

AIRPAX®

IAG/IUG/IEG/CEG/LEG Magnetic Circuit Protectors



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AIRPAX® | IAG/IUG/IEG/CEG/LEG Series Hydraulic Magnetic Circuit Protectors

INTRODUCTION

The Airpax™ IAG/IUG/IEG/CEG/LEG magnetic circuit protectors provide low-cost power switching, reliable circuit protection and accurate circuit control for equipment in the international marketplace.

IEG models meet IEC spacing requirements which is mandatory for equipment that must comply with IEC specifications 601 and 950 and VDE specifications 0804 and 0805. In addition, they are UL Recognized as supplementary protectors per UL STD. 1077, CSA Certified as supplementary protectors per CSA C22.2–No. 235, VDE Approved to VDE 0642 (EN60934), CCC Approved and CE Compliant. IAG models are for those applications where the unit's inherent attributes are desired, but compliance with the various standards is not required.

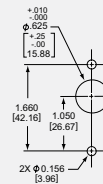
Designed using the latest in sensitive hydraulic magnetic technology, the IAG/IUG/IEG/CEG/LEG line adapts itself to many applications and environments. They're ideal for data processing and business machines, medical instrumentation, broadcast

equipment, vending and amusement machines, military applications and wherever precision operation is required. Temperature differences which affect fuses and other thermal devices are not a concern.

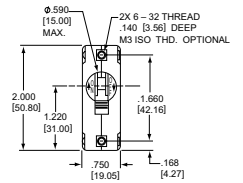
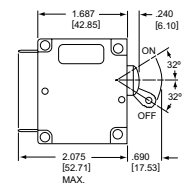
One important feature of this protector line is a "trip free" action, which means the circuit will trip in the presence of an overload even though the handle is held in the ON position. The delay mechanism senses the fault and the contacts open.

The IAG/IUG/IEG/CEG/LEG is available in a wide variety of configurations including series, series with auxiliary switch, shunt and relay with a choice of delays and ratings in either DC, 50/60Hz or 400Hz versions. Handles come in seven different colors and international markings are standard. Single or multiple versions are available, with a variety of pole arrangements to meet your specifications. Four pole models require a double toggle handle. Units with a handle per pole come in one through six pole assemblies.

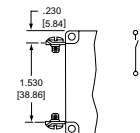
Single Pole Mounting Detail



SINGLE POLE CIRCUIT PROTECTOR



LEG Type Units Require Screw Terminals



Note: Tolerance ± 0.15 [3.8] unless noted. Dimensions in brackets [] are millimeters.

MULTI-POLE CIRCUIT PROTECTORS
(IAG/IUG/IEG/CEG/LEG)

Two Pole Protectors

An assembly consisting of two single pole units, having their trip mechanisms internally coupled and with a single toggle handle, forms the IEG11 with quick-connect D.I.N.-style terminals. Individual poles may differ in ratings, delays and internal connections. An auxiliary switch may be included in either or both poles, allowing you to mix SELV and hazardous voltages. Rugged screw-type terminals can be provided, in which case the designation would be IEG66. The IEGH offers a toggle handle for each pole. LEG type units are available only in one or two pole configurations.

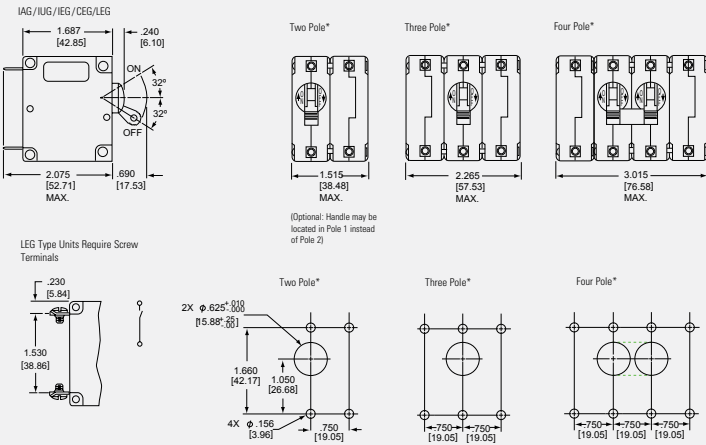
Three Pole and Four Pole Protectors

The three pole construction consists of three single pole units assembled with an internal mechanical interlock which actuates

all units simultaneously. A single toggle handle operates all three poles for quick and convenient control, or if preferred, a handle per pole is available. The four pole construction consists of four single pole units assembled with an internal mechanical interlock which actuates all units simultaneously. A double toggle handle operates all four poles. The individual poles need not have identical characteristics and any series trip pole may have an auxiliary switch. If screw-type terminals are required, the breaker designation will be IEG666 for a three pole version and IEG6666 for a four pole version.

Protector poles are numbered consecutively when viewed from the terminal side, with the ON position up, starting with Pole #1 on the left side and proceeding to the right.

IAG/IUG/IEG/CEG/LEG Multi-Pole Circuit Breakers



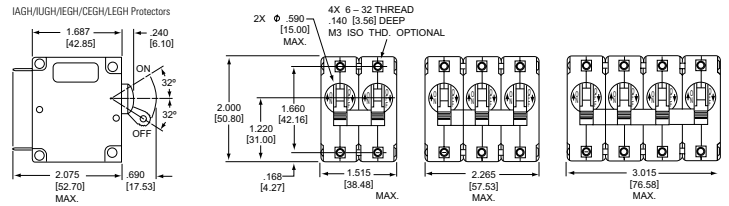
Panel Mounting Detail: Tolerance for Mtg. ±.005 [13] unless noted.
*See Single Pole Mounting Detail for hole sizes and locations. LEG type units are only available in one or two poles.

