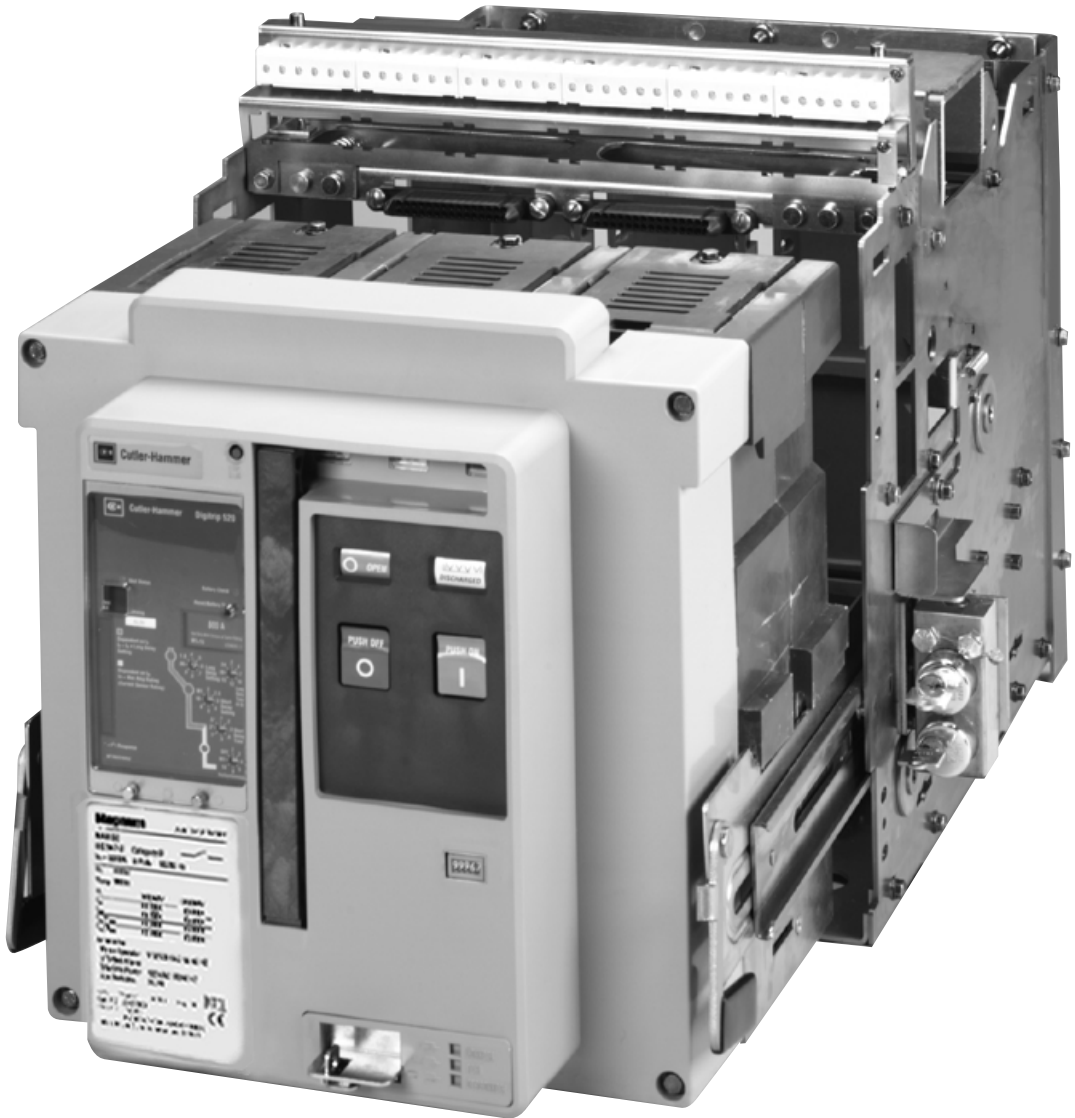


# AIR CIRCUIT BREAKERS

## PRODUCT GUIDE

### Magnum Low Voltage Air Circuit Breakers



**Cutler-Hammer**

**EATON**

**Magnum Ratings, Characteristics, Weights and Dimensions**

<b>Electrical characteristics</b>		(per IEC 947-2 and BSEN 60947-2)					
Number of poles				3, 4			
Rated Current (A)	In	40°C		800			
Rating of 4th pole (A)				800			
Rated Insulation Voltage (V)	Ui			1000			
Rated Impulse Withstand Voltages (kV)	Uimp			8			
Rated Operational Voltage (V)	Ue	AC 50/60Hz		690			
Utilization Category				B			
<b>Circuit Breaker Type</b> <sup>②③</sup>				MWI-408	MWI-608	MWI-808	MWI-C08
Service Breaking Capacity (kA rms) <sup>①</sup>	Ics	AC 50/60Hz	220/415V	40	65	85	100
			440V	40	65	85	100
			500/690V	40	65	85	85
Ultimate Breaking Capacity (kA rms) <sup>①</sup>	Icu	AC 50/60Hz	220/415V	40	65	85	100
			440V	40	65	85	100
			500/690V	40	65	85	100
Short Time Withstand Current (kA rms)	Icw	AC 50/60Hz	0.5s	40	65	85	85
			1s	40	65	85	85
			3s	NA	NA	65	65
Making Capacity (kA peak)	Icm	AC 50/60Hz	220/415V	84	143	187	220
			440V	84	143	187	220
			500/690V	84	143	187	220
Maximum Break Time (msec)				35	35	35	35
Maximum Closing Time (msec)				50	50	50	50
Maximum Spring Charging Time (sec)				5.0	5.0	5.0	5.0
Mechanical Endurance with maintenance		Operating cycles (C-O) x 1000		20	20	20	20
Mechanical Endurance without maintenance @ 690V		Operating cycles (C-O) x 1000		10	10	10	10
Electrical Endurance without maintenance		Operating cycles (C-O) x 1000		10	10	10	10
<b>Circuit Breaker Maximum Weight kg</b>	Drawout	3 Pole		60	60	60	60
		4 Pole		80	80	90	90
	Fixed	3 Pole		50	50	55	55
		4 Pole		65	65	65	65
<b>Circuit Breaker Dimensions mm</b>	Drawout	3 Pole	H	380	380	380	380
			D	355	355	355	355
			W	410	410	410	410
		4 Pole	H	380	380	380	380
			D	355	355	355	355
			W	537	537	537	537
	Fixed	3 Pole	H	380	380	380	380
			D	355	355	355	355
			W	410	410	410	410
		4 Pole	H	380	380	380	380
			D	355	355	355	355
			W	537	537	537	537

① Forward or Reverse Fed

