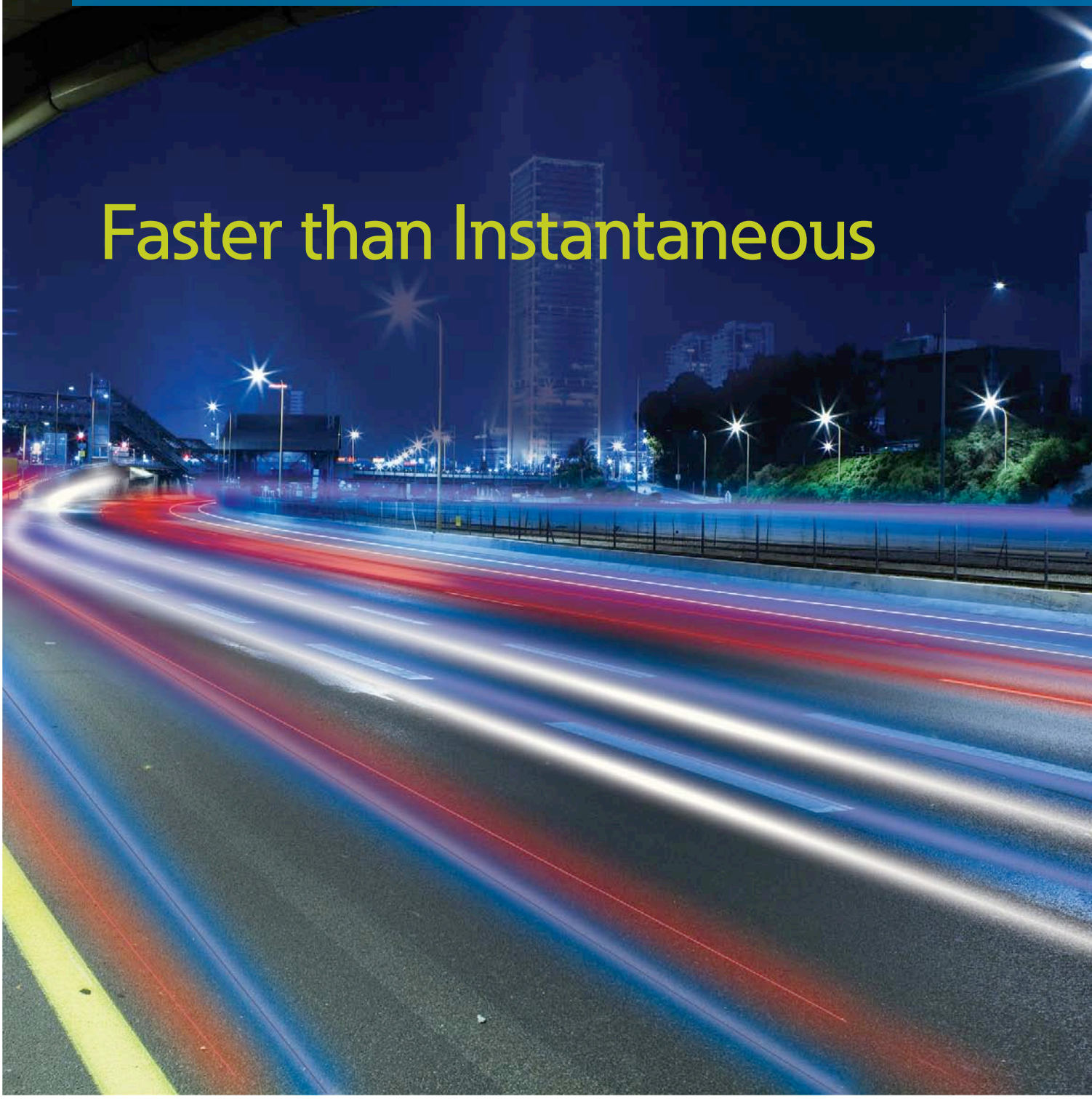
310+ Electronic trip units
Molded-case circuit breakers

Faster than Instantaneous



Powering Business Worldwide

Safety matters with Eaton's Arcflash Reduction Maintenance System™

At Eaton, safety is the No. 1 priority. It is our goal not only to provide innovative solutions for our customers, but also to create products that help ensure the safety of personnel.