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

MULTI-POLE CIRCUIT PROTECTORS
(IAGH/IUGH/IEGH/CEGH/LEGH)

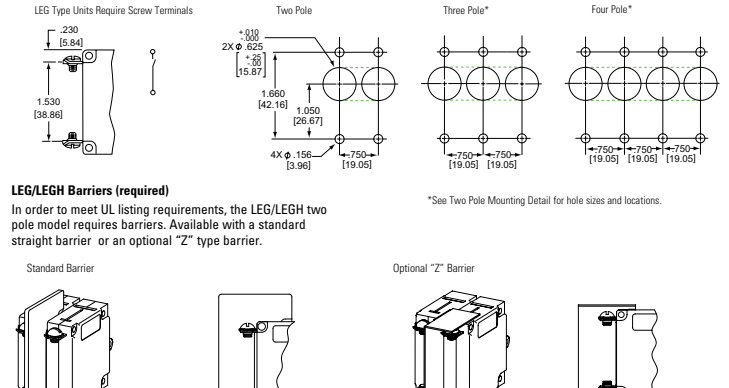
The IAGH/IUGH/IEGH/CEGH/LEGH two, three and four pole models are available with a handle per pole.

LEGH type units are available only in two pole models.



Panel Mounting Detail: Tolerance for Mtg. ±.005 [13] unless noted.

NOTE: We recommend machining slots into your panel for 2 or more poles. This eliminates the need to disassemble/reassemble the handle ties to be able to insert the handles thru individually drilled holes. LEG type units are only available in one or two poles.



LEG/LEGH Barriers (required)
In order to meet UL listing requirements, the LEG/LEGH two pole model requires barriers. Available with a standard straight barrier or an optional "Z" type barrier.

*See Two Pole Mounting Detail for hole sizes and locations.

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

ROCKER CIRCUIT PROTECTORS
(IAGX/IAGZX/IUGX/IUGZX/IEGX/IEGZX/CEGX/CEGZX/LEGZX)

The IAGX/IUGX/IEGX/CEGX and IAGZX/IUGZX/IEGZX/CEGZX/LEGZX styles offer two attractive rocker actuator versions of our popular IAG/IUG/IEG/CEG/LEG family. Designed with the operator in mind, each features handles with a concave surface and aesthetic appearance for front panel applications.

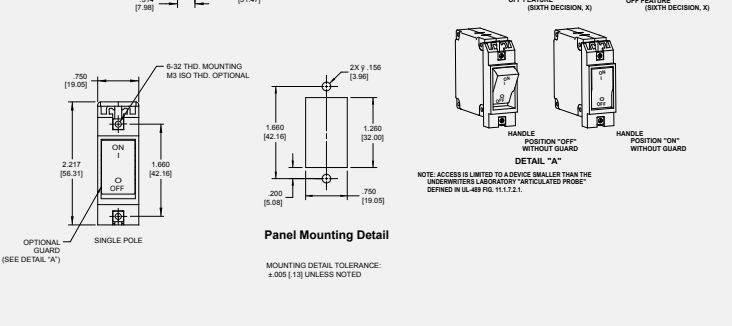
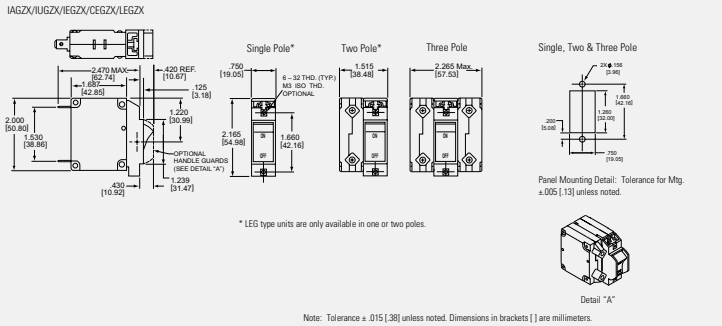
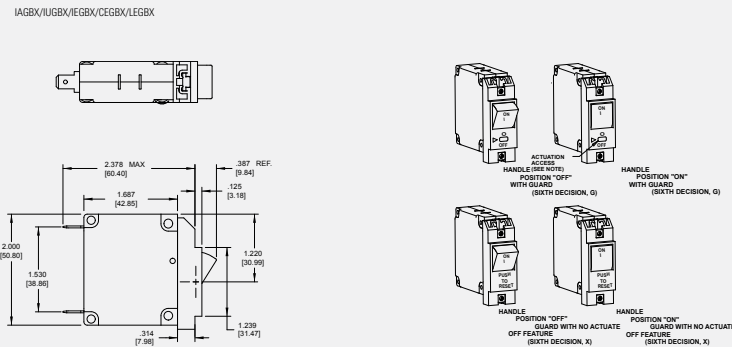
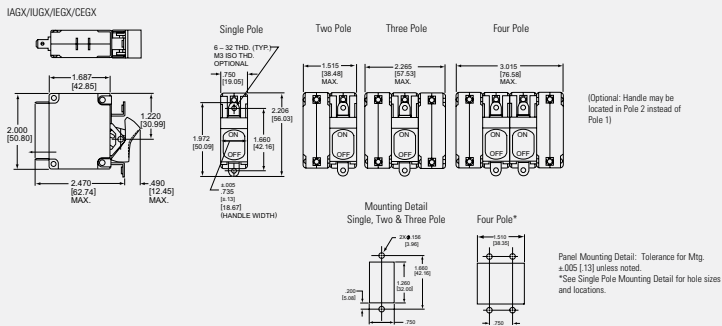
Both are available with rocker handle styles in a choice of five single colors: black, red, grey, orange or white.