② Non-automatic circuit breakers also available in rated currents. A non-automatic circuit breaker does not have a trip unit, sensors or an overcurrent release.

③ For all other special applications, please contact Cutler-Hammer.

**Magnum Ratings, Characteristics, Weights and Dimensions (Continued from previous page)**

3, 4				3, 4			3, 4			3, 4		
1250				1600			2000			2500		
1250				1600			2000			2500		
1000				1000			1000			1000		
8				8			8			8		
690				690			690			690		
B				B			B			B		
MWI-412	MWI-612	MWI-812	MWI-C12	MWI-616	MWI-816	MWI-C16	MWI-620	MWI-820	MWI-C20	MWI-625	MWI-825	MWI-C25
40	65	85	100	65	85	100	65	85	100	65	85	100
40	65	85	100	65	85	100	65	85	100	65	85	100
40	65	85	85	65	85	85	65	85	85	65	85	85
40	65	85	100	65	85	100	65	85	100	65	85	100
40	65	85	100	65	85	100	65	85	100	65	85	100
40	65	85	100	65	85	100	65	85	100	65	85	100
40	65	85	85	65	85	85	65	85	85	65	85	85
40	65	85	85	65	85	85	65	85	85	65	85	85
40	65	85	85	65	85	85	65	85	85	65	85	85
NA	NA	65	65	NA	65	65	50	65	65	50	65	65
84	143	187	220	142	187	220	143	187	220	143	187	187
84	143	187	220	142	187	220	143	187	220	143	187	187
84	143	187	220	142	187	220	143	187	220	143	187	187
35	35	35	35	35	35	35	35	35	35	35	35	35
50	50	50	50	50	50	50	50	50	50	50	50	50
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
20	20	20	20	20	20	20	15	15	15	15	15	15
10	10	10	10	10	10	10	10	10	10	10	10	10
10	10	10	10	10	10	10	7	7	7	6	6	6
60	60	65	65	60	65	65	65	65	65	80	80	80
80	80	90	90	80	90	90	90	90	90	105	105	105
50	50	55	55	50	55	55	55	55	55	65	65	65
65	65	75	75	65	75	75	75	75	75	80	80	80
380	380	380	380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355	355	355	355
410	410	410	410	410	410	410	410	410	410	410	410	410
380	380	380	380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355	355	355	355
537	537	537	537	537	537	537	537	537	537	537	537	537
380	380	380	380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355	355	355	355
410	410	410	410	410	410	410	410	410	410	410	410	410
380	380	380	380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355	355	355	355
537	537	537	537	537	537	537	537	537	537	537	537	537

