFD150TMU62	E2F150TMU62
HFD150UM	E2F150UM
JCDA2D1S30	E2JM250MDA2D1S30
JCMA2D1S30	E2JM250MFA2D1S30
JDCM3070W	E2JM3070W
JDCM3090W	E2JM3090W
JDCM3100W	E2JM3100W
JDCM3125W	E2JM3125W

<b>Series C Mining</b>	<b>Superseded by E<sup>2</sup> Mining</b>
JDCM3150W	E2JM3150W
JDCM3175W	E2JM3175W
JDCM3200W	E2JM3200W
JDCM3225A5W	E2JM3225AW
JDCM3225D5W	E2JM3225DW
JDCM3225W	E2JM3225W
JDCM3250A5MW	E2JM3250MAW
JDCM3250A5MWU18	E2JM3250MAWU18
JDCM3250A5W	E2JM3250AW
JDCM3250C5MW	E2JM3250MCW
JDCM3250D5MW	E2JM3250MDW
JDCM3250D5MWA06	E2JM3250MDWA06
JDCM3250D5W	E2JM3250DW
JDCM3250D5WS10	E2JM3250DWS10
JDCM3250F	E2JM3250F
JDCM3250F5MD01	E2JM3250MFD01
JDCM3250F5MW	E2JM3250MFW
JDCM3250G5MW	E2JM3250MGW
JDCM3250G5WA02D01	E2JM3250MGA02D01
JDCM3250J5MW	E2JM3250MJW
JDCM3250J5MWA02	E2JM3250MJA02
JDCM3250J5WA02D01	E2JM3250MJA02D01
JDCM3250J5WD01	E2JM3250MJD01
JDCM3250K5MW	E2JM3250MKW
JDCM3250L5MW	E2JM3250MLW
JDCM3250MW	E2JM3250MW
JDCM3250W	E2JM3250W
JDCMAA2D1	E2JM3250MMA02D01
JDCMDD1S30	E2JM3250MDS30D01
JDCMFD01	E2JM3250MFD01
JDCMGA02D1	E2JM3250MGA02D01
JDCMJA2D1	E2JM3250MJA02D01
JDCMJD01	E2JM3250MJD01
JDM2250F	E2JM3250F
JDM3070W	E2J3070W
JDM3090W	E2J3090W
JDM3100W	E2J3100W
JDM3125W	E2J3125W
JDM3150W	E2J3150W
JDM3150WU18	E2J3150WU18

# 12.5

## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup> Cross-Reference, continued

Series C Mining	Superseded by E <sup>2</sup> Mining
JDM3175W	E2J3175W
JDM3200W	E2J3200W
JDM3200WA06	E2J3200WA06
JDM3225A5W	E2J3225AW
JDM3225D5W	E2J3225DW
JDM3225W	E2J3225W
JDM3250A5MW	E2J3250MAW
JDM3250A5W	E2J3250AW
JDM3250C5MW	E2J3250CW
JDM3250D5MW	E2J3250MDW
JDM3250D5W	E2J3250DW
JDM3250F	E2J3250F
JDM3250F5MW	E2J3250MFW
JDM3250G5MW	E2J3250MGW
JDM3250J5MW	E2J3250MJW
JDM3250K5MW	E2J3250MKW
JDM3250L5MW	E2J3250MLW
JDM3250MW	E2J3250MW
JDM3250W	E2J3250W
JDM3250WS10	E2J3250WS10
JM2225T1125-2250	E2J3225T
JM3070T	E2J3070T
JM3090T	E2J3090T
JM3100T	E2J3100T
JM3125T	E2J3125T
JM3150T	E2J3150T
JM3175T	E2J3175T
JM3200T	E2J3200T
JM3225T	E2J3225T
JM3225TA5	E2J3225TA
JM3225TD5	E2J3225TD
JM3250T	E2J3250T
JM3250TA5	E2J3250TA
JM3250TA5M_350-700	E2J3250TMA
JM3250TC5M	E2J3250TMC
JM3250TD5_500-1000	E2J3250TMD
JM3250TF5M_625-1250	E2J3250TMF
JM3250TG5M_750-1500	E2J3250TMG
JM3250TJ5M_875-1750	E2J3250TMJ
JM3250TK5M_1000-2000	E2J3250TMK

