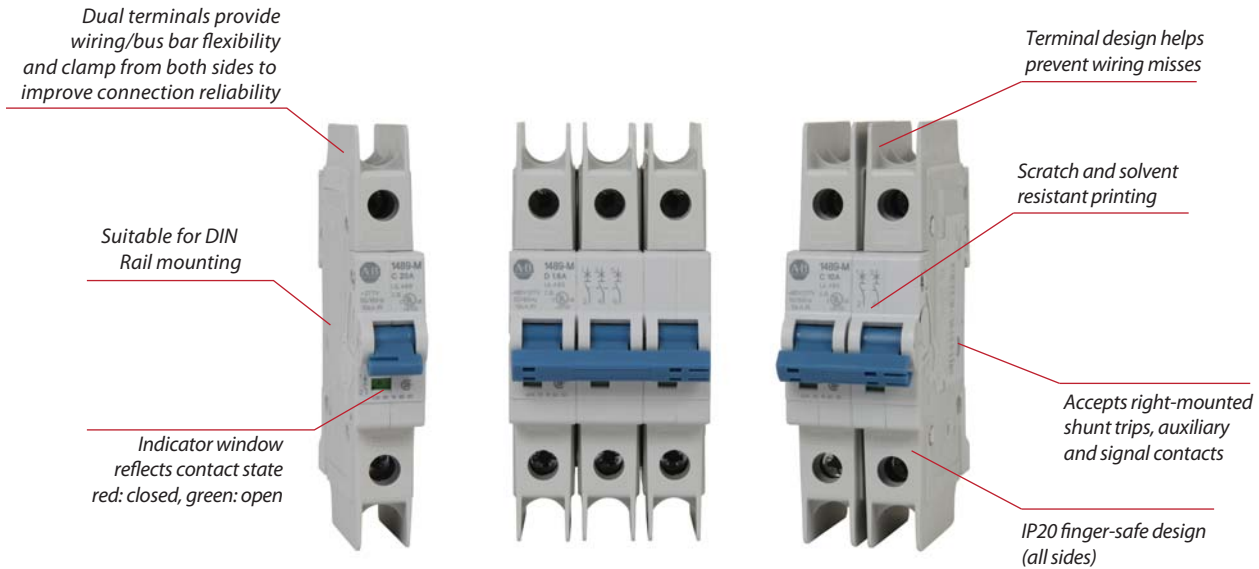


# 1489-M Circuit Breakers



Bulletin 1489-M thermal-magnetic Circuit Breakers are approved for branch circuit protection in the United States and Canada, and are certified as Miniature Circuit Breakers for IEC applications.

These branch protectors are compatible with many accessories to meet diverse application needs, including UL 508 Listed bus bars for convenience in panel assembly, auxiliary contacts, signal contacts and shunt trips for versatility, and lockout attachments for safety during maintenance.

## Features

- Current limiting
- Fast breaking time
- High rated voltage
- Superior shock and vibration resistance to help prevent nuisance tripping
- Dual terminals allow a more secure connection of two wires, or both a wire and bus bar
- Terminal design helps prevent wiring misses by directing wires into the terminal openings, even while tightening
- Reversible line and load connections
- Single and multi-pole toggle mount lock out attachments available for Lockout/Tagout (LOTO)
- RoHS compliant and fully recyclable device
- Suitable for extreme ambient conditions

## 1489-M Circuit Breakers

<b>Rated Voltage</b>	UL/CSA: Max. 480Y/277V AC IEC: U <sub>e</sub> 230/400V AC
<b>Interrupting Capacity</b>	UL/CSA: 10 kA IEC: 15 kA
<b>Current Ratings</b>	0.5...63 A
<b>Poles</b>	1, 2, 3
<b>Trip Curves</b>	C, D
<b>Standards Compliance</b>	UL 489 CSA C22.2 No. 5.1 EN 60947-2 GB 14048.2
<b>Certifications</b>	UL Listed, File No. E197878 CSA Certified, File No. 259391 CE Marked VDE Certified CCC Certified RoHS Compliant

## Catalog Number Explanation

**Note:** Examples given in this section are for reference purposes. This basic explanation should not be used for product selection; some combinations may not produce a valid catalog number.

1489 - **M** **1** **C** **005**  
*a* *b* *c* *d*

**a**

Voltage Type	
Code	Description
M	AC Circuit Breaker

**b**

Poles	
Code	Description
1	1-Pole
2	2-Pole
3	3-Pole

**c**



Trip Curve	
Code	Trip Curve
C	Trip Curve C
D	Trip Curve D

**d**

Rated Current ( $I_n$ )	
Code	Current [A]
005	0.5
010	1
016	1.6
020	2
030	3
040	4
050	5
060	6
070	7
080	8
100	10
130	13
150	15
160	16
200	20
250	25
300	30
320	32
350	35
400	40
500	50
600	60
630	63


