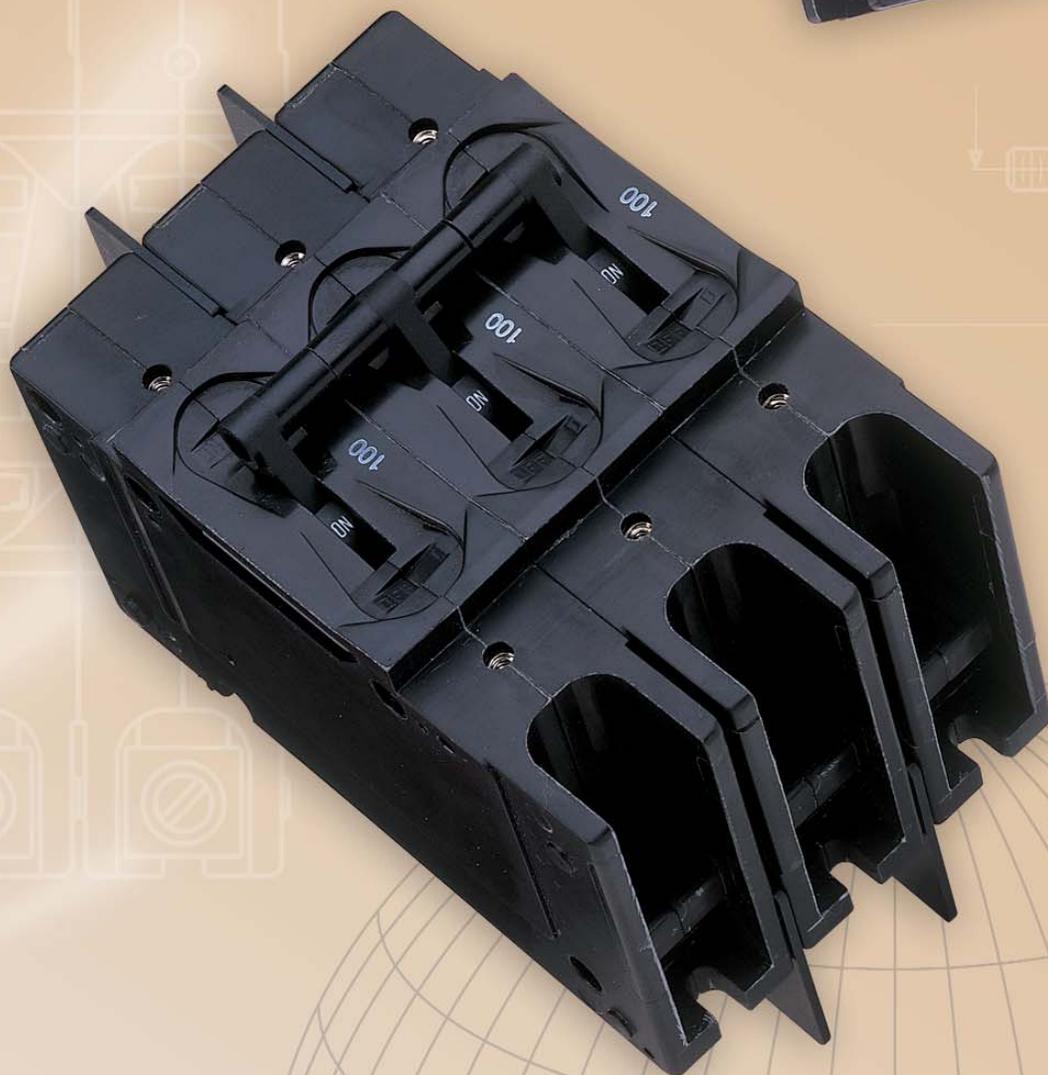


AIRPAX

209 / 219 / 229 / 279

Magnetic Circuit Protectors





The 209, E-Frame circuit breaker combines power switching with accurate, reliable circuit protection in a compact single or multi-pole unit. The unit is ideal for branch circuit applications such as EDP, air conditioners, panel boards and lighting controls.

The 209 is actually a family of circuit protectors available in one through six pole assemblies with a variety of configurations and terminal styles to meet your application needs. First in this family is the 209, a general purpose E-Frame circuit breaker which complies with UL Standard 489. Other members of the family include the 219, for manual controller applications, which complies to UL Standard 508, the 229, for Supplementary Protectors applications, which complies to UL1077, and the 299, a Special Construction version.

Utilizing the hydraulic-magnetic principle, the 209 family adapts itself to local applications and environments. Temperature conditions, which affect fuses and other thermal devices, are not a concern. The magnetic /ampere turn principle minimizes nuisance tripping due to temperature variations.

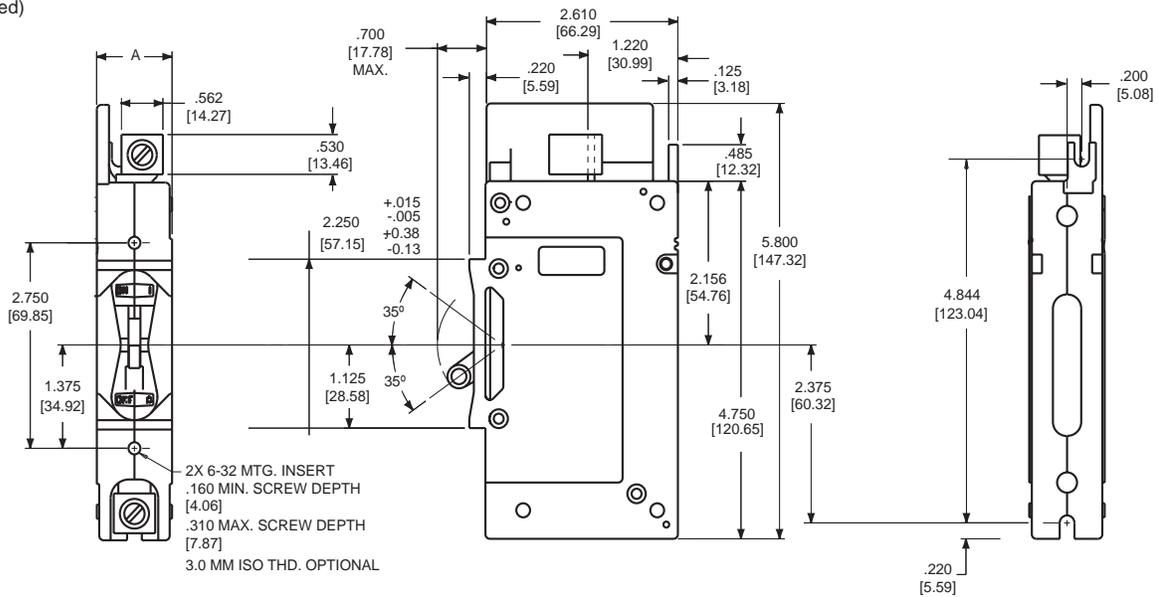
Inrush currents, due to ferroresonant transformers, lamps and capacitive filters, are now becoming more significant. Recognizing the need for this type of protection, Airpax offers the unique inertial delay which is standard for all 50/60Hz time delay units, but may be deleted where inrush is not a problem. No extra cost or special order is required.

The 209 family of circuit protectors withstands high pulses without tripping or affecting normal delay curves (see page 198). This performance, however, does not derate or sacrifice protection.

