

# E<sup>2</sup> 1200 Vac mining service breakers



## 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. The performance of these breakers was proven and verified during hundreds of hours of testing.

Industry-leading E<sup>2</sup> mining breakers are now available in 1200 Vac with IEC certification.

This family of breakers is designed especially for trailing cable application and meets key global mining standards.<sup>①</sup>

<sup>①</sup> MSHA 30 CFR75.

**Table 1. Additional Information on Mining Breakers**

Source	Description
TD01217001E	E <sup>2</sup> Mining Circuit Breaker Dimensional Data
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

**Table 2. Interrupting Capacity Ratings**

Circuit Breaker Type	Interrupting Capacity (Symmetrical kA)	
	Vac (50/60 Hz)	
	1000	1200
E <sup>2</sup> KW	10	10
E <sup>2</sup> LW	10	10
E <sup>2</sup> MW	12	12



Powering Business Worldwide

**Product selection**

**E<sup>2</sup>KW**

Circuit breakers with interchangeable, non-electronic trip units

**Table 3. 1200 Vac Maximum, 10 kA at 1200 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 50°C	Magnetic Trip Range	Complete Breaker Catalog Number
<b>Thermal-Magnetic</b>		
100	500–1000	<b>E2KW3100W</b>
125	625–1250	<b>E2KW3125W</b>
150	750–1500	<b>E2KW3150W</b>
175	875–1750	<b>E2KW3175W</b>
200	1000–2000	<b>E2KW3200W</b>
225	300–650	<b>E2KW3225AW</b>
	500–1000	<b>E2KW3225DW</b>
	1125–2250	<b>E2KW3225W</b>
250	1250–2500	<b>E2KW3250W</b>
300	1500–3000	<b>E2KW3300W</b>
320	1600–3200	<b>E2KW3320W</b>
350	1750–3500	<b>E2KW3350W</b>
<b>Magnetic Only</b>		
350	300–650	<b>E2KW3250MAW</b>
	500–1000	<b>E2KW3350MDW</b>
	625–1250	<b>E2KW3350MFW</b>
	750–1500	<b>E2KW3350MGW</b>
	875–1750	<b>E2KW3350MJW</b>
	1000–2000	<b>E2KW3350MKW</b>
	1125–2250	<b>E2KW3350MLW</b>
	1250–2500	<b>E2KW3350MWW</b>
	1500–3000	<b>E2KW3350MNW</b>
	1600–3200	<b>E2KW3350MVW</b>
	1750–3500	<b>E2KW3350MRW</b>

**E<sup>2</sup>LW**

Circuit breakers with interchangeable, non-electronic trip units

**Table 4. 1200 Vac Maximum, 10 kA at 1200 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 50°C	Magnetic Trip Range	Complete Breaker Catalog Number
<b>Thermal-Magnetic</b>		
300	1500–3000	<b>E2LW3300W</b>
320	1600–3200	<b>E2LW3320W</b>
350	1750–3500	<b>E2LW3350W</b>
400	2000–4000	<b>E2LW3400W</b>
450	2250–4500	<b>E2LW3450W</b>
<b>Magnetic Only</b>		
450	1125–2250	<b>E2LW3450MLW</b>
	1500–3000	<b>E2LW3450MNW</b>
	1600–3200	<b>E2LW3450MVW</b>
	1750–3500	<b>E2LW3450MRW</b>
	2000–4000	<b>E2LW3450MXW</b>
	2250–4500	<b>E2LW3450MYW</b>

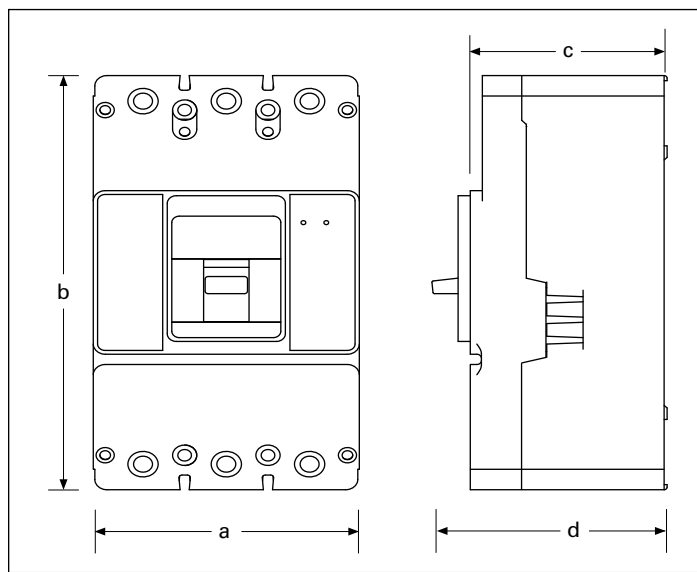
**E<sup>2</sup>MW**

Circuit breakers with interchangeable, non-electronic trip units

**Table 5. 1200 Vac Maximum, 12 kA at 1200 Vac, Three-Pole**

Maximum Continuous Ampere Rating at 50°C	Magnetic Trip Range	Complete Breaker Catalog Number
<b>Thermal-Magnetic</b>		
400	1000–2000	<b>E2MW3400W</b>
500	1250–2500	<b>E2MW3500W</b>
600	1500–3000	<b>E2MW3600W</b>
630	1575–3150	<b>E2MW3630W</b>
800	2000–4000	<b>E2MW3800W</b>
<b>Magnetic Only</b>		
800	1500–3000	<b>E2MW3800MNW</b>
	1575–3150	<b>E2MW3800MZW</b>
	2000–4000	<b>E2MW3800MXW</b>