The IAGZX/IUGZX/IEGZX/CEGZX/LEGZX style adds our "EZ" options of contrasting dual color rocker actuators, affording a clear visual indication of the handle position and integrated handle guards, to help prevent accidental turn-on and turn-off of the unit. Available with a black rocker and white, red or green indicator color for either ON or OFF indication.

ROCKER CIRCUIT PROTECTORS
(IAGBX/IUGBX/IEGBX/CEGBX/LEGBX)

The innovative new design of our IEG BX style circuit breaker features a flat front rocker that not only satisfies your aesthetic needs, it guards against accidental actuation while providing the highest degree of circuit protection and quality. Only Airpax offers this new standard in user interface, providing additional peace of mind that guards alone can't supply.

Available on a variety of versions with a full range of agency approvals, the new IEG BX style circuit breakers meet or exceed all current performance specifications, including interrupting capacities up to 50,000 amperes. Various guard options offer additional and increasing levels of actuation protection performance. The two shot mold on the flat rocker surface provides a clean, crisp legend that can withstand demanding use.



SEALED TOGGLE CIRCUIT PROTECTORS (IAGN/IUGN)

The IAGN/IUGN family is a sealed toggle version of the IAG/IUG family. The silicone rubber seal around the handle assures panel seal integrity and makes this style a natural for harsh environments.

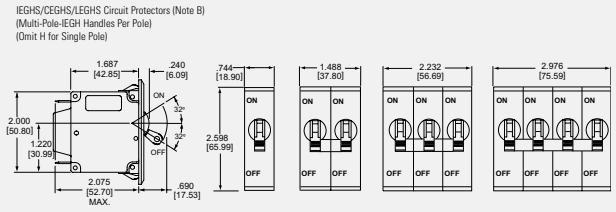
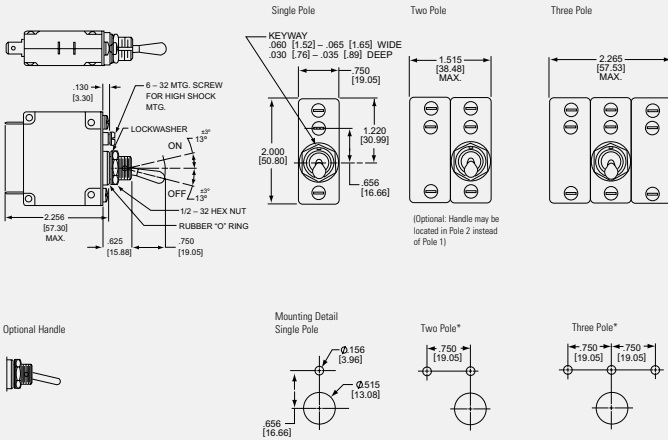
This sealed toggle family is available in one to three poles with ratings of .050 to 50 amperes.

SNAP-IN CIRCUIT PROTECTORS (IEGS/IEGHS/CEGS/CEGHS/LEGS/LEGHS)

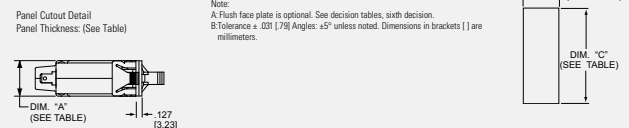
The Snap-In version of the IEG brings mounting simplification and international spacing together in a package that is aesthetically enhanced. The IEGS securely snaps into a rectangular cut-out, eliminating the need for panel mounting hardware and the associated costs. The face plate of the IEGS is a clean, black matte and it satisfies the increasing demand for front panel components that are designed with ergonomic considerations.

The IEGS is offered in either flush or beveled versions, in 1, 2, 3 or 4 pole packages, and with a handle per pole or per unit.

The IEGS is UL Recognized, CSA Certified and VDE approved.



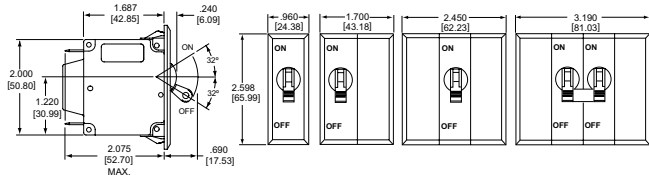
IEGHS/CEGHS/LEGHS Circuit Protectors (Note B)
(Multi-Pole-IEG Handles Per Pole)
(Omit H for Single Pole)



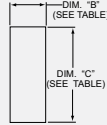
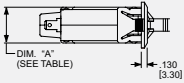
Note:
A Flush face plate is optional. See decision tables, sixth decision.
B Tolerance = .031 [0.79] Angles: ±45° unless noted. Dimensions in brackets [] are millimeters.

