

CLiP® Current Limiting Protector

Reduces Fault Energy by 99% on Overdutied Equipment

G&W Electric

Engineered to order. Built to last.

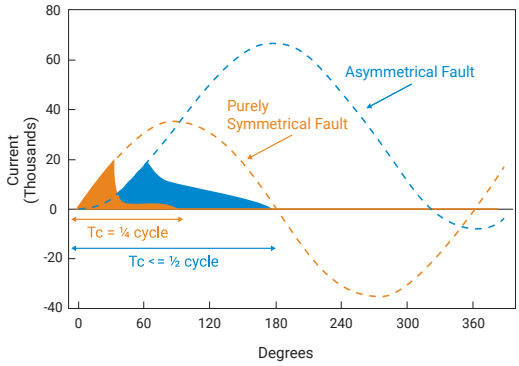
If your system suffered a major fault today, could your circuit breakers clear it? How quickly? At what cost?

As distribution systems expand to meet growing demand, available fault currents imposed on equipment are increasing through stiffened transmission systems, greater substation capacity and on-site and distributed generation. These currents may exceed their thermal, mechanical and interrupting capability, leading to catastrophic failure.

Protect your system with CLiP, an electronically sensed and triggered, commutating form of current limiter protection using a copper busbar path that carries the continuous current. CLiP will limit blast and arc flash exposure, mitigates fire, reduces magnitude of peak let-through current and shields overdutied equipment from damage and catastrophic failure for a 20 year lifespan.

The graph to the right displays an example of symmetrical and asymmetrical faults with their corresponding let-through currents.

CLiP SYMMETRICAL AND ASYMMETRICAL TYPICAL FAULT CURRENT INTERRUPTS



Tc = Time it takes for CLiP to clear the fault

HOW CLiP OPERATES

Upon occurrence of a short circuit current:

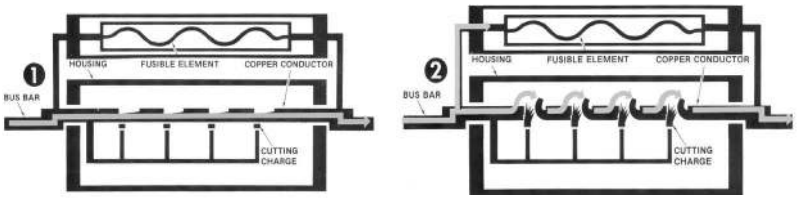
- A sensing unit actuates a linear cutting device
- This segments the copper conductor in a number of fractional lengths and bends them upward, forming multiple gaps
- Arcs form at these gaps and resultant arc voltage causes transfer of the short circuit current to a small, parallel current limiting fuse
- The fuse melts and clears the circuit
- Current extinction occurs in the first half loop and limitation prior to the first peak
- Reliable interruption is assured without venting of ionized gases

Note: The multiple breaks in the main current path to provide faster communication of fault current to the current limiting fuse element, while providing improved dielectric withstand.

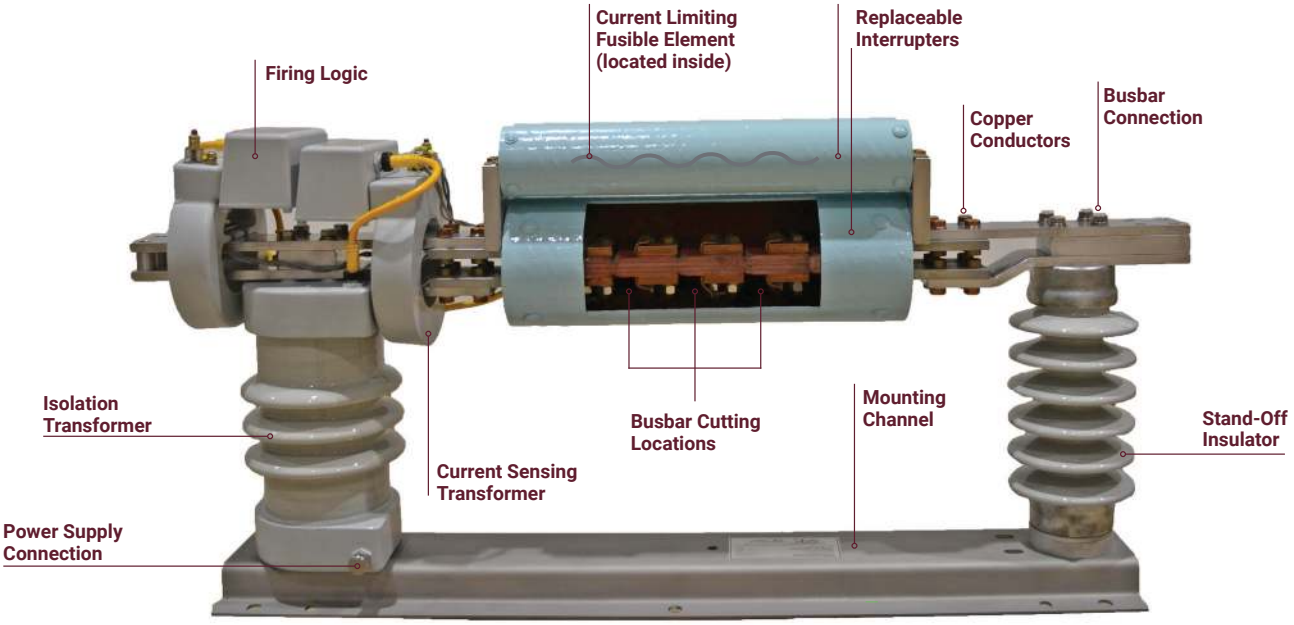


Close up of the severed main conductor and melted current limiting element of a 3000A (double bus) CLiP after interruption