Magnetic Circuit Protectors	189
Drawings and Terminal Styles	189
249 Power Selector Breaker System	192
Multi-Pole Circuit Protectors	194
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279 Communication Circuit Breakers	196
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Specifications	202
Ratings and Interrupting Capacities	203
Decision Tables	204
Decision Tables for 249 Power Selector Breaker System	206



Front Connected Solderless Connector (Back Mounted)



Terminal Style

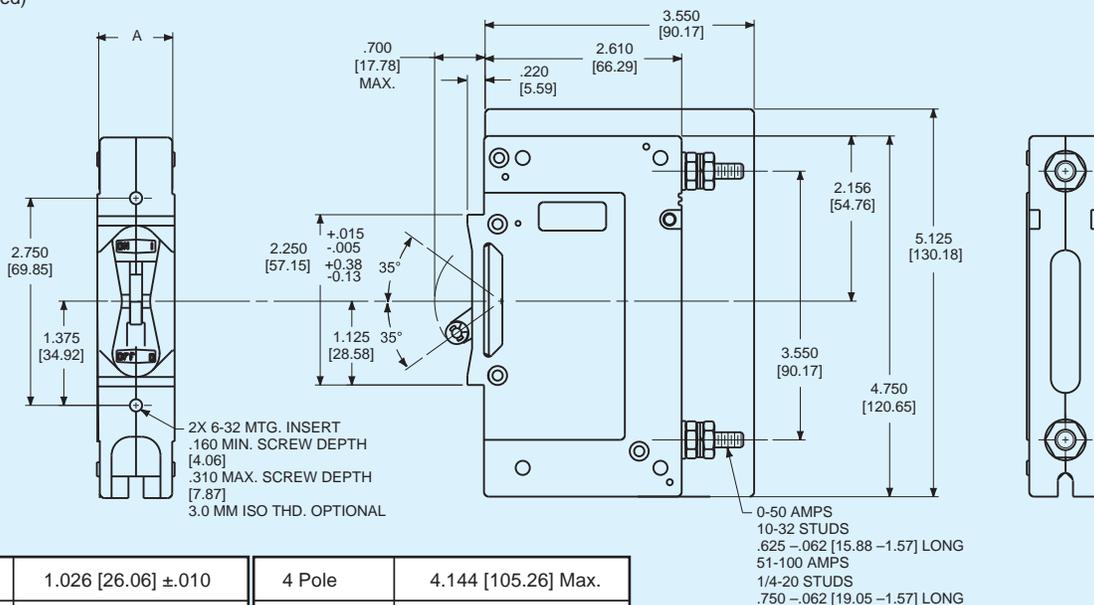
209 E-Frame circuit protectors and breakers may be specified with either screw terminals, stud or solderless connectors.

A choice of front or back connected terminal styles is available. The back connected terminal style is available with stud terminals only. Front terminal style is available with either screw terminals or solderless connectors.

Refer to Sixth Decision Table on page 203 for front connected terminal information.

Barriers for back connected terminal styles are supplied on multi-pole units only. Line and load connections may be made to either terminal and terminals will be identified as shown.

Back Connected Stud Terminal (Front Mounted)



1 Pole	1.026 [26.06] ±.010	4 Pole	4.144 [105.26] Max.
2 Pole	2.072 [52.63] Max.	5 Pole	5.180 [131.57] Max.
3 Pole	3.108 [78.94] Max.	6 Pole	6.216 [157.89] Max.

Note: Tolerance ± .015 [.38] unless noted. Dimensions in brackets [] are millimeters.

249 POWER SELECTOR BREAKER SYSTEM

The 249 Power Selector Breaker System combines magnetic-hydraulic branch circuit overload protection and a power system selector switch in one device.

The 249 is designed to allow selection of any one of two, three or four independent power systems. This is accomplished with fool-proof sliding-gate handle covers. The number of sliding covers is one less than the number of power systems. With this arrangement, it is impossible to switch "ON" more than one power system at a time. Since the 249 Power Selector Breaker System is listed as a Branch Circuit Breaker per UL 489 and power switching is accomplished by UL listed breakers, it is usually not necessary to include additional branch service protection.

Standard options available include terminals for front or back connections, choice of trip time delay, current ratings to 100 amperes and single or multi-pole sections. See page 204 for additional information.

Trip Time Delay

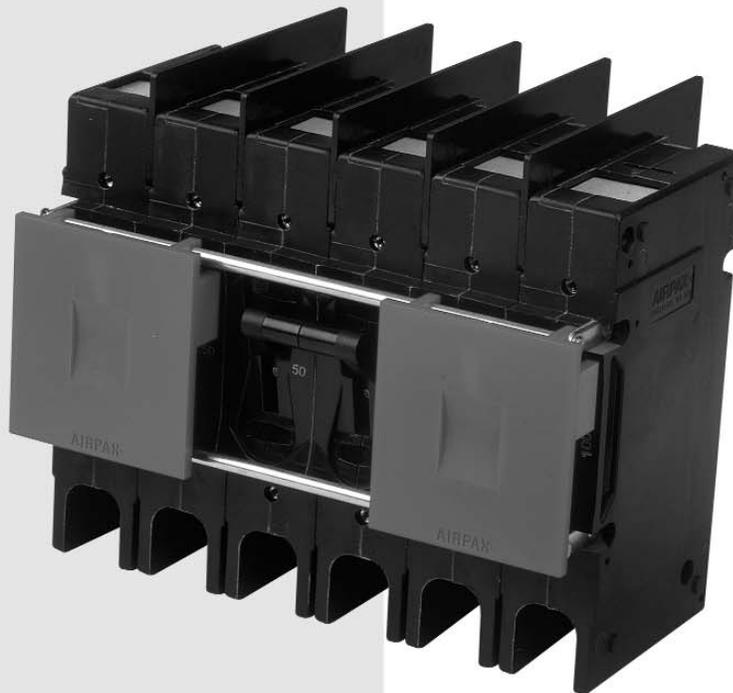
Three inverse time delays are available to permit close coordination with various loads. Delays 51 and 61 are short delays for electronic loads. Delays 52 and 62 are medium delays for mixed loads. Delays 53 and 63 are long delays for motor loads.

Current and Voltage Ratings

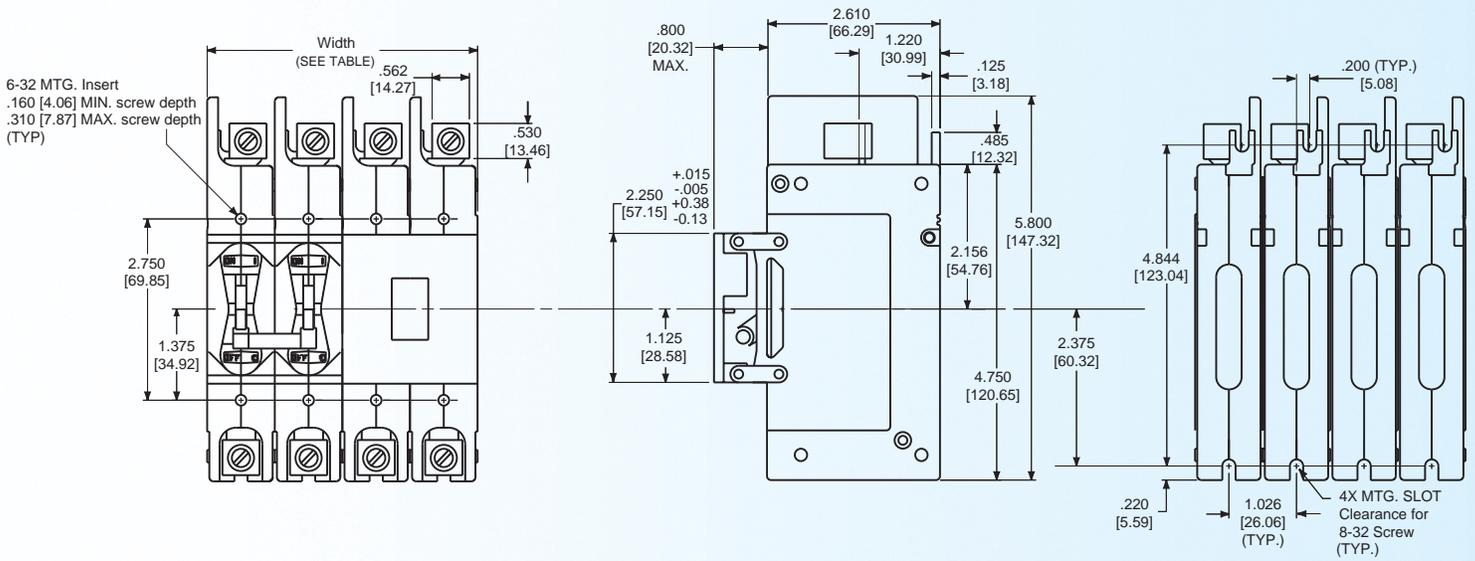
Single pole and multi-pole protector ratings are available up to 100 amperes, 240Vac or 125Vdc. The special configuration for Marine use has a 120V/240Vac rating for current rating up to 100 amperes.