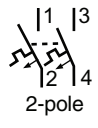
# Product Selection

## 1-Pole Circuit Breakers

Photo/Wiring Diagram	UL/CSA Max. Voltage	IEC/EN Max. Voltage	Continuous Current Rating ( $I_n$ ) [A]	Trip Curve C Inductive 5...10 $I_n$ Cat. No.	Trip Curve D Highly Inductive 10...20 $I_n$ Cat. No.
  1-pole	277V AC, 48V DC	230V AC	0.5	1489-M1C005	1489-M1D005
			1	1489-M1C010	1489-M1D010
			1.6	1489-M1C016	1489-M1D016
			2	1489-M1C020	1489-M1D020
			3	1489-M1C030	1489-M1D030
			4	1489-M1C040	1489-M1D040
			5	1489-M1C050	1489-M1D050
			6	1489-M1C060	1489-M1D060
			7	1489-M1C070	1489-M1D070
			8	1489-M1C080	1489-M1D080
			10	1489-M1C100	1489-M1D100
			13	1489-M1C130	1489-M1D130
			15	1489-M1C150	1489-M1D150
			16	1489-M1C160	1489-M1D160
			20	1489-M1C200	1489-M1D200
	25	1489-M1C250	1489-M1D250		
	30	1489-M1C300	1489-M1D300		
	32	1489-M1C320	1489-M1D320		
	35	1489-M1C350	1489-M1D350		
		C Curve: 277V AC, 48V DC D Curve: 240V AC, 48V DC		40	1489-M1C400
	240V AC, 48V DC		50	1489-M1C500	1489-M1D500
		60	1489-M1C600	1489-M1D600	
		63	1489-M1C630	1489-M1D630	


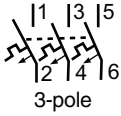
# Product Selection

## 2-Pole Circuit Breakers

Photo/Wiring Diagram	UL/CSA Max. Voltage	IEC/EN Max. Voltage	Continuous Current Rating ( $I_n$ ) [A]	Trip Curve C Inductive 5...10 $I_n$ Cat. No.	Trip Curve D Highly Inductive 10...20 $I_n$ Cat. No.
  2-pole	480Y/277V AC, 96V DC	400V AC	0.5	1489-M2C005	1489-M2D005
			1	1489-M2C010	1489-M2D010
			1.6	1489-M2C016	1489-M2D016
			2	1489-M2C020	1489-M2D020
			3	1489-M2C030	1489-M2D030
			4	1489-M2C040	1489-M2D040
			5	1489-M2C050	1489-M2D050
			6	1489-M2C060	1489-M2D060
			7	1489-M2C070	1489-M2D070
			8	1489-M2C080	1489-M2D080
			10	1489-M2C100	1489-M2D100
			13	1489-M2C130	1489-M2D130
			15	1489-M2C150	1489-M2D150
			16	1489-M2C160	1489-M2D160
			20	1489-M2C200	1489-M2D200
			25	1489-M2C250	1489-M2D250
			30	1489-M2C300	1489-M2D300
			32	1489-M2C320	1489-M2D320
	35	1489-M2C350	1489-M2D350		
		C Curve: 480Y/277V AC, 96V DC D Curve: 240V AC, 96V DC		40	1489-M2C400
	240V AC, 96V DC		50	1489-M2C500	1489-M2D500
			60	1489-M2C600	1489-M2D600
			63	1489-M2C630	1489-M2D630

# Product Selection

## 3-Pole Circuit Breakers

Photo/Wiring Diagram	UL/CSA Max. Voltage	IEC/EN Max. Voltage	Continuous Current Rating ( $I_n$ ) [A]	Trip Curve C Inductive 5...10 $I_n$ Cat. No.	Trip Curve D Highly Inductive 10...20 $I_n$ Cat. No.	
  3-pole	480Y/277V AC	400V AC	0.5	1489-M3C005	1489-M3D005	
				1	1489-M3C010	1489-M3D010
				1.6	1489-M3C016	1489-M3D016
				2	1489-M3C020	1489-M3D020
				3	1489-M3C030	1489-M3D030
				4	1489-M3C040	1489-M3D040
				5	1489-M3C050	1489-M3D050
				6	1489-M3C060	1489-M3D060
				7	1489-M3C070	1489-M3D070
				8	1489-M3C080	1489-M3D080
				10	1489-M3C100	1489-M3D100
				13	1489-M3C130	1489-M3D130
				15	1489-M3C150	1489-M3D150
				16	1489-M3C160	1489-M3D160
				20	1489-M3C200	1489-M3D200
				25	1489-M3C250	1489-M3D250
				30	1489-M3C300	1489-M3D300
				32	1489-M3C320	1489-M3D320
				35	1489-M3C350	1489-M3D350
			C Curve: 480Y/277V AC D Curve: 240V AC		40	1489-M3C400
	240V AC		50	1489-M3C500	1489-M3D500	
			60	1489-M3C600	1489-M3D600	
			63	1489-M3C630	1489-M3D630	