DIMENSIONS "A", "B", "C"				
Number of Poles	Dimension "A", inches [mm]	Dimension "B", inches [mm]	Dimension "C", inches [mm]	
1 pole	.750 [19.05] max	.755 [19.18] min	2.180 ± .005 [55.37 ± .13]	
2 pole	1.515 [38.48] max	1.520 [38.61] min		
3 pole	2.265 [57.53] max	2.270 [57.66] min		
4 pole	3.015 [76.58] max	3.020 [76.71] min		
Panel Thickness			.040 to .059 [1.02 to 1.50]	.060 to .100 [1.52 to 2.54]

IEGS/CEGS/LEGS Circuit Protectors (Note B)
(Add H for multiple handles per unit, IEHGS)



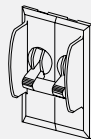
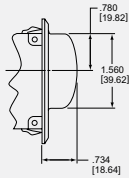
Panel Cutout Detail
Panel Thickness: (See Table)



DIMENSIONS "A", "B", "C"

Number of Poles	Dimension "A", inches [mm]	Dimension "B", inches [mm]	Dimension "C", inches [mm]
1 pole	.750 [19.05] max	.780 ± .015 [19.81 ± .381]	2.180 ± .005 [55.37 ± .13] 2.186 ± .011 [55.52 ± .28]
2 pole	1.515 [38.48] max	1.540 ± .015 [39.12 ± .381]	
3 pole	2.265 [57.53] max	2.290 ± .015 [58.17 ± .381]	
4 pole	3.015 [76.58] max	3.040 ± .015 [77.22 ± .381]	
Panel Thickness			.040 to .059 [1.02 to 1.50] .060 to .100 [1.52 to 2.54]

Optional Handle Guard



Note: A. Tolerance ± .015 [.38] unless noted. Dimensions in brackets [] are millimeters.
B. Beveled face plate is standard.

CONFIGURATIONS

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 overcurrent protection, it's simultaneously used as an on-off switch.

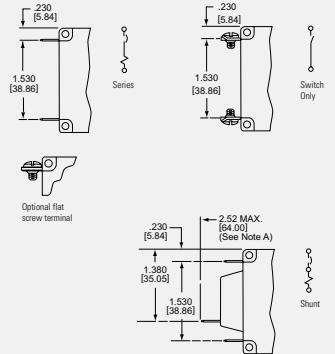
Shunt Trip

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.

Auxiliary Switch (Applies to Series Trip Only)

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.

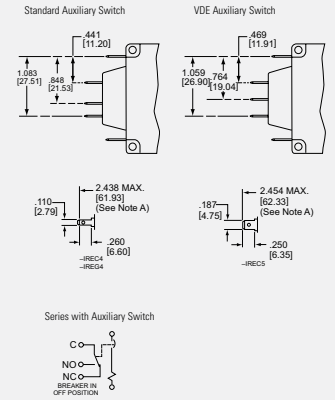
Auxiliary switch contacts actuate simultaneously with the main protector contacts, and will open regardless of whether the protector contacts are opened manually or electrically. For auxiliary switch ratings below 6Vac or 5Vdc, an auxiliary switch with gold contacts designated as REG is available. Gold contacts are not recommended for load current above 100 milliamps.



MAIN TERMINAL TYPES

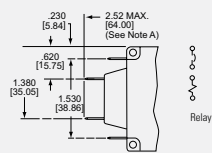
Amp Rating	Push-On	8-32 Screw	M4 Screw	10-32 Screw	M5 Screw
.05 to 30	X	X	X		
30.1 to 50				X	X

Note:
A. Terminal protrusion dimensions are referenced from back mounting panel.
B. Main terminals are male push-on type .250 [6.35] wide x 0.31 [7.9] thick x .375 [9.53] long or 8-32 x .187 [4.75] screw type. Metric screw terminals are M4 x 5mm (+.03A) M5 x 5mm screw type (+.03A). On VDE approved builds with screw terminals, external tooth lockwashers are supplied. On VDE approved builds with push-on terminals a soldered connection is required above 25 amperes.



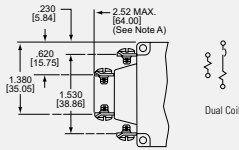
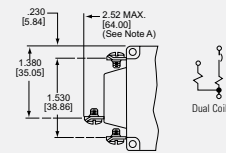
Relay Trip

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.



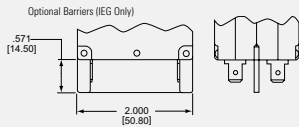
Dual Coil

By combining two electrically independent coils on a common magnetic circuit, it is possible to provide contact opening when either an over-current or trip voltage is applied to the respective coils. One coil will be a current trip coil with standard specifications. The second, or dual coil, can be used to provide a control function permitting contact opening from a remote interlock or other transducer functions. Standard coils are 6, 12, 24, 48, 120 and 240 volts. Tripping is instantaneous and must be removed (usually self-interrupting) after trip.



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

TYPICAL RESISTANCE / IMPEDANCE

Current Ratings (Amps)	Impedance		
	DC (ohms)	AC, 50/60Hz (ohms)	AC, 400Hz (ohms)
	51, 52, 53, 59	61, 62, 63, 69	41, 42, 43, 49
0.200	36.6	34.2	74.2
1.00	1.38	1.47	2.85
2.00	0.31	0.25	0.64
5.00	0.053	0.051	0.100
10.0	0.016	0.013	0.027
20.0	0.006	0.005	0.008
30.0	0.0027	0.0026	0.004
50.0	0.0019	0.0018	—

DCR and Impedance based on 100% rated current applied and stabilized for a minimum of one hour. Tolerance: 05-25 amperes ± 20%; 26-30 amperes ± 25%; 21-50 amperes ± 50%. Consult factory for special values and for coil impedance of delays not shown.

OPERATING CHARACTERISTICS

Inrush Pulse Tolerance

The following table 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 breaker. The table at left provides a guide to determine if the inertia delay feature is required. Consult factory for further assistance.