Master Drawing

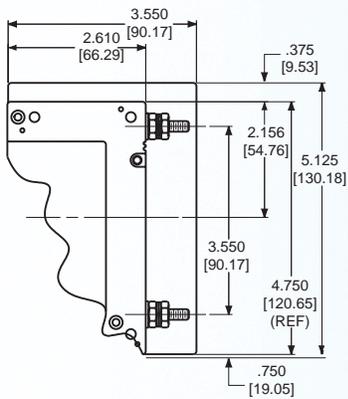
Standard circuit protector terminal and configurations are shown. For other types, consult factory.



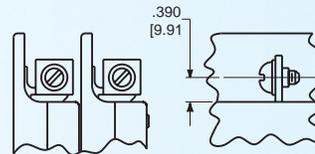
249 Master Drawing



1/4 - 20 Studs



10 - 32 or 1/4 - 20 Screw Terminals



Number of Poles	Width
9	9.324 (236.83) Max.
8	8.288 (210.52) Max.
6	6.216 (157.89) Max.
4	4.144 (105.26) Max.
2	2.072 (52.63) Max.

Note: Tolerance $\pm .015$ [.38] unless noted. Dimensions in brackets [] are millimeters.

Common-Trip Construction

All multi-pole protectors contain an internal trip bar which opens all poles in the event of an overload in any pole. Handles are ganged externally for simultaneous actuation.

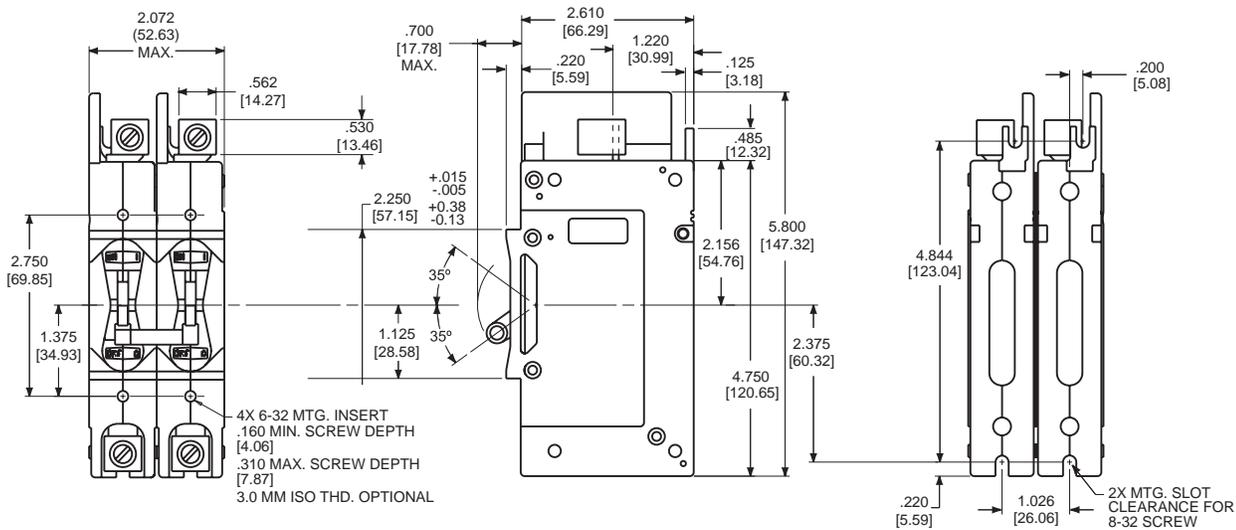
Individual poles may differ in ratings, delays and configurations, providing an almost limitless number of combinations.

Multi-pole protectors (up to 6 poles) easily satisfy special modern day circuitry. Series, shunt, relay and auxiliary switch construction add to the versatility of design engineering. Airpax's sales engineering force is ready to assist in proper unit selection, both for equipment protection and economical design.

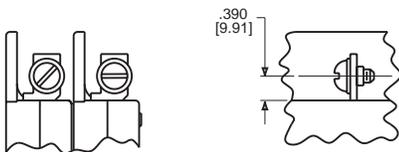
Three Phase, Four Pole Includes Control Protector

Remote shutdown of equipment is sometimes necessary or desirable in today's sophisticated equipment. The 219 four pole assembly fills this need for three phase operation. Three of the four poles are designed for the circuit's proper operating current and over-current protection. The fourth pole may be designed for instantaneous tripping by logic circuitry, interlocks or from a manual remote site or control. The control power required would be quite low, with voltages from 5 to 125Vdc, or 5 to 240Vac available. The fourth pole construction is optional. It may be either series, shunt or relay, depending on the application required. When specifying, both the minimum trip voltage and Hz are required. Factory consultation is readily available.

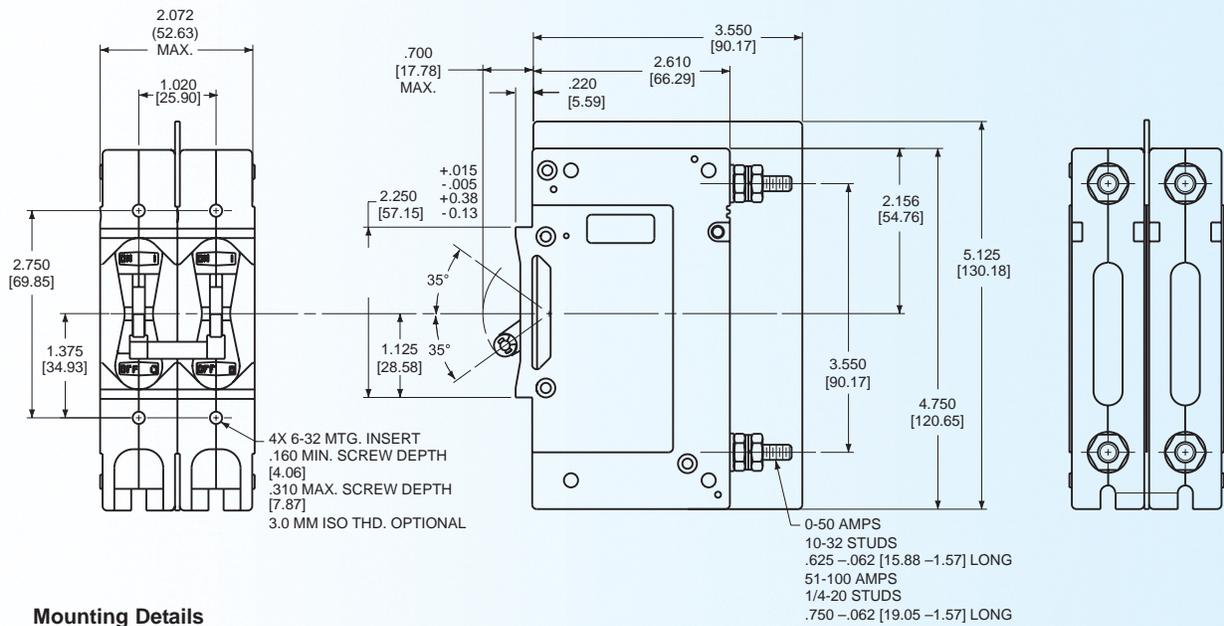
Front Connected Solderless Connector (Back Mounted)