**Magnum Ratings, Characteristics, Weights and Dimensions**

<b>Electrical characteristics</b>				(per IEC 947-2 and BSEN 60947-2)		
Number of poles				3, 4		
Rated Current (A)	In	40°C		3200		
Rating of 4th pole (A)				3200		
Rated Insulation Voltage (V)	Ui			1000		
Rated Impulse Withstand Voltages (kV)	Uimp			8		
Rated Operational Voltage (V)	Ue	AC 50/60Hz		690		
Utilization Category				B		
<b>Circuit Breaker Type<sup>②③</sup></b>				MWI-632	MWI-832	MWI-C32
Service Breaking Capacity (kA rms) <sup>①</sup>	Ics	AC 50/60Hz	220/415V	65	85	100
			440V	65	85	100
			500/690V	65	85	85
Ultimate Breaking Capacity (kA rms) <sup>①</sup>	Icu	AC 50/60Hz	220/415V	65	85	100
			440V	65	85	100
			500/690V	65	85	100
Short Time Withstand Current (kA rms)	Icw	AC 50/60Hz	0.5s	65	85	100
			1s	65	85	100
			3s	50	65	65
Making Capacity (kA peak)	Icm	AC 50/60Hz	220/415V	143	187	220
			440V	143	187	220
			500/690V	143	187	220
Maximum Break Time (msec)				30	30	30
Maximum Closing Time (msec)				50	50	50
Maximum Spring Charging Time (sec)				5.0	5.0	5.0
Mechanical Endurance with maintenance		Operating cycles (C-O) x 1000		15	15	15
Mechanical Endurance without maintenance @690V		Operating cycles (C-O) x 1000		10	10	10
Electrical Endurance without maintenance		Operating cycles (C-O) x 1000		2.5	2.5	2.5
<b>Circuit Breaker Maximum Weight kg</b>						
	Drawout	3 Pole	H	80	80	80
			D	105	105	105
	Fixed	3 Pole	H	65	65	65
			D	80	80	80
<b>Circuit Breaker Dimensions mm</b>						
	Drawout	3 Pole	H	380	380	380
			D	355	355	355
			W	410	410	410
		4 Pole	H	380	380	380
			D	355	355	355
			W	537	537	537
	Fixed	3 Pole	H	380	380	380
			D	355	355	355
			W	410	410	410
		4 Pole	H	380	380	380
			D	355	355	355
			W	537	537	537

① Forward or Reverse Fed

② Non-automatic circuit breakers also available in rated currents. A non-automatic circuit breaker does not have a trip unit, sensors or an overcurrent release.

③ For all other special applications, please contact Cutler-Hammer.

**Magnum Ratings, Characteristics, Weights and Dimensions (Continued from previous page)**

3, 4				3, 4			3, 4		
4000				5000			6300		
4000				5000			6300		
1000				1000			1000		
8				8			8		
690				690			690		
B				B			B		
MWI-640	MWI-840	MWI-C40	MWI-E40	MWI-850	MWI-C50	MWI-E50	MWI-863	MWI-C63	MWI-E63
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
65	85	100	150	85	100	150	85	100	150
N/A	65	85	100	65	85	100	65	85	100
143	187	220	330	187	220	330	187	220	330
143	187	220	330	187	220	330	187	220	330
143	187	220	330	187	220	330	187	220	330
40	40	40	40	40	40	40	40	40	40
70	70	70	70	70	70	70	70	70	70
5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
10	10	10	10	10	10	10	10	10	10
5	5	5	5	5	5	5	5	5	5
2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.5	1.5	1.5
125	125	125	125	145	145	145	150	150	150
65	165	165	165	185	185	185	190	190	190
100	100	100	100	115	115	115	120	120	120
130	130	130	130	150	150	150	155	155	155
380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355
869	869	869	869	869	869	869	869	869	869
380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355
1138	1138	1138	1138	1138	1138	1138	1138	1138	1138
380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355
869	869	869	869	869	869	869	869	869	869
380	380	380	380	380	380	380	380	380	380
355	355	355	355	355	355	355	355	355	355
1138	1138	1138	1138	1138	1138	1138	1138	1138	1138