Series C Mining	Superseded by E <sup>2</sup> Mining
JM3250TL5M_1125-2250	E2J3250TML
JM3250TM	E2J3250TM
KDCM3100W	E2KM3100W
KDCM3125W	E2KM3125W
KDCM3150W	E2KM3150W
KDCM3175W	E2KM3175W
KDCM3200W	E2KM3200W
KDCM3225A5MW	E2KM3200MAW
KDCM3225D5MW	E2KM3200MDW
KDCM3225W	E2KM3225W
KDCM3250W	E2KM3250W
KDCM3250WU18	E2KM3250WU18
KDCM3300W	E2KM3300W
KDCM3350W	E2KM3350W
KDCM3400D5MA02D09H04	E2KM3400MDA02D09H04
KDCM3400D5MW	E2KM3400MDW
KDCM3400D5MWA02D07	E2KM3400MDA02D07
KDCM3400D5W	E2KM3400DW
KDCM3400D5WD09	E2KM3400DD09
KDCM3400F	E2KM3400F
KDCM3400F5MW	E2KM3400MFW
KDCM3400FD09G04	E2KM3400MFD09G04
KDCM3400G5MW	E2KM3400MGD09G05
KDCM3400G5MWD09H04	E2KM3400MGD09H04
KDCM3400G5W	E2KM3400MGW
KDCM3400G5WD07	E2KM3400MGD07
KDCM3400J5MA02D09	E2KM3400MJA02D09
KDCM3400J5MA2D9G4S30	E2KM3400MJA2D9G4S30
KDCM3400J5MD09	E2KM3400MJD09
KDCM3400J5MD09H04S30	E2KM3400MJD09H04S30
KDCM3400J5MW	E2KM3400MJW
KDCM3400J5MWA02D07	E2KM3400MJA02D07
KDCM3400J5MWA06	E2KM3400MJWA06
KDCM3400J5MWD07S30	E2KM3400MJD07S30
KDCM3400J5WD07	E2KM3400MJD07
KDCM3400K5MW	E2KM3400MKW
KDCM3400K5MWS10	E2KM3400MKWS10
KDCM3400K5MWU18	E2KM3400MKWU18
KDCM3400L5MW	E2KM3400MLW
KDCM3400L5MWD09H04	E2KM3400MLD09H04

**E<sup>2</sup> Cross-Reference, continued**

<b>Series C Mining</b>	<b>Superseded by E<sup>2</sup> Mining</b>
KDCM3400L5MWS10	E2KM3400MLWS10
KDCM3400L5WD07	E2KM3400MLD07
KDCM3400MW	E2KM3400MW
KDCM3400N5MW	E2KM3400MNW
KDCM3400N5MWA06	E2KM3400MNWA06
KDCM3400N5WA02D07	E2KM3400MNA02D07
KDCM3400R5MW	E2KM3400MRW
KDCM3400W	E2KM3400W
KDCM3400W5MW	E2KM3400MWW
KDCMDMD07	E2KM3400MDD07
KDCMNA2D7	E2KM3400MNA02D07
KDM2400F	E2K2400F
KDM2400G5MS50	E2K2400MGWS50
KDM2400G5MW	E2K2400MGW
KDM2400W5MW	E2K2400MWW
KDM2400W5MWA06D07S10	E2K2400MWA06D07S10
KDM2400W5MWA06D10S10	E2K2400MWA06D10S10
KDM2400W5MWD07	E2K2400MWD07
KDM2400W5MWD07S10	E2K2400MWD07S10
KDM2400W5MWD10	E2K2400MWD10
KDM2400W5MWD10S10	E2K2400MWD10S10
KDM2400W5MWS10	E2K2400MWS10
KDM3100W	E2K3100W
KDM3125W	E2K3125W
KDM3150W	E2K3150W
KDM3150WA06	E2K3150WA06
KDM3175W	E2K3175W
KDM3200W	E2K3200W
KDM3225A5W	E2K3225AW
KDM3225D5A13D09U18	E2K3225DA13D09U18
KDM3225D5MW	E2K3400MDW
KDM3225D5W	E2K3225DW
KDM3225F	E2K3400F
KDM3225W	E2K3225W
KDM3225WK37	E2KE3225W
KDM3225WK37U18	E2KE3225WU18
KDM3225WK38	E2KE3225MW
KDM3250W	E2K3250W
KDM3300W	E2K3300W
KDM3300WA06U18	E2K3300WA06U18