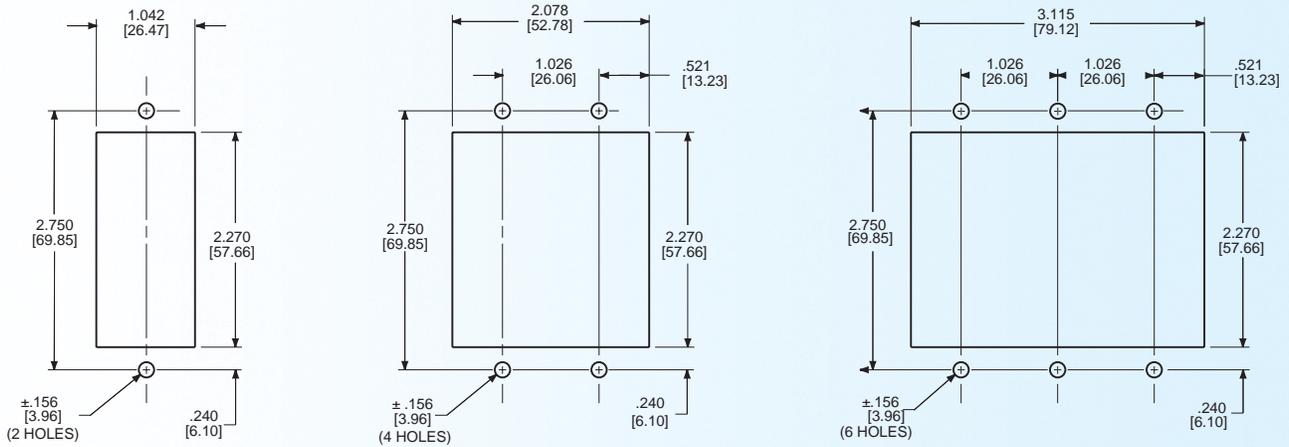
10 - 32 or 1/4 - 20 Screw Terminals



Back Connected Stud Terminal
(Front Mounted)



Mounting Details



Multi-Pole Dimensions	
1 Pole	1.026 (26.06) plus/minus .010
2 Pole	2.072 (52.63) Max.
3 Pole	3.108 (78.94) Max.
4 Pole	4.144 (105.26) Max.
5 Pole	5.180 (131.57) Max.
6 Pole	6.216 (157.89) Max.

Note: Tolerance $\pm .015$ [.38] unless noted. Dimensions in brackets [] are millimeters.
Caution: Elongation of mounting holes may be necessary for units with more than 6 poles and units up to 12 poles due to tolerance compounding.

UL-1500 Ignition Protection

The 229D family is certified to UL-1500 which covers Ignition Protected circuit protectors. This specification requires devices to be used in accordance with the requirements of U.S. Coast Guard and Fire Protection Standard for Pleasure and Commercial Motor Craft, ANSI/MFPA No. 302.

The ratings available are 100 amperes or less at 65Vdc or 240Vac. Maximum IC, 1000 amperes. Consult factory for application details.

The 299D series is available with interlocking to prevent on board and shore power being used simultaneously.

Combination of ON-OFF switching the protection function offers a simplified solution for your electrical systems.

UL 489A Communications Equipment Protection

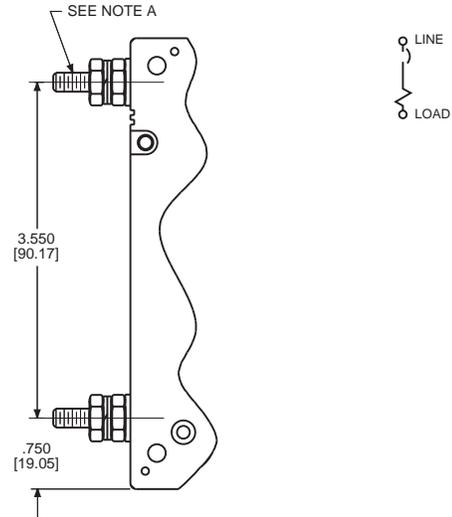
The 279 Series complies with the requirements of UL 489A, Circuit Breakers for use in Communication Equipment, meeting the need for protection at higher DC voltages.

The available ratings are 100 amperes or less at 160Vdc. Maximum short circuit interrupting current is 5000 amperes. The 279 series available only in a series trip configuration.

Please consult Airpax for specific application details.

Series Trip

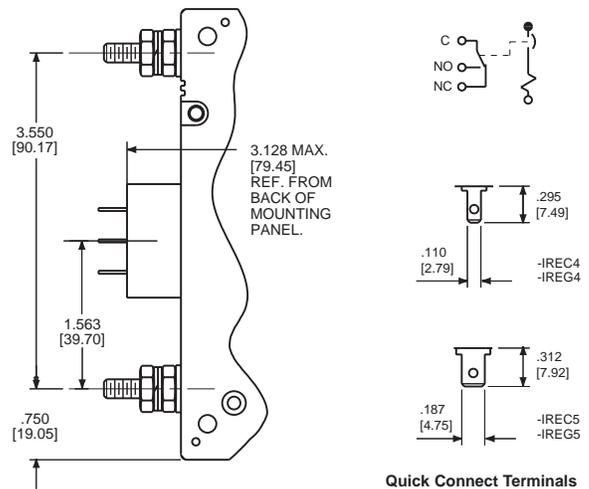
The most popular configuration for magnetic protectors is the series trip, where the sensing coil and contacts are in series with the load being protected. The handle position conveniently indicates circuit status. In addition to providing conventional over-current protection, it's simultaneously used as an ON-OFF switch.



Auxiliary Switch

This is furnished as an integral part of a series pole in single or multi-pole assemblies. Isolated electrically from the protector's circuit, the switch works in unison with the power contacts and provides indication at a remote location of the protector's ON-OFF status.

(Applies to Series Trip Only)



Relay Trip

This permits the overload sensing coil to be placed in a circuit which is electrically isolated from the trip contacts. The coil may be actuated by sensors monitoring pressure, flow, temperature, speed, etc. Other typical applications include crowbar, interlock and emergency/rapid shutdown circuitry. Trip may be accomplished by voltage or current, which must be removed after trip.