INRUSH PULSE TOLERANCE	
Delay	Pulse Tolerance
61, 62, 63, 71, 72, 73	10 times rated current (approx)
61F, 62F, 63F, 71F, 72F, 73F	12 times rated current (approx)
64, 65, 66	25 times rated current (approx)

PERCENTAGE OF RATED CURRENT VS TRIP TIME IN SECONDS AT +25°C (VERTICAL MOUNT)

Delay	100%	125%	150%	200%	400%	600%	800%	1000%
41	No Trip	May Trip	.500 to 8.0	.150 to 1.9	.020 to .40	.006 to .25	.004 to .1	.004 to .05
42	No Trip	May Trip	5 to 70	2.2 to 25	.40 to 5.0	.012 to 2	.006 to .2	.006 to .15
43	No Trip	May Trip	35 to 350	12 to 120	1.5 to 20	.012 to 2.2	.01 to .22	.01 to .1
49	No Trip	May Trip	.100 Max	.050 Max	.020 Max	.020 Max	.020 Max	.020 Max
51*	No Trip	.500 to 6.5	.300 to 3.0	.100 to 1.2	.031 to .500	.011 to .25	.004 to .1	.004 to .08
52*	No Trip	2 to 60	1.8 to 30	1 to 10	.15 to 2.0	.04 to 1	.008 to .5	.006 to .1
53*	No Trip	80 to 700	40 to 400	15 to 150	2 to 20	.23 to 9	.018 to .55	.012 to .2
59*	No Trip	.120 Max	.050 Max	.050 Max	.022 Max	.017 Max	.017 Max	.017 Max
61*	No Trip	.700 to 12	.35 to 7.0	.130 to 3.0	.030 to 1	.015 to .3	.01 to .15	.008 to .1
62*	No Trip	10 to 120	6 to 60	2 to 20	.2 to 3.0	.02 to 2	.015 to .8	.01 to .25
63*	No Trip	50 to 700	30 to 400	10 to 150	1.5 to 20	.4 to 10	.013 to .85	.013 to .5
64	No Trip	.7 to 12	.35 to 7	.13 to 3	.030 to 1	.017 to .3	.01 to .16	.008 to .1
65	No Trip	10 to 120	6 to 60	2 to 20	.2 to 3	.02 to 2	.017 to .76	.01 to .6
66	No Trip	50 to 700	30 to 400	10 to 150	1.5 to 20	.4 to 10	.014 to 5	.014 to 3
69*	No Trip	.120 Max	.100 Max	.050 Max	.022 Max	.017 Max	.017 Max	.017 Max
71**	No Trip	.440 to 10	.300 to 7	.100 to 3.0	.03 to 1	.012 to .3	.004 to .15	.004 to .1
72**	No Trip	1.8 to 100	1.7 to 60	1 to 20	.15 to 3	.04 to 2	.008 to .79	.006 to .28
73**	No Trip	50 to 600	30 to 400	10 to 150	1.8 to 20	.22 to 10	.018 to .88	.011 to .50
79**	No Trip	.120 Max	.100 Max	.050 Max	.023 Max	.016 Max	.015 Max	.015 Max

*CEG type units are available only with 51, 52, 53 and 59 delays. LEG type units are available only with 61, 62, 63 and 69 delays. **135% minimum trip point for delays 71, 72, 73 and 79.

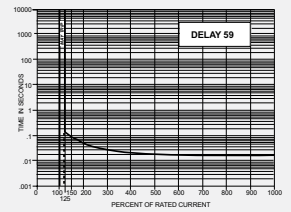
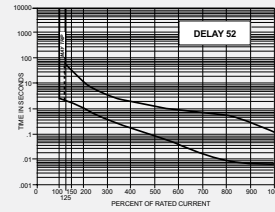
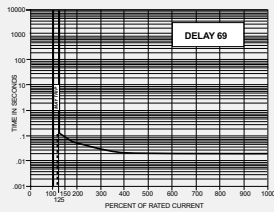
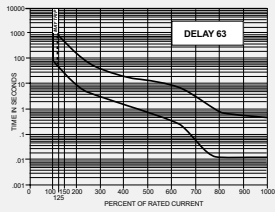
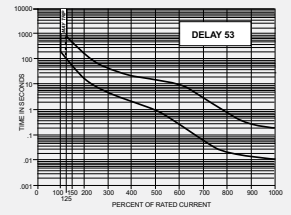
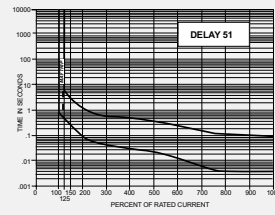
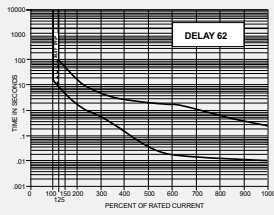
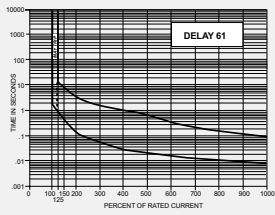
DELAY CURVES (IAG/IUG/IEG/CEG/LEG)

400Hz, DC, 50/60Hz Delay Curves (typ)

A choice of delays is offered for DC, 50/60Hz and 400Hz applications. Delays 49, 59 and 69 provide fast acting, instantaneous trip and are often used to protect sensitive electronic equipment (not recommended where known inrush exists). Delays 41, 51 and 61 have a short delay for general purpose applications. Delays 42, 52 and 62 are long enough to start certain types of motors and most transformer and capacitor loads. Delays 43, 53 and 63 are long delays for special motor applications at 400Hz, DC and 60Hz. CEG type units are only available in 51, 52, 53 and 59 delay curves. LEG type units are only available in 61, 62, 63 and 69 delay curves.