<b>Series C Mining</b>	<b>Superseded by E<sup>2</sup> Mining</b>
KDM3300WS10	E2K3300WS10
KDM3350W	E2K3350W
KDM3400D5MW	E2K3400MDW
KDM3400D5W	E2K3400DW
KDM3400D5WU18	E2K3400DWU18
KDM3400F	E2K3400F
KDM3400F5MW	E2K3400MFW
KDM3400FK37A06D09D18	E2KE3400A06D09D18
KDM3400G5A06D09U18	E2K3400GA06D09U18
KDM3400G5A13D09U18	E2K3400GA13D09U18
KDM3400G5MW	E2K3400MGW
KDM3400G5W	E2K3400GW
KDM3400G5WA06	E2K3400GWS10
KDM3400G5WS10	E2K3400GWS10
KDM3400G5WU18	E2K3400GWU18
KDM3400J5MW	E2K3400MJW
KDM3400K5MS54	E2K3400MKWS54
KDM3400K5MW	E2K3400MKW
KDM3400L5MW	E2K3400MLW
KDM3400MW	E2K3400MW
KDM3400MWA06U18	E2K3400MWA06U18
KDM3400N5MW	E2K3400MNW
KDM3400R5MW	E2K3400MRW
KDM3400W	E2K3400W
KDM3400W5MW	E2K3400MWW
KEM3100T	KEM3100T
KEM3125T	KEM3125T
KEM3150T	KEM3150T
KEM3150TM	KEM3150TM
KEM3200T	KEM3200T
KEM3225T	KEM3225T
KEM3225T2	KEM3225T2
KEM3225TM	KEM3225TM
KEM3225TM2	KEM3225TM2
KM2225TA5	E2K2225TA
KM2225TA5M	E2K2400TMA
KM2225TD5	E2K2225TD
KM2225TD5M	E2K2400TMD
KM2400TD5	E2K2400TD
KM2400TD5M	E2K2400TMD

# 12.5

## Molded Case Circuit Breakers

### Mining Service Circuit Breakers

#### E<sup>2</sup> Cross-Reference, continued

Series C Mining	Superseded by E <sup>2</sup> Mining
KM2400TG5M	E2K2400TMG
KM2400TN5M	E2K2400TMN
KM2400TW5M	E2K2400TMW
KM3100T	E2K3100T
KM3125T	E2K3125T
KM3150T	E2K3150T
KM3175T	E2K3175T
KM3200T	E2K3200T
KM3225T	E2K3225T
KM3225TA5	E2K3225TA
KM3225TA5M	E2K3400TMA
KM3225TD5	E2K3225TD
KM3225TD5M	E2K3400TMD
KM3250T	E2K3250T
KM3300T	E2K3300T
KM3350T	E2K3350T
KM3400T	E2K3400T
KM3400TD5	E2K3400TD
KM3400TF5M	E2K3400TFM
KM3400TG5M	E2K3400TMG
KM3400TJ5M	E2K3400TMJ
KM3400TK5M	E2K3400TMK
KM3400TL5M	E2K3400TML
KM3400TM	E2K3400TM
KM3400TN5M	E2K3400TMN
KM3400TR5M	E2K3400TMR
KM3400TW5M	E2K3400TMW
LDCM3600EMA05W	E2LEM3600MA05W
LDCM3600F	E2LM3600F
LDM3600F	E2L3600F

Series C Mining	Superseded by E <sup>2</sup> Mining
LEM3300T	LEM3300T
LEM3350T	LEM3350T
LEM3400T	LEM3400T
LEM3400T2	LEM3400T2
LEM3400TM	LEM3400TM
LEM3400TM2	LEM3400TM2
LEM3600T	LEM3600T
LEM3600TM	LEM3600TM
LM3600TL6M	E2L3600TML
LM3600TN6M	E2L3600TMN
LM3600TP6M	E2L3600TMP
LM3600TR6M	E2L3600TMR
LM3600TS6M	E2L3600TM
LM3600TX6M	E2L3600TMX
UVE3LP08K	UVE3LP08K
UVE4LP08K	UVE4LP08K

#### Additional Information on Mining Breakers

Source	Description
TD01217001E	E <sup>2</sup> Mining Circuit Breaker Dimensional Data
BR01217001E	E <sup>2</sup> Mining Circuit Breaker Brochure
TC01217001E	E <sup>2</sup> Mining Circuit Breaker Time Current Curves
<a href="http://www.eaton.com/mining">www.eaton.com/mining</a>	Mining and Metals

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Printed in USA  
Publication No. CA01217001E / Z9516  
June 2010



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