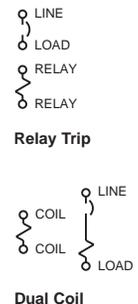
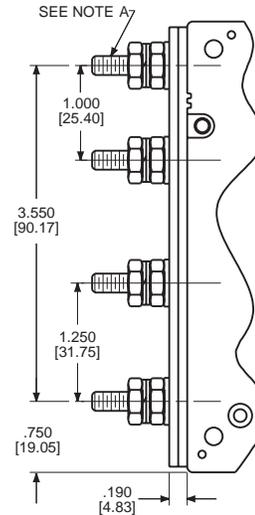
Dual Coil

Providing for both a voltage trip and a current trip function in a magnetic circuit protector is common practice. These two coil protectors provide remote or automatic opening of one or more circuits with a low level signal.

The voltage coil will trip the protector instantaneously while the current coil provides normal inverse time delays. The voltage coil is not rated for continuous duty and therefore, the voltage must be removed when the protector trips.

Since both coils are housed within the same pole, the space savings are substantial.

This option is not available with 64, 65 or 66 delays.

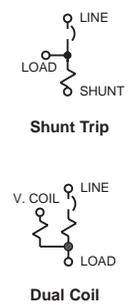
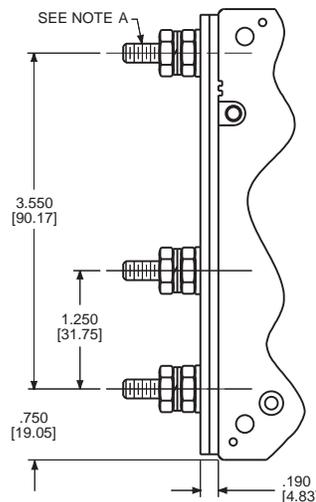


Shunt Trip

The shunt trip is designed for controlling two separate loads with one assembly. The control is established by providing overload protection for the critical load. When the current through this load becomes excessive and reaches the trip point, the protector will open and remove power from both loads simultaneously. The total current rating of both loads must not exceed the maximum contact rating.

Voltage Trip

Sometimes called “dump circuits” or “panic trip circuits,” these units make it possible to open main power contacts with lower power inputs from one or more sources. This configuration is becoming increasingly more important for sensitive circuitry and denser packaging in automation systems. Available in series, shunt or relay configurations.



Note: Tolerance $\pm .015$ [38] unless noted. Dimensions in brackets [] are millimeters.
A: 0-50 Amps, 10-32 Studs $.625 \pm .062$ [15.88 \pm .157] Long, 51-100 Amps, 1/4 - 20 Studs, $.750 \pm .062$ [19.05 \pm .157] Long.

OPERATING CHARACTERISTICS

Percentage of Rated Current vs Trip Time in Seconds

Delay	100%	125%	150%	200%	400%	600%	800%	1000%
41 & 41F	No Trip	May Trip	.6 - 7	.2 - 2	.03 - .40	.01 - .1	.009 - .060	.008 - .050
42 & 42F	No Trip	May Trip	7 - 70	2 - 20	.1 - 3	.01 - .2	.009 - .09	.008 - .08
43 & 43F	No Trip	May Trip	60 - 500	20 - 200	2 - 30	.01 - .1	.009 - .09	.008 - .08
51 & 51F *	No Trip	.4 - 7	.2 - 2	.12 - 1	.03 - .3	.012 - .1	.009 - .07	.008 - .05
52 & 52F *	No Trip	8 - 80	2.5 - 45	.7 - 20	.2 - 3	.05 - 1	.01 - .5	.009 - .08
53 & 53F *	No Trip	100 - 900	50 - 500	20 - 200	2 - 25	.015 - 5	.01 - .15	.009 - .09
61	No Trip	.6 - 5	.3 - 2	.1 - .8	.03 - .3	.015 - .1	.01 - .07	.009 - .06
62	No Trip	12 - 120	6 - 55	2 - 18	.3 - 3	.05 - 1	.016 - .1	.01 - .08
63	No Trip	70 - 800	45 - 450	20 - 200	2 - 30	.3 - 4	.02 - .25	.012 - .15
64 & 64F	No Trip	.6 - 5	.3 - 3	.1 - 1.5	.03 - .5	.02 - .4	.01 - .3	.008 - .25
65 & 65F	No Trip	12 - 100	6 - 50	2 - 18	.3 - 3	.05 - 2	.016 - 1.6	.01 - 1
66 & 66F	No Trip	70 - 800	45 - 450	20 - 200	2 - 30	.3 - 9	.02 - 5	.013 - 3

Note: All U.L. listed products 30 amp and below trip times at 200% are 120 seconds maximum. *279 is available only with DC delays.

Inrush Pulse Tolerance

The table shown above provides a comparison of inrush pulse tolerance with and without the inertial delay feature for each of the 50/60Hz delays. Pulse tolerance is defined as a single pulse of half sine wave peak current amplitude of 8 milliseconds duration that will not trip the circuit protector.

The table at right provides a reference guide for selecting the inertial delay feature. Consult factory for further assistance.

Delay	Pulse Tolerance
61, 62, 63	8 times rated current
64, 65, 66	20 times rated current
64F, 65F, 66F	30 times rated current

Note: These limits do not apply to dual coils, tapped coils, and instantaneous units.

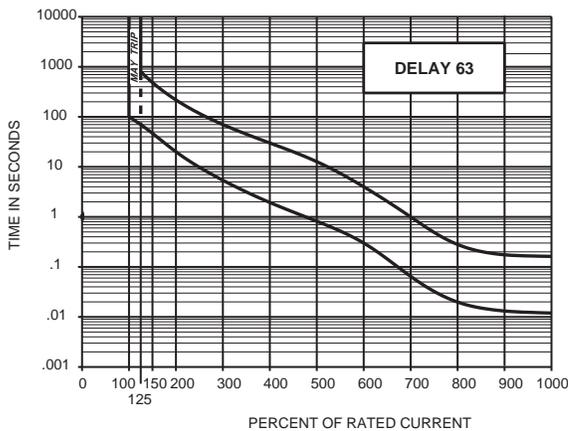
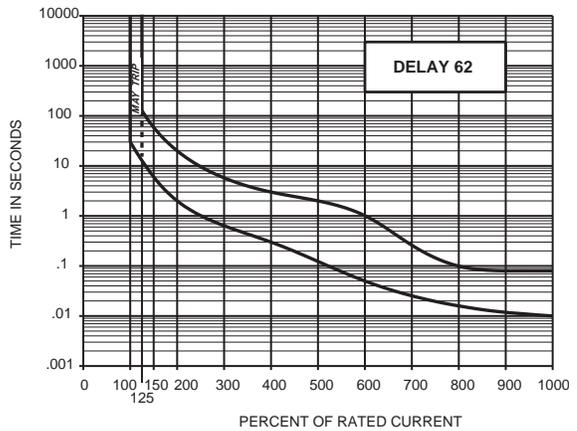
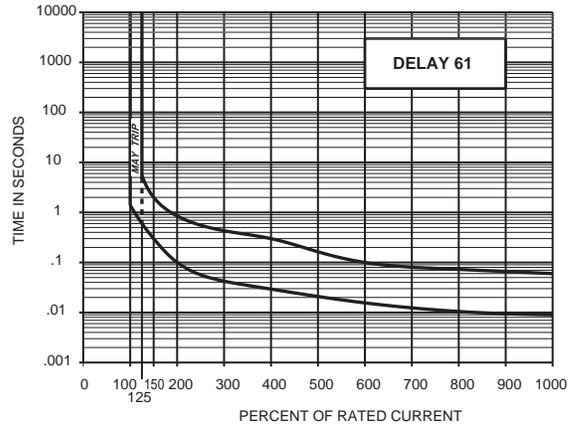
50/60Hz Delay Curves (typ)

A choice of delays is offered for 50/60Hz applications.