Eaton is improving personnel safety with its Arcflash Reduction Maintenance System technology, also called Maintenance Mode, which responds nearly three times faster when an arcing fault is present. Other circuit breaker manufacturers address the danger of arc flash incidents by dialing down pickup settings to the Instantaneous function, so that the circuit breaker responds with no intentional delay at lower levels of arcing current.

This technology, featured in Eaton molded-case circuit breakers equipped with the 310+ electronic trip units covering applications from 55A through 2500A, allows the breaker to respond more quickly to an arcing fault condition, which not only clears the fault faster, but also significantly reduces the release of potentially harmful arc flash energy.

Faster clearing time means less arc energy. Less arc energy exposure means improved worker safety.

Benefits of the Arcflash Reduction Maintenance System unit

- Increased worker safety—when enabled, the Arcflash Reduction Maintenance System provides an accelerated trip to reduce arc flash up to 60% faster than standard instantaneous tripping ❶
- Reduction in incident energy levels due to an arc flash may allow reduced levels of personal protective equipment (PPE) to be used, increasing worker comfort and mobility
- Using molded-case circuit breakers with Eaton 310+ electronic trip units, the operator can pre-select from three levels of protection to facilitate the maximum arc-flash reduction, while also avoiding nuisance tripping during planned startup and maintenance operations, without having to manually adjust the normal operational trip unit settings ❷
- Eaton 310+ electronic trip units address the National Electrical Code® Section 240.87 for Arc Energy Reduction. These molded-case circuit breakers provide two approved methods to reduce arc energy: energy-reducing maintenance switching with local status indicator and zone selective interlocking

❶ Typical tested values for Eaton molded-case circuit breakers.

❷ Series C® K-Frame includes a fixed remote Maintenance Mode setting of 2.5x.

310+ trip unit technology available across molded-case circuit breakers

Eaton molded-case circuit breakers offer a common electronic trip unit offering from 15A through 2500A. The Digitrip™ RMS 310+ electronic trip unit (ETU) offers a wide range of selectable settings and optional features to fit your electrical application needs.

www.eaton.com/310plus

No more rating plugs

The 310+ ETU offers a range of adjustability of Long (L), Short (S), Instantaneous (I) and Ground (G) settings. The 310+ contains an integrated I_r switch that allows users to modify the continuous current rating of the breaker as the application demands. The eight-position I_r switch enables a multitude of continuous current settings based on application requirements. Ordering, stocking and managing various amperages of rating plugs is no longer required.

Adjustable curve shaping

Users of the 310+ ETU will enjoy the I^2t curve shaping functions enabled by the L, S, I and G adjustability. These settings are particularly useful for applications demanding breaker coordination and circuit customization. The long delay and short delay functions enable the breaker curves to be manipulated for upstream and downstream breaker coordination.

Cause of trip information

If cause of trip is desired, the 310+ ETU can be fitted with a Digiview, a Panelmount Digiview or a Cause of Trip LED indicator. When a fault condition occurs and one of these devices is connected to the ETU's test port, the 310+ processor captures the fault information and transmits to the cause of trip device, before the breaker trips and goes offline. While powered via line current when the breaker is closed, the Digiview and Cause of Trip LED indicator will retain the cause of trip information when the breaker trips/opens because of their lithium batteries.

Zone selective interlocking communications

All 310+ ETUs can be configured with zone selective interlocking (ZSI). With ZSI enabled, all molded-case circuit breakers from 15A through 2500A and beyond into Eaton's air circuit breaker offerings, can communicate when a fault is present. The breaker closest to the fault will override any customer-defined delay setting and open instantaneously to clear the fault, allowing line-side breakers to remain closed and online. ZSI is a proven solution for reducing arc flash incident energy when a fault is present.