DELAY CURVES (IAG/IUG/IEG/CEG)

DC Delay Curves (typ)

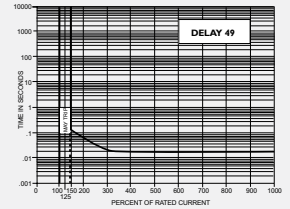
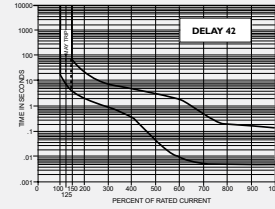
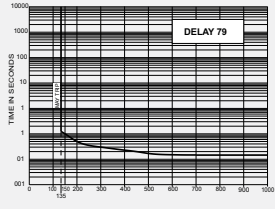
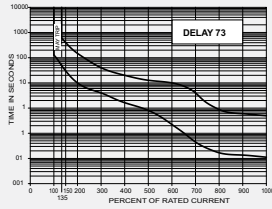
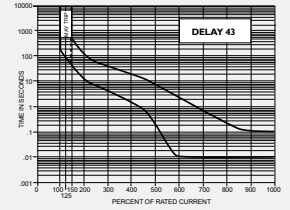
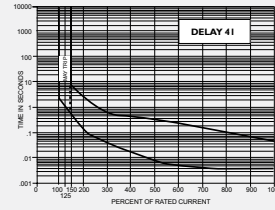
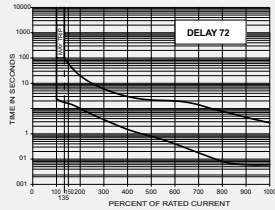
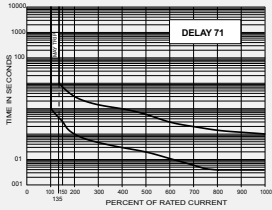


DELAY CURVES (IAG/IUG/IEG)

Multi-frequency - DC, 50/60Hz Delay Curves (typ)

DELAY CURVES (IAG/IUG/IEG)

400Hz Delay Curves (typ)



SPECIFICATIONS

Trip Free

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

Trip Indication

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

Ambient Operation

IAG/IUG/IEG/CEG/LEG protectors operate in temperatures between -40° C to +85° C.

Insulation Resistance

Not less than 100 megohms at 500 volts DC.

Dielectric Strength

IAG/IUG/IEG/CEG/LEG protectors withstand 3750Vac, 60Hz for 60 seconds between all electrically isolated terminals, except auxiliary switch terminals shall withstand 600Vac, 60Hz for REG and REC types. Four terminal dual coil and relay construction (not offered in the IEG) will withstand 1500Vac.

Endurance

Operating as a switch, the operating life exceeds 10,000 operations at a rate of 6 per minute when tested as follows: 6000 OPS @ rated current plus 4000 OPS @ at no load.

Electrical Characteristics

.050-50 amperes; 80Vdc Max., 240Vac Max., 50/60Hz and .050-30 amperes; 250Vac Max., 400Hz. Units above 30 amps are not suitable for across-the-line motor starting.

Auxiliary Switch

When supplied shall be SPDT configuration. Non VDE approved switches have a maximum UL rating of 10.0 amperes, 250 volts, 60Hz; 3.0 amperes, 50 volts DC, 1 amperes, 80 volts DC (REC) type or 0.1 amperes, 125 volts, 60Hz. (REG type).

VDE approved switches have a maximum UL rating of 10.0 amperes, 250 volts, 60Hz, 1 amperes, 80 volts DC (REG type); or 0.1 amperes, 125 volts, 60Hz (REG type); or 0.1 amperes, 125 volts, 60Hz (REG type).

Moisture Resistance

Meets all the requirements of MIL-PRF-55629 when tested in accordance with Method 106 of MIL-STD-202.

Salt Spray (Corrosion)

Meets the requirements of MIL-PRF-55629 when tested in accordance with Method 101 of MIL-STD-202.

Shock

Circuit protectors shall not trip when tested per MIL-STD-202, Method 213, Test Condition I with 100% rated current applied to delayed units, except 90% current in plane 4 (i.e., handle down). Instantaneous units shall have 80% rated current applied in all planes.

Construction

Series, shunt, relay and series with auxiliary switch available in various delays and combinations.

Vibration

Circuit protector shall not trip when vibrated per MIL-STD-202, Method 204, Test Condition A with 100% rated current applied to delayed units and 80% rated current to instantaneous units.

VDE Approval

IEG is VDE approved under VDE 0642 (EN60934). The IEG has 8mm creepage and clearance between the main circuit and the following areas:

- A. Operator accessible area around the handle.
- B. The mounting inserts or brackets.
- C. The auxiliary switch circuit.
- D. Between poles.

Care must be taken to maintain spacings at the terminals when wired. The VDE approval for standard terminals is not for use with bare wire. A crimp type lug is required. In addition, all VDE approved units will be in compliance with specific CE Directives. These units will be marked as CE Compliant.

UL1500 (Marine Ignition Protected)

IDG/IDGH is approved for Marine Ignition Protection

UL489A Listed

The CEG is dimensionally the same as the popular IEG, but provides UL listing to UL489A. Available in one to three poles, in series, series with auxiliary switch, shunt, dual coil and voltage trip configurations. As a circuit breaker, the CEG provides communication equipment manufacturers with a UL listed circuit breaker in a very compact package that meets the stringent environmental requirements of today's marketplace. This makes the CEG ideal for switching, transmission and wireless applications.