Trip Unit Summary Table



TRIP UNIT TYPE		DIGITRIP 220	DIGITRIP 520i <sup>⑤</sup>	DIGITRIP 520Mi <sup>⑥⑦</sup>	DIGITRIP 1150i <sup>⑦</sup>
Ampere Range 200A-6300A		200A-3200A	200A-6300A	200A-6300A	200A-6300A
Interrupting Rating at 690V		40 through 150kA	40 through 150kA	40 through 150kA	40 through 150kA
rms Sensing		Yes	Yes	Yes	Yes
PROTECTION AND COORDINATION					
<b>Protection</b>	Ordering Options	LI	LSI, LSIG	LSI, LSIG, LSIA	LSI, LSIG, LSIA
	Fixed Rate Plug ( $I_n$ )	Yes	Yes	Yes	Yes
	Overtemperature Trip	Yes	Yes	Yes	Yes
<b>Long Delay</b>	Long Delay Setting	Fixed	0.4-1.0 x ( $I_n$ )	0.4-1.0 x ( $I_n$ )	0.4-1.0 x ( $I_n$ )
	Long Delay Time $I^2t$ at 6 x $I_r$	Fixed	2-24 Seconds	2-24 Seconds	2-24 Seconds
<b>Protection</b>	Long Delay Time $I^4t$	No	No	No	No
	Long Delay Thermal Memory	Yes	Yes	Yes	Yes
	High Load Alarm	No	No	No	0.7 - 1.0 x $I_r$
<b>Short Delay</b>	Short Delay Pick-Up	No	130-1000% x ( $I_r$ ) <sup>①</sup>	150-1000% x ( $I_r$ ) <sup>①</sup>	150-1000% x ( $I_r$ ) <sup>①</sup>
	Short Delay Time $I^2t$ at 8 x $I_r$	No	100-500 ms	100-500 ms	100-500 ms
<b>Protection</b>	Short Delay Time Flat	No	100-500 ms	100-500 ms	100-500 ms
	Short Delay Time ZSI	No	Yes	Yes	Yes
	Instantaneous Pick-up	200-100% x ( $I_n$ ) <sup>①</sup>	200-100% x ( $I_n$ ) <sup>①</sup>	200-100% x ( $I_n$ ) <sup>①</sup>	200-100% x ( $I_n$ ) <sup>①</sup>
<b>Protection</b>	Making Current Release	Yes	Yes	Yes	Yes
	Off Position	No	Yes	Yes	Yes
	Earth Fault Alarm	No	No	Yes	Yes
<b>Earth Fault</b>	Earth Fault Pick-Up	No	25-100% x ( $I_n$ )	25-100% x ( $I_n$ )	25-100% x ( $I_n$ )
	Earth Fault Delay $I^2t$ at .625 x $I_n$	No	100-500 ms	100-500 ms	100-500 ms
<b>Protection</b>	Earth Fault Delay Flat	No	100-500 ms	100-500 ms	100-500 ms
	Earth Fault ZSI	No	Yes	Yes	Yes
	Earth Fault Memory	No	Yes	Yes	Yes
	Disable Earth Fault	No	No	No	Yes
SYSTEM DIAGNOSTICS					
Cause of Trip LEDs		No	Yes <sup>②</sup>	Yes <sup>②</sup>	Yes <sup>②</sup>
Magnitude of Trip Information		No	No	No	Yes
Remote Signal Contacts		No	No	Yes	Yes
Programmable Contacts		No	No	No	2
SYSTEM MONITORING					
Digital Display		No	No	4 Char. LCD	24 Char. LED
Current (%) Full Scale Sensor		No	No	Yes (2%)	Yes (1%)
Voltage (%) L to L		No	No	Yes (1%)	
Power and Energy (%)		No	No	No	Yes (2%)
Apparent Power kVA and Demand		No	No	No	Yes
Reactive Power kVAR		No	No	No	Yes
Power Factor		No	No	No	Yes
Crest Factor		No	No	No	No
Power Quality - Harmonics		No	No	No	Yes
% THD		No	No	No	Yes
SYSTEM COMMUNICATIONS					
IMPACC		No	No	No	Yes <sup>③</sup>
Testing Method		Test Set	Test Set	Test Set	Integral and Test Set <sup>④</sup>
Trip Log (3 Events)		No	No	No	Yes
Electronic Operations Counter		No	No	No	Yes
Triplink		No	No	No	Yes
Waveform Capture		No	No	No	Yes
Selectable IEC Curves		No	No	No	Yes

① Addition range up to M1 value: <1250-M1=1400%. 1600-2500-M1=1200%. >3000-M1=1000%.

② Cause of trip - L, S, I, G, and making current release.

③ Must use NT-based IMPACC software to enable communications.

④ Tester for secondary injection.

$I_n$ =Rating plug rating.

$I_r$ =Long Delay setting.

⑤ Model 520 also available with same characteristics except the 520 has a 1200 ampere ground fault current limitation.

⑥ Model 520M also available with same characteristics except the 520M has a 1200 ampere ground fault current limitation.

⑦ Available control voltages are 24/48 Vdc, 120 Vac and 240 Vac