Ground fault alarm only, no trip feature

New to the 310+ family of trip units is the ground fault alarm (GFA), no trip feature. Critical applications require equipment to stay online when a ground fault is present. ETUs configured with the GFA, no trip feature will notify users that a ground fault is present while keeping the breaker online.

Technical data






310+	F-Frame	J-Frame	K-Frame	L-Frame	N-Frame	R-Frame
Frame breaks (A)	80 160 225	50 100 160 250	125 250 400	250 400 600	800 1200	1600 2000 2500
Continuous current range (A)	15–225	20–250	55–400	100–600	320–1200	800–2500
Ground fault pickup (A)	16–225	10–250	50–400	50–600	160–1200	200–1200
Interrupting capacities at 480 Vac (kAIC)	35 65 100	35 65 100 150 200	35 65 100	35 65 100 150 200	35 65 100 150	65 100
100% rated	No	Yes	Yes	Yes	Yes	Yes
Protection	LS LSI LSG LSIG	LS LSI LSG LS(A) LSIG LSI(A)	LS LSI LSG LS(A) LSIG LSI(A) ALSI ALSIG ALSI(A)	LS LSI LSG LS(A) LSIG LSI(A) ALSI ALSIG ALSI(A)	LS LSI LSG LS(A) LSIG LSI(A) ALSI ALSIG ALSI(A)	LS LSI LSG LS(A) LSIG LSI(A) ALSI ALSIG ALSI(A)
Arcflash Reduction Maintenance System	No	No	ALSI ALSIG ALSI(A)	ALSI ALSIG ALSI(A)	ALSI ALSIG ALSI(A)	ALSI ALSIG ALSI(A)
Interchangeable trip unit	No	Yes	Yes	Yes	No	Yes
High load alarm, trip (suffix B20)	Yes	Yes	Yes	Yes	Yes	Yes
Ground fault alarm, trip (suffix B21)	LSG LSIG	LSG LSIG	LSG LSIG ALSIG	LSG LSIG ALSIG	LSG LSIG ALSIG	LSG LSIG ALSIG
Zone selective interlock (suffix ZG)	Yes	Yes	Yes	Yes	Yes	Yes
Cause of trip indication (Catalog Nos: DIGIVIEW, DIGIVIEWR06, TRIP-LED)	Yes	Yes	Yes	Yes	Yes	Integral to the 310+
PM3 connectivity	Yes	Yes	Yes	Yes	No	No
Thru-cover accessories	No	Yes	No	Yes	No	No
Three-pole frame dimensions W x H x D in inches (mm)	4.13 x 6.00 x 3.38 (105.0 x 152.4 x 86.0)	4.13 x 7.00 x 3.57 (105.0 x 177.8 x 90.7)	5.50 x 10.13 x 4.10 (149.7 x 257.3 x 104.1)	5.48 x 10.13 x 4.09 (139.2 x 257.3 x 104.0)	8.25 x 16.00 x 5.50 (209.6 x 406.4 x 139.7)	15.50 x 16.00 x 9.00 (393.7 x 406.4 x 228.6)
Four-pole frame dimensions W x H x D in inches (mm)	N/A	5.34 x 7.00 x 3.57 (135.6 x 177.8 x 90.7)	7.22 x 10.13 x 4.10 (183.4 x 257.3 x 104.1)	7.22 x 10.13 x 4.09 (183.4 x 257.3 x 104.0)	11.13 x 16.00 x 5.50 (282.7 x 406.4 x 139.7)	20.00 x 16.00 x 9.00 (508.0 x 406.4 x 228.6)

For additional information, please refer to the following publications:

	F-Frame	J-Frame	K-Frame	L-Frame	N-Frame	R-Frame
Product aid	**PA01200006E**	**PA01200004E**	**PA012003EN**	**PA01200004E**	**PA01209001E**	**PA01209002E**
Time current curves	**TC01200002E**	**TC01204008E**