UL489 Listed

The LEG is dimensionally the same as the popular IEG, but provides UL listing to UL489. Available with one or two poles, in series, series with auxiliary switch, shunt and three-terminal dual coil configurations. As a circuit breaker, the LEG provides equipment manufacturers with a UL listed magnetic hydraulic circuit breaker in the most compact package available on the market.

APPROXIMATE WEIGHT PER POLE (1 TO 6 POLES AVAILABLE)	
Ounces	Grams
2.2	62.4

RECOMMENDED TORQUE SPECIFICATIONS	
Component	Torque (in-lbs)
6-32 Mounting Inserts	6 to 8
M3 Mounting Screws	4 to 5
8-32 Screw Terminals	10 to 12
M4 Terminal Screws	10 to 12
10-32 Screw Terminals	14 to 15
M5 Screw Terminals	14 to 15
1/2 - 32 Mounting Bushing	30 to 35

Where applicable, mechanical support must be provide to the terminals when applying torque

AGENCY APPROVALS

IAG/IUG/IEG Supplementary Protectors				Rated Current (Amps)		Short Circuit Rating (SC), Amps	
Max Voltage	Frequency (Hz)	Phase	Minimum Poles	ULCSA	TÜV	UL1077 & CSA	TÜV
80	DC	—	1	.02 to 50	.10 to 30	U2, 7500	4000
125	50/60	1	1	.02 to 50	—	U2, 3000	—
125	50/60	1	1	.02 to 30	—	C1, 5000(3)	—
125	50/60	1	1	.02 to 50	—	U3, 1000	—
125 / 250	50/60	1	2	.02 to 50	—	U1, 3000	—
125 / 250	50/60	1	1	2/1 - 30/15	—	C2, 5000(1)	—
240	50/60	1 & 3	1	.02 to 50	—	U1, 2000	—
240	50/60	1 & 3	1	.02 to 50	—	C2, 5000(1)	—
250	50/60	1	1	.02 to 2	—	U2, 5000	—
250	50/60	1 & 3	1	.02 to 30	.10 to 50	U1, 2000	2000
250	50/60	1 & 3	1	.02 to 30	—	C2, 3500(2)	—
250 (4)	50/60	1 & 3	1	.02 to 30	—	C1, 3500(2)	—
250 (4)	50/60	1 & 3	1	.02 to 30	—	U1, 1000	—
250 (5)	50/60	1	2	.02 to 50	—	U3, 1000	—
250 (5)	50/60	3	3	.02 to 50	—	U3, 1000	—
277	50/60	1	1	.02 to 30	—	U2, 2000	—
277	50/60	1	1	.02 to 30	—	C2, 5000(2)	—
250	400	1 & 3	1	.02 to 30	—	U2, 1500	—
250	400	3	—	.02 to 30	—	U3, 200	—

IDG Supplementary Protectors							
Max Voltage	Frequency (Hz)	Phase	Minimum Poles	ULCSA	TÜV	UL1077 & CSA	TÜV
48	DC	—	1	.02-50	—	U2, 5000	—
65	DC	—	1	.02-50	—	U2, 3000	—
125	50/60	1	1	.02-50	—	U2, 2000	—
125/250	50/60	1	2	.02-50	—	U2, 1500	—
250	50/60	1 & 3	1	.02-30	—	U1, 1000	—

CEG Communications Equipment Circuit Breakers							
Max Voltage	Frequency (Hz)	Phase	Minimum Poles	ULCSA	TÜV	UL489A	TÜV
80	DC	—	1	.05-50	—	5000	—

LEG Circuit Breakers							
Max Voltage	Frequency (Hz)	Phase	Minimum Poles	ULCSA	TÜV	UL489	TÜV
125	50/60	1	1	.05-30	.10-30	5000	2000
120/240	50/60	1	2	1-30	.10-30	5000	2000

Notes: (1) With 125 A max. series fuse; (2) With 80 A max. series fuse; (3) With 50 A max. circuit breaker; (4) With blocked vent construction; (5) Non-standard construction. "Fit for further use" approval

General notes:
 All supplementary protectors are of the overcurrent (OC) type.
 The family of protectors has been evaluated for end use application for use groups (UG) A, B, C and D.
 The terminals (TW) are suitable for factory wiring only (D).
 The maximum voltage ratings for which the protectors have been tested are shown in the chart.
 The current is the ampere range that the protectors have been tested.
 The tripping current (TC) for all of the protectors is "1" (in the range of 125% to 135% of ampere rating except for the 400Hz protectors which is "2" (more than 135% of ampere rating).
 The overload rating (OL) - designates whether the protector has been tested for general use or motor starting applications.
 0 - tested at 1.5 times amp rating for general use
 1 - tested at 5 times AC rating or 10 times DC rating for motor starting
 The short circuit current rating (SC) - The short circuit rating in amperes following a letter and number designating the test conditions and any calibration following the short circuit test is defined below:
 C - Indicates short circuit test was conducted with series reclosure protection
 U - Indicates short circuit test was conducted without series overcurrent protection
 1 - Indicates a recalibration was not conducted as part of the short circuit testing
 2 - Indicates a recalibration was performed as part of the short circuit testing
 3 - Indicates recalibration was performed along with the dielectric and voltage withstand for "Suitable for Further Use" rating

LEG DECISION TABLES

The ordering code for LEG circuit breakers may be determined by following the decision steps in the tables shown here.