Delay 61 is a short delay for general purpose applications. Delay 62 is long enough to start certain types of motors and most transformer and capacitor loads. Delay 63 is a long delay for special motor applications.

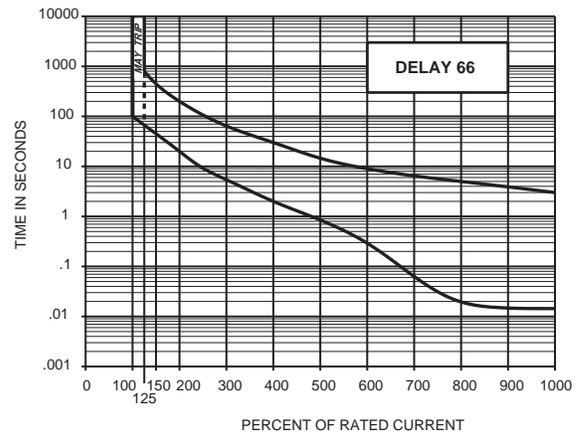
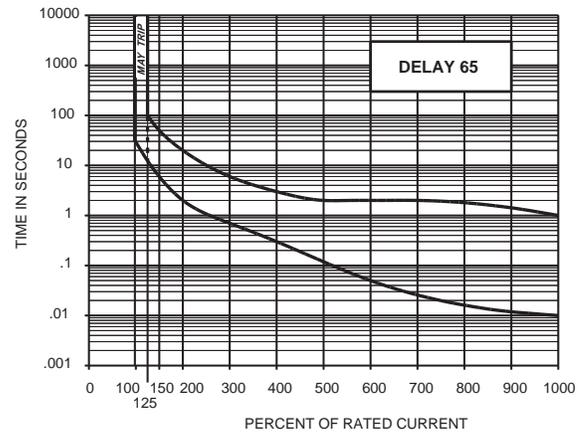
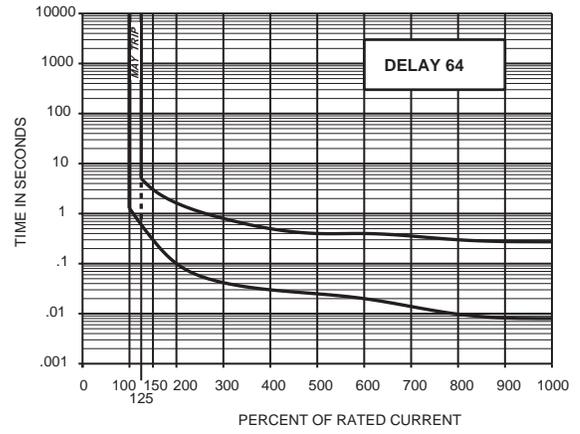
Delays 64, 65 and 66 are the latest 50/60Hz delays with short, medium and long trip times respectively. The patented protector design provides both increased tolerance to high inrush induced nuisance tripping and longer trip times at 600 percent. These delays are ideally suited for applications where thermal devices are presently used, such as motor protection or where short duration, high inrush currents are experienced. As shown in a typical motor start-up curve, the delay 66 will provide locked rotor and overload protection. Nuisance tripping is avoided, since acceptable short periods of overload will not trip the protector.

All trip curves and trip currents are specified with the protector mounted in the normal vertical position at ambient temperature of +25°C. For test and measurement purposes, the protectors should not carry current prior to application of overload for calibration test. For other than vertical mount position, consult factory.

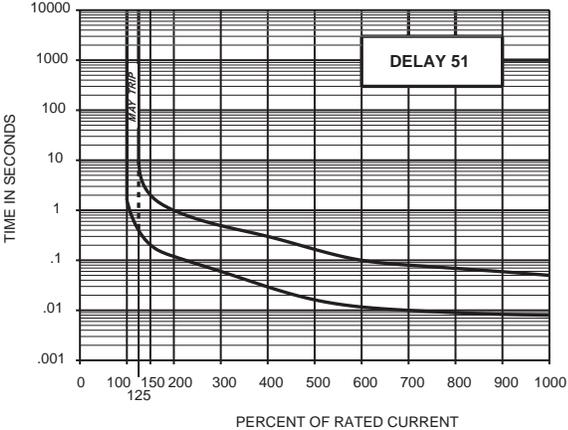


209/219/229/279

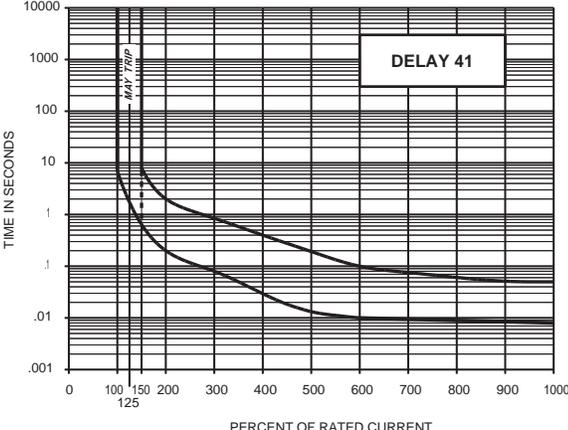
60Hz Delay Curves (typ)



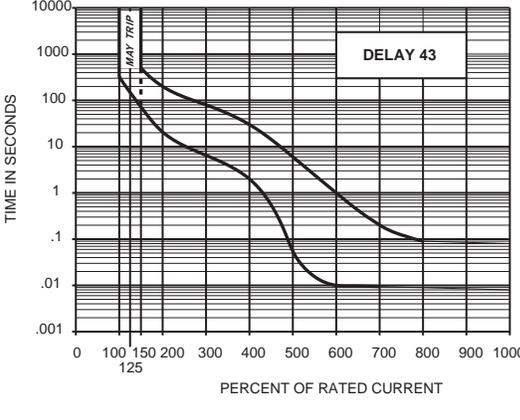
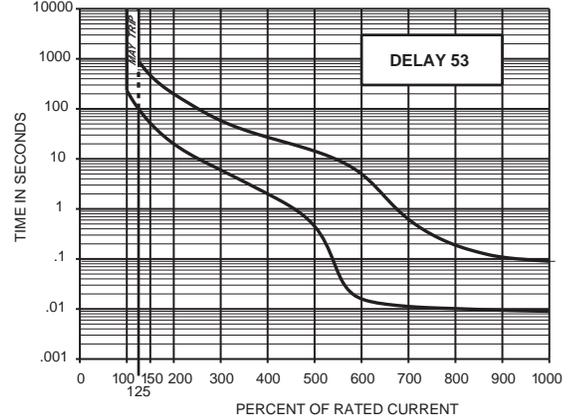
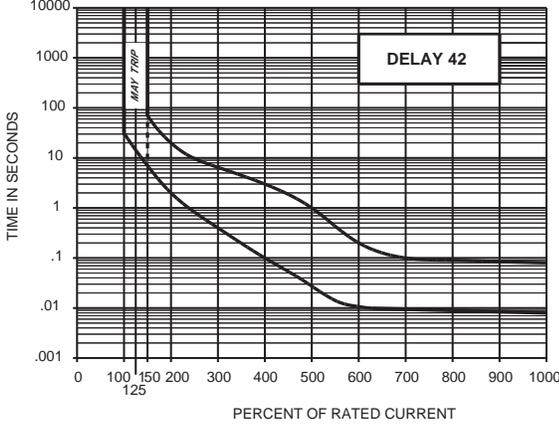
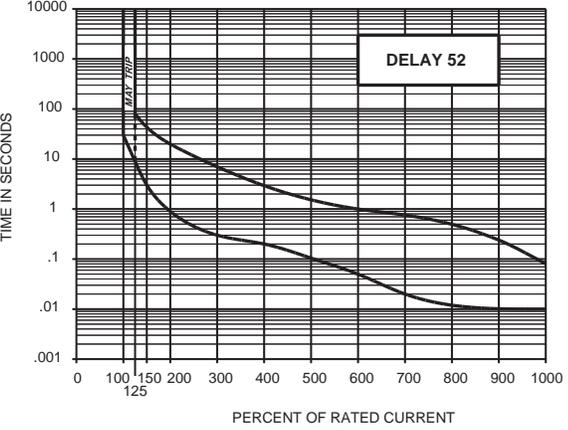
DC Delay Curves (typ)
(279 is available only with DC delays)