Operation Sequence



CLiP COMPONENTS



APPLICATIONS

- Refineries
- Generating Stations
- Distribution Networks
- Chemical Plants
- Cement Plants
- Pulp & Paper Mills
- Universities
- Hospitals
- Oil Platforms & FPSOs
- Mining
- Battery Energy Storage (BESS)
- Wind and Solar
- Datacenters



Three-phase system in an enclosure protecting an FPSO



University substation outdoor installation



Wind farm installation

OPTIONS

- Field tester provides proper verification and operation of CLiP installation.
- Redundant sensing and firing logic units provide a second unit per phase with independent sensing and tripping capability.
- CLiP Simulators verify customer system conditions prior to connecting the interrupters.
- Enable/disable relay provides the customer with a means to remotely disable the CLiP when protection capability is not required.
- IP32 or NEMA 3R powder-coated enclosures can be supplied.
- DC to AC inverter converts virtually any DC voltage to AC as required by the CLiP controls



Control Box



Field Tester

FEATURES AND BENEFITS

FEATURES	BENEFITS
Single-phase and three-phase protection	• Use the high-speed remote indication relay contacts (located in the control box) to trip a breaker and interrupt unfaulted phases. No need to replace interrupters in unfaulted phases
Threshold current sensing (Does not use transient susceptible rate of rise current sensing)	• Hardened transient filtering responds to actual current values, not transients or harmonics • Can directly protect capacitor banks and harmonic filters • Consistent peak let-through values, regardless of fault asymmetry level
Remote enable/disable	• If protection is temporarily not required, it can be remotely disabled. It then acts simply as a busbar. The operation modes are PLC and SCADA adaptable
Remote trip indication	• Three-phase remote indication of operation (within three cycles) provides two Form C contacts for remote monitoring and trip of user's series breaker to prevent single-phasing
Outdoor duty	• Can be installed outdoors without an enclosure or mounted on a pole
No fuse aging associated with transients or inrushes	• No need to replace aging fuses, providing substantial long-term cost savings
Copper busbar	• Lower system losses, resulting in improved reliability. Lower peak let-through, resulting in better current limiting performance

TECHNICAL RATINGS

VOLTAGE (kV)	CURRENT (A)*	kA RMS, SYM. INTERRUPT/kA INST. MAX TRIGGER					BIL (kV)
		38/14	40/14	60/21	80/42	120/14	
2.8	1500, 3000, 4000, 5000	N	Y	Y	Y	Y	60
5.5	1500, 3000, 3500, 4000, 5000	N	Y	Y	Y	Y	60
8.3	1200, 3000, 4000, 5000	N	Y	Y	Y	Y	110
15.5	1200, 3000, 4000, 5000	N	Y	Y	Y	Y	110
27	1200, 2500, 4000	N	Y	Y			200
38	1200, 2500, 4000	Y	N	Y			200

DIMENSIONS

Maximum Voltage & Current	Overall Length Over Bus in (mm)	Maximum Height in (mm)	Height to Top of Bus in (mm)	Width of Energized Parts in (mm)	Weight per Phase lb (kg)
2.8 & 5.5kV 1,500A 3,000A* 5,000A	46 (1,168) 48 (1,219) 48 (1,219)	23 (584) 25 (635) 26 (660)	17 (432) 19 (482) 19 (482)	9.4 (239) 9.4 (239) 24 (609)	150 (68) 200 (91) 330 (150)
8.3 & 15.5kV 1,200A* 3,000A* 5,000A	52 (1,321) 54 (1,372) 54 (1,372)	23 (584) 25 (635) 26 (660)	17 (432) 19 (482) 19 (482)	9.4 (239) 9.4 (239) 14 (356)	160 (73) 220 (100) 380 (173)
27 & 38kV 1,200A 2,500A 4,000A	59 (1,499) 61 (1,549) 61 (1,549)	28 (711) 30 (762) 30 (762)	22 (559) 24 (609) 24 (609)	9.4 (239) 9.4 (239) 13.5 (343)	195 (89) 280 (127) 560 (254)

**Other ratings are available. Consult factory. Note: Dimensions are approximate. Do not use for construction. Custom configurations requiring less space are available.*

Contact us today

708.388.5010 or info@gwelec.com

G&W Electric

Engineered to order. Built to last.

Since 1905, G&W Electric has been a leading provider of innovative power grid solutions including the latest in load and fault interrupting switches; reclosers; sensors; system protection equipment; power grid automation; transmission and distribution cable terminations; and joints and other cable accessories. G&W Electric is headquartered in Bolingbrook, Illinois, U.S.A., with manufacturing facilities and sales support in more than 100 countries, including Canada, Italy, China, Mexico, Brazil, India and Singapore. We help our customers meet their challenges and gain a competitive edge through a suite of advanced products and technical services.

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