The coding given permits a self-assigning part number but with certain limitations. Special applications may require a factory-assigned part number. Typical examples are units with mixed ratings, combinations of styles, or constructions not listed in the third decision table. With these, it is suggested that order entry be by description and/or drawings and a part number whenever a descriptive drawing exists to provide cross reference, traceability and manufacturing control.

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

For example, the following is the code for a single pole, LEG screw type terminal, series unit with auxiliary switch, designed for operation in a 50/60Hz circuit. It has a short time delay, a rating of 20 amperes, a black marked handle and is VDE approved.

To determine the ordering number for your particular LEG 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.

Notes:

A. When "A" (metric thread mounting) is specified in the sixth decision in combination with screw terminal option in the second decision, metric screw terminals are supplied.

B. LEG, LEGH, LEGS, LEGHS, LEGZX and LEGBX circuit breakers are designed to meet 8mm creepage and clearance requirements for installation Category III, Pollution Degree 3, Case A as measured in IEC 864. Intended for use in equipment designed to comply with IEC 601 and 950 and VDE 0864 and 0865.

1 First Decision

Select Type and Terminal	Handle and Mounting Options
LEG One toggle handle per unit	Standard toggle/mounting (if designation required)
LMG One toggle handle per unit with trip indication	S Toggle w/ snap-in mounting
LEGH One toggle handle per pole	ZX ZX rocker w/ integral mounting*
LEGH1 One toggle handle per pole with trip indication	BX BX rocker w/ integral mounting

Note: All types are UL608 listed. CUL certified.
*Not available for far away terminals.
**Not available for far away.

2 Second Decision

Flush-on Terminals	Screw Terminals	Single pole
1	E	Single pole
11	EE	Two pole

*Not available in toggle w/ handle type.

3 Third Decision

Internal Configuration
1 Series
1REC4 Series w/ auxiliary switch * 110 quick connect
1REC3 Series w/ auxiliary switch * 187 quick connect
1REC4 Series w/ auxiliary switch* 110 quick connect
1RS4 Series w/ alarm switch*, electrical trip, 110 Q.C. terminals
1RLS4 Series w/ alarm switch*, electrical trip, mid trip only, 110 Q.C. terminals
1-3 Shunt

4 Fourth Decision

Frequency and Delay
001 50/60Hz short delay
002 50/60Hz long delay
003 50/60Hz motor start
004 50/60Hz 125% instant trip

For selection of neutral cable, see 4" or 1" in size data column.
*125% type are only available with TC creepage.

5 Fifth Decision

Reset Current

See these numbers to get required current value:
100mm 100 amp maximum and 30.0 amp maximum.
For example, use 100 or 210 or 102

6 Sixth Decision

Optional

A Standard hardware. No designation required.
G Metric thread mounting inserts and terminals.
G Handle guard, (available in ZX, BX and snap-on versions only)
L Handle lock
S Face plate index flush with breaker
X* Handle guard with actuation feature (BX rocker only)
Z Z-barriers

Note:
1. Only in those configurations where the need is required.
2. When this is not used, white wire may be substituted and G.S. thread will be supplied (see note on page 1208-000000001)
3. G.S.S. connector from plates has threaded indicator (pg. 90)
*No combination of mounting options.

7 Seventh Decision

Handle Color and Marking Selection

Toggle Handle	Color	Unmarked	Marked I/O OFF
Black	00	01 (STD)	
Yellow	10	11	
Red	20	21	
Blue	30	31	
Green	40	41	
Orange	60	61	
White	90	91	

Handle marking color is black, white, red, blue, green, yellow and black on white, yellow and orange handles.
See alternate 1" indicator below for ZX and BX rocker handles.

Example:
LEG 6 - 1REC4 - 61 - 20.0 - 01 - V

7 Seventh Decision

Handle Color and Marking Selection (See Note)

Rocker Handle Color	Vertical Mounting			Horizontal Mounting			Marking Detail				
	Unmarked	On-Off Fig. 1	On-Off Fig. 2	On-Off Fig. 4	On-Off Fig. 5	On-Off Fig. 6					
Black	N/A	White	N/A	00	01	02	03	04	05	06	A
Red	N/A	White	N/A	20	21	22	23	24	25	26	
Grey	N/A	Black	N/A	40	41	42	43	44	45	46	
Orange	N/A	Black	N/A	60	61	62	63	64	65	66	A
White	N/A	Black	N/A	90	91	92	93	94	95	96	
Black	White	White	On	A0	A1	A2	A3	A4	A5	A6	
Black	Red	White	On	B0	B1	B2	B3	B4	B5	B6	B
Black	Green	White	On	C0	C1	C2	C3	C4	C5	C6	
Black	White	White	Off	00	01	02	03	04	05	06	
Black	Red	White	Off	20	21	22	23	24	25	26	B
Black	Green	White	Off	40	41	42	43	44	45	46	
Black	White	White	On	90	91	92	93	94	95	96	
Black	Red	White	On	00	01	02	03	04	05	06	C
Black	Green	White	On	40	41	42	43	44	45	46	
Black	White	White	On	90	91	92	93	94	95	96	
Black	White	White	Off	A0	N/A	A02	A03	N/A	N/A	N/A	C
Black	Red	Red	Off	B0	N/A	B02	B03	N/A	N/A	N/A	
Black	Green	Green	Off	F0	N/A	F02	F03	N/A	N/A	N/A	
Black	Yellow	Yellow	Off	90	N/A	902	903	N/A	N/A	N/A	

Note:
1. Handle is black in all cases.
2. Consult factory for other marking options.

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