400Hz Delay Curves(typ)



209/219/229/279



Coil Impedance Chart

Current Rating	50/60 Hz Impedance Ohms/Delays 61, 62, 63	DC Resistance Ohms/Delays 51, 52, 53
.100	117	112
1	1.00	.970
5	.044	.042
10	.012	.011
20	.0043	.0042
30	.0031	.0030
50	.0019	.0018
80	.0015	.0014
100	.0009	.0008

Note: .1 to 1.0 ampere ± 10%, 1.1 to 5.0 amperes ± 15%, 5.1 to 15.0 amperes ± 25%, 15.1 to 100 amperes ± 50%, or .001 ohms, whichever is greater. DCR & impedance is measured after one hour at 100% rated current.

Approximate Weight Per Pole	
Single Pole	9 oz.
Two Pole	1 lb., 3 oz.
Three Pole	2 lb.
Four Pole	2 lb., 7 oz.
Five Pole	3 lb.
Six Pole	3 lb., 12 oz.

Recommended Torque Specifications	
6-32 mounting inserts	6-8 inch pounds
M3 mounting inserts	4-5 inch pounds
1/4 - 20 screw terminals	35-40 inch pounds
10 - 32 stud terminals	13-14 inch pounds
M5 stud terminals	13-14 inch pounds
1/4 - 20 stud terminals	40-45 inch pounds

Trip Free

Will trip open on overload, even when forcibly held on. This prevents the operator from damaging the circuit by holding the handle in the ON position.

Trip Indication

The operating handle moves positively to the OFF position on overload.

Environmental Specifications

Moisture and fungus resistance is provided by the use of moisture resistant finishes. Special springs and treatment for all ferrous parts eliminate inherent moisture-related problems. The use of fungi inert cases and handles avoids fungus-related problems.

Current Ratings

209/219/229 may be supplied with these ratings: DC, 50/60Hz, 400Hz, 0.1 to 100 amperes. 279 types may be supplied with DC ratings only, 0.1 to 100 amperes.

Voltage Ratings

On 209/219/229, voltages up to and including 240Vac, 50/60Hz or 400Hz, or 125Vdc are available. Multi-pole units can be supplied for 277Vac/480Vac, 50/60Hz. 279 types are available with a voltage of 160Vdc. All units will be marked with the standard maximum voltage. UL Listed breakers will be labeled with the UL listed voltage.

Auxiliary Switch Ratings

When supplied shall be S.P.D.T. configuration with a maximum rating of 10 amperes 250Vac.

Mounting Considerations

A three-inch spacing must be provided between the circuit protector and vent and any conductive surface. If closer than three inches is necessary, then an insulator must be installed on the conductive surface.

Solderless Connectors

Connectors are rated AL9 CU. and accept either copper or aluminum conductors. Units are suitable for use with both 60° and 75° wire. Optional pressure plate for fine stranded wire is available. Contact factory for details.

209/219/229/279 RATINGS AND INTERRUPTING CAPACITIES

209/239

UL Listed (UL 489) Branch Circuit Breakers
CSA Certified C22.2 No. 5

Max. Voltage	Frequency	Amp Ratings	Interrupting Capacity
65	DC	0.1-100	25000A
125	DC	0.1-125	5000A Resistive
125/250	DC	0.1-20	5000A
120/240	50/60Hz	0.1-100	5000A
120/240	50/60Hz	0.1-50	10000A
120	50/60Hz	0.1-50	10000A
240	50/60Hz	0.1-100	5000A
240	400Hz	0.1-100	2500A

279

UL listed (UL 489A) Circuit Breakers
for Use in Communications Equipment

Max. Voltage	Frequency	Amp Ratings	Interrupting Capacity
160	DC	0.1-100	5000A

219/229/259

UL Recognized (UL1077/UL508) Supplementary Protector
Manual Motor Controller
CSA Certified C22.2 No. 14 and 235

Max. Voltage	Frequency	Amp Ratings	Interrupting Capacity
125	DC	0.1-100	5000A Resistive
120/240	50/60Hz	0.1-100	5000A
120/240	50/60Hz	0.1-100	10000A
240	50/60Hz	0.1-100	5000A
277/480	50/60Hz	0.1-100	5000 A
277/480	50/60Hz	0.1-100	10000A w/ 225A max fuse*
480	50/60Hz	0.1-100	10000A w/ 225A max fuse*
347/600	50/60Hz	0.1-100	5000A
600	50/60Hz	0.1-77	10000A w/ 225A max fuse*
250	400Hz	0.1-100	5000 A

*4x rated fuse back up: 480 & 600Vac limited to a max. fuse of 225 amperes.

209/219/229

VDE 0660 Part 101 (EN60947-2) for Category "A" Certified

Max. Voltage	Frequency	Rated Amps (In)	Interrupting Capacity (Ics/Icu)
125	DC	0.1-100	4000A
240	50/60Hz	0.1-100	4000A
240/415	50/60Hz	0.1-100	4000A

VDE 0642 (EN60934)

Max. Voltage	Frequency	Rated Amps (In)	Interrupting Capacity
125	DC	0.1-100	4000A (PC 1)
240	50/60Hz	0.1-100	4000A (PC 1)
240/415	50/60Hz	0.1-100	4000A (PC 1)

229D

Marine Ignition Protected Approved to UL-1500

Max. Voltage	Frequency	Rated Amps	Interrupting Capacity
65	DC	0.1-100	1000A
240	50/60Hz	0.1-100	1000A

How to Order

The ordering code for 209, E-Frame Circuit Protectors may be determined by following the steps in the decision tables shown here.

The coding given permits a self-assigning part number for standard configurations. Factory part numbers are assigned to units with mixed ratings, combinations of styles or construction not listed in the Third Decision Table, etc. With these, it is suggested that order entry be by description and/or drawings, and a part number will be established.

Additionally, it is standard policy to establish a factory-assigned part number whenever a descriptive drawing exists to insure cross reference, traceability and manufacturing control.

When specifying a protector for AC motor start or high inrush applications, the peak amplitude and surge duration should be specified for factory assistance in rating selection.

209 and 239 are UL listed circuit breakers under file no. E53739 per UL 489.

279 is a UL listed under file no. E192808 per UL 489A.

219 is a UL recognized "Manual Motor Controller" under file no. E41607 per UL 508.

229 is a UL recognized "Supplementary Protector" under file no. E66410 per UL 1077.