**Dimensions**



**Table 6. Dimensions (mm)**

Dimension	E <sup>2</sup> KW	E <sup>2</sup> LW	E <sup>2</sup> MW
a	139.4	209.6	209.6
b	257.2	273.1	406.4
c	103.2	103.2	103.2
d	109.6	111.1	111.1

## Ratings

Table 7. Trailing Cable Setting Per 30 CFR 75

Conductor Size	Maximum Breaker Amperes Instantaneous Setting	Maximum Ampere 75°C Insulated Conductor	E <sup>2</sup> /E <sup>2</sup> M/E <sup>2</sup> W 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

Table 8. Auxiliary Switch and Alarm (Signal / Lockout Switch) Electrical Ratings

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)

Table 9. Shunt Trip Electrical Ratings

Breaker Type	Supply Voltage	Operating Voltage	
		Minimum	VA
E <sup>2</sup> KW	110 Vac	60	100
	120 Vac		120
	127 Vac		140
	110 Vdc	77	110
	120 Vdc		130
	125 Vdc		140
	24 Vac		41
E <sup>2</sup> LW/E <sup>2</sup> MW	48 Vac	18	139
	60 Vac		210
	48 Vac	34	830
E <sup>2</sup> LW/E <sup>2</sup> MW	60 Vac		1280
	110 Vac	60	100
	120 Vac		120
	127 Vac		140
	48 Vdc	34	710
	60 Vdc		1105
	110 Vdc	77	110
	120 Vdc		130
	125 Vdc		140

Table 10. Undervoltage Release Mechanism Electrical Ratings

Breaker Type	Supply Voltage	Dropout Voltage		Pickup Voltage	
		Minimum	Maximum	Maximum	VA
E <sup>2</sup> KW/E <sup>2</sup> LW/E <sup>2</sup> MW	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

## Accessories

### External accessories

Table 11. Line and Load Terminals

Breaker Type	Maximum Breaker Amperes	Wire Type	AWG Wire Range (No. Conductors)	Metric Wire Range (mm <sup>2</sup> )	Catalog Number
E <sup>2</sup> KW	225	Cu	#3–350 (1)	35–185 (1)	T300K
	350	Cu	250–500 (1)	120–240 (1)	T350K
	400	Cu	2/0–250 (2)	95–120	3T400K ①
E <sup>2</sup> LW	400	Cu/Al	4/0–600 (1)	120–300	3TA401LDK ①
	600	Cu	250–350 (2)	120–250	T602LD
E <sup>2</sup> MW	600	Cu	(2) 2/0–500 kcmil	—	T600MA1
	600	Cu/Al	(2) 1–500 kcmil	—	TA700MA1
	800 std.	Cu/Al	(3) 3/0–400 kcmil	—	TA800MA2
	800	Cu/Al	(2) 500–750 kcmil	—	TA801MA
	800	Cu	(3) 3/0–300 kcmil	—	T800MA1

① Three-pole kit.

Table 12. End Cap Terminals—For Use with Ring Type Terminals

Breaker Type	Maximum Breaker Amperes	Catalog Number	Metric Catalog Number	Imperial
E <sup>2</sup> KW	400	KPEK3	KPEMK3	—
E <sup>2</sup> LW	600	KPEK4	KPEMK4	—

Table 13. Padlockable Handle Lock Hasp

Breaker Type	Catalog Number
E <sup>2</sup> KW	PLK3
E <sup>2</sup> LW	HLK4
E <sup>2</sup> MW	HLK4

Internal accessories

Table 14. Auxiliary Switch and Alarm (Signal / Lockout Switch)

Breaker Type	Number of Contact Sets (1A and 1B)	Mounting Location	Auxiliary Switch		Alarm	
			Catalog Number	Factory Modification Code	Catalog Number	Factory Modification Code
E <sup>2</sup> KW	1	Right pole	A1X3PK	A06	A1L3LPK / A1L3RPK	B06
	2	Right pole	A2X3PK	A13	A2L3LPK / A2L3RPK	B13
E <sup>2</sup> LW/E <sup>2</sup> MW	1	Right pole	A1X4PK	A06	A1L4LPK / A1L4RPK	B06
	2	Right pole	A2X4PK	A13	A2L4LPK / A2L4RPK	B13

Table 15. Shunt Trip ①

Breaker Type	Voltage Rating	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> KW	110–240 Vac or 110–125 Vdc	Left pole	SNT3P11K ②	S10
E <sup>2</sup> LW/E <sup>2</sup> MW	48–60 Vac	Left pole	SNT4LP05K ③	S06
	48–60 Vdc	Left pole	SNT4LP23K ③	S86
	110–240 Vac	Left pole	SNT4LP11K ③	S10
	110–125 Vdc	Left pole	SNT4LP26K ③	S42

① Contact Eaton for internal accessory voltage ratings not listed.

② LH or RH.

③ LH (RH also available).

Table 16. Undervoltage Release ①

Breaker Type	UVR Type	Voltage Rating	Mounting Location	Catalog Number	Factory Modification Code
E <sup>2</sup> KW	120V handle reset with LED	120 Vac	Left pole	UVM3LP08K ②③	U66
	120V 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> LW/E <sup>2</sup> MW	120V handle reset with LED	120 Vac	Left pole	UVM4LP08K ②③	U66
	120V 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

① Contact Eaton for internal accessory voltage ratings not listed.

② LH (RH also available).

③ Pigtail leads.

④ Terminal blocks.

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