# Specifications

Electrical Ratings					
Poles	1, 2, 3				
Tripping characteristics	C, D				
Rated current ( $I_n$ )	0.5...63 A				
Rated frequency [f]	50/60 Hz				
Rated insulation voltage $U_i$ per IEC/EN 60664-1	250V AC (phase to ground) 440V AC (phase to phase)				
Overvoltage category	III				
Pollution degree	3				
Data per UL/CSA					
Rated voltage	AC	1-pole	C Curve	0.5...40 A	277V AC
				50...63 A	240V AC
		D Curve		0.5...35 A	277V AC
				40...63 A	240V AC
	2-, 3-pole	C Curve		0.5...40 A	480Y/277V AC
				50...63 A	240V AC
		D Curve		0.5...35 A	480Y/277V AC
				40...63 A	240V AC
DC	1-pole			48V DC	
	2-pole			96V DC (2-pole in series)	
Rated interrupting capacity per UL 489				10 kA	
Reference temperature for tripping characteristics				40 °C	
Electrical endurance				6,000 operations (AC and DC); 1 cycle (1s - ON, 9s - OFF)	
Data per IEC/EN 60947-2					
Rated operational voltage ( $U_e$ )	1-pole		230V AC		
	2-, 3-pole		400 V AC		
Highest supply or utilization voltage ( $U_{max}$ )	AC	1-pole	253/440V AC		
		2-, 3-pole	440V AC		
	DC ★	1-pole	48V DC		
		2-pole	96V DC		
Min. operating voltage				12V AC, 12V DC	
Rated ultimate short-circuit breaking capacity ( $I_{CU}$ )				15 kA	
Rated service short-circuit breaking capacity ( $I_{CS}$ )				≤40 A: 11.25 kA >40 A: 7.5 kA	
Rated impulse withstand voltage $U_{imp}$ . (1.2/50μs)				4 kV (test voltage 6.2kV at sea level, 5kV at 2,000m)	
Dielectric test voltage				2 kV (50/60Hz, 1 min.)	
Reference temperature for tripping characteristics				30 °C	
Electrical endurance				$I_n < 30A$ :20,000 ops.(AC) $I_n \geq 30A$ :10,000 ops. (AC) 1,000 ops. (DC)	
1 cycle (2s - ON, 13s - OFF, $I_n \leq 32A$ ),					
1 cycle (2s - ON, 28s - OFF, $I_n > 32A$ )					

★ Self-declared IEC DC ratings.

Mechanical Data		
Housing	Insulation group II, RAL 7035	
Indicator window	red ON/green OFF	
Protection degree per EN 60529	IP20, IP40 in enclosure with cover	
Mechanical endurance	20,000 operations	
Shock resistance per IEC/EN 60068-2-27	25 g - 2 shocks - 13 ms	
Vibration resistance per IEC/EN 60068-2-6	5g - 20 cycles at 5...150...5 Hz with load 0.8 In	
Environmental		
Environmental conditions (damp heat) per IEC/EN 60068-2-30	28 cycles with 55°C/90-96% and 25°C/95-100%	
Ambient temperature ★	-25...+55 °C	
Storage temperature	-40...+70 °C	
Installation		
Terminal	Dual terminal	
Cross-section of conductors♣ – solid, stranded (front/back terminal slot)	mm <sup>2</sup>	35/35 mm <sup>2</sup>
	AWG	18...4/18...10 AWG
Cross-section of conductors – flexible	mm <sup>2</sup>	25/10 mm <sup>2</sup>
Multi-wire rating per UL, CSA	AWG	1 wire, 18...4 AWG
	AWG	2 wires‡, 18...10 AWG
Cross-section of bus bars (back terminal slot)	mm <sup>2</sup>	10 mm <sup>2</sup>
Tightening torque	N·m	2.8 N·m
	in·lb	AWG 18...16: 8.85 in·lb, AWG 14...10: 17.7 in·lb, AWG 8...4:39.8 in·lb
Screwdriver	No. 2 Pozidrive	
Mounting	DIN Rail (EN 60715, 35 mm) with fast clip	
Mounting position	Any	
Supply	Optional	
Approximate Dimensions and Weight		
Pole dimensions (H x D x W)	111 x 69 x 17.5 mm (4.37 x 2.72 x .69")	
Pole weight	125 g (4.4 oz.)	
Combination with Auxiliary Elements		
Auxiliary contact	Yes	
Signal contact	Yes	
Shunt trip	Yes	

♣ 35 mm self-declared, not included in IEC/EN approval.

★ Refer to the ambient temperature derating tables.

‡ Wires must be of like size and stranding. Only one wire per terminal slot.

**Power Loss Due to Current**

Rated Current [A]	Power Loss Per Pole [W]	Rated Current [A]	Power Loss Per Pole [W]
0.5	1.4	15	2.4
1	1.4	16	2.5
1.6	1.8	20	2.5
2	1.8	25	3.2
3	1.6	30	3.5
4	1.8	32	3.7
5	1.9	35	4.1
6	2.0	40	4.5
7	1.1	50	4.5
8	1.5	60	4.9
10	2.1	63	5.4
13	2.3	—	—

**Zero-stack Derating**

The installation of several miniature circuit breaker side by side with rated current on all poles requires a correction factor to the rated current (not required if spacers are used).

No. of Adjacent Devices	Factor
1	1
2,3	0.9
4,5	0.8
≥ 6	0.75

**Approximate Dimensions**

**Note:** Dimensions are shown in millimeters (inches). Dimensions are not intended for manufacturing purposes.