For example, the following is the code for a single pole breaker with series trip, 50/60Hz, medium inertial delay, 120/240Vac maximum voltage ratings, solderless connector with mounting foot added to the line side of the breaker to facilitate back panel mounting and a current rating of 10.0 amperes.

To determine the ordering number of your particular 209 unit, simply follow the steps shown. You may use this number to place an order or as a reference for further questions you may have.

1 First Decision	
Type	
209*	Magnetic Branch Circuit Breaker, UL 489 Listed
219	Manual Motor Controller, UL 508 Recognized
229	Supplementary Protector, UL 1077 Recognized
279**	Magnetic Circuit Breakers for use in Communication Equipment, UL 489A Listed
229D	Marine Ignition Protection, UL 1500 Recognized
239*	Magnetic Branch Circuit Breaker, UL 489 Listed (marine)
299	Special Construction, not UL Listed or Recognized
<small>* UL 489 Listed units are rated to 125Vdc, 240Vac maximum. ** UL 489A Listed units are rated to 160Vdc maximum.</small>	

2 Second Decision	
Poles	
-1	Single pole unit
-2	Two pole unit
-3	Three pole unit
-4	Four pole unit
-5	Five pole unit
-6	Six pole unit

Notes:

A 6-32 inserts for front mounting are provided on all units. M3 ISO metric mounting inserts are available and are specified by adding -A at the end of the ordering code above.

B The auxiliary switch is located on the right-hand pole (viewed from terminal end) unless specified otherwise. Auxiliary switches are available on all front or back panel mounts (series construction only). If more than one auxiliary switch is specified use "2R" through "6R" as required.

C Line terminals are 10-32 screws for bus connection to 100 amperes. Load terminals are 10-32 screws to 50 amperes and solderless connectors from 50 to 100 amperes.

D An anti-flashover barrier is supplied between poles on all multi-pole versions with 10-32 stud and 1/4-20 stud terminals per UL requirement.

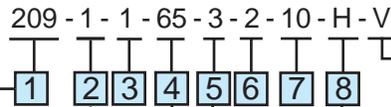
E The standard current values for 100% of rated current are those listed in the Seventh Decision Table. Non-listed values can be readily supplied, in general without delayed delivery. Please contact an Airpax office or sales representative.

3 Third Decision

-0	Switch only
-1	Series
-1REC4	Auxiliary switch* (std.) .110 quick connect
-1REG4†	Auxiliary switch* .110 quick connect
-1REC5	Auxiliary switch* .187 quick connect
-3	Shunt (up to 50 amp only)**
-4	Relay (up to 50 amp only)**

† Gold contacts
* Switch is located in the right hand pole (viewed from terminal end) unless otherwise specified.
** Not available in 209 type.

Example:



6 Sixth Decision

Terminal Selection

	Terminal	Terminal Connect	Panel Mount
-1	Solderless connector	front	front (Note A)
-2	Solderless connector	front	back
-3	10-32 screw (100 amps max.)	bus connect	back (Note C)
-4	10-32 screw (50 amps max.)	front	front
-5	10-32 screw (50 amps max.)	front	back
-6	1/4 - 20 screw (100 amps max.)	front	front
-7	1/4 - 20 screw (100 amps max.)	front	back
-8	10-32 stud (50 amps max.)	back	front (Note D)
-9	1/4 - 20 stud (100 amps max.)	back	front (Note D)
-3M	M5 x 0.8 screw (100 amps max.)	bus connect	back (Note C)
-4M	M5 x 0.8 screw (50 amps max.)	front	front
-5M	M5 x 0.8 screw (50 amps max.)	front	back
-6M	M6 x 1.0 screw (100 amps max.)	front	front
-7M	M6 x 1.0 screw (100 amps max.)	front	back
-8M	M5 x 0.8 stud (50 amps max.)	back	front (NoteD)
-9M	M6 x 1.0 stud (100 amps max.)	back	front (Note D)

Back panel mount style supplied with mounting foot.
Solderless connector will accept #14 through 0 copper or #12 through 0 aluminum wire.

4 Fourth Decision

Hz and Delay

Standard		Option
40	400Hz instant trip	
41	400Hz short delay	41F
42	400Hz medium delay	42F
43	400Hz long delay	43F
50	DC instant trip	
51	DC short delay	51F
52	DC medium delay	52F
53	DC long delay	53F
60	50/60Hz instant trip	
61	50/60Hz short delay	
62	50/60Hz medium delay	
63	50/60Hz long delay	64F
65	50/60Hz short delay (high pulse)	65F
66	50/60Hz long delay (high pulse)	66F
SW	50/60Hz motor delay (high pulse)	
	Switch only (no delay)	

An "F" after any delay denotes high pulse tolerance construction.

5 Fifth Decision

Voltage and Current

	Maximum Voltage	Maximum Current (Amperes)
-1	65Vdc††	100
-2	125Vdc	100
-3	120/240Vac	100
-4	240Vac	100
-5*	277/480Vac†	100
-6	277Vac	100
-7*	600Vac	77
-8*	480Vac †††	100
-9**	160 Vdc	100

* Multi-pole only
** For 279 ratings only
† 240/415Vac "Wye" only for VDE
†† For 229D ratings only
††† Two poles breaking minimum

V = VDE Approved

The shaded areas denote VDE Approval options. This approval requires the addition of a V at the end of the part number. The V will be added to any part number formed entirely from shaded decisions. If non-shaded areas are selected, the unit will not be VDE Approved, but other approvals still apply.

7 Seventh Decision

Current Ratings

Amps	Amps
.1	10
.25	15
.5	20
1	25
2	30
2.5	50*
3	60
5	70
7.5	100 *

Non-Standard currents are available. (Note E).
*Switch only ratings.

8 Eighth Decision

Optional

A	Metric mounting inserts M3 (Note A)
H	International handle markings

Multi-pole units with mixed construction poles numbered left to right when viewed from terminal end.

DECISION TABLES FOR 249 POWER SELECTOR BREAKER SYSTEM

209/219/229/279

How to Order

To evolve a convenient ordering system for most applications, the following code has been developed. If a system is required which is not covered below, please consult factory or describe in detail. The number shown as an example describes a 120 volt, three section system, such as may be used on a boat with a port and starboard shore power receptacle and an AC generator. The breaker rating for the shore power is 30 amperes and for the generator 20 amperes in this example. 1/4 -20 screw type terminals and a medium time delay are specified.

Example:

249 - 6 - C - 20 - 30 - 30 - 2 - 62 - 1



1 First Decision	
Total Number of Poles	
-2	2
-4	4
-6	6
-8	8
-9	9

2 Second Decision		
Total Number of Poles		
Code	Number of Selections	Breaker Poles Per Section
-A	2	1
-B	2	2
-C	3	2
-D	4	2
-E	2	3
-F	3	3

3 Third Decision	
Current Rating (Each Section)	
Indicate the actual rating from the list below for each section (left to right when viewed from front.) -10, -15, -20, -25, -30, -50, -60, -70, -100	

4 Fourth Decision	
Terminals	
-1*	Box type solderless wire connect
-2	1/4 - 20 screw
-3	1/4 - 20 stud (for back connection)
* -1 box type connector not supplied on 239 marine applications.	

5 Fifth Decision	
Trip Time Delay	
-51 or 51F	Short DC
-52 or 52F	Medium DC
-53 or 53F	Long DC
-61	Short AC
-62	Medium AC
-63	Long AC
-64	Short AC (high pulse)
-65	Medium AC (high pulse)
-66	Long AC (high pulse)

6 Sixth Decision	
Application	
-1	Marine (239 Breaker)
-2	Industrial (209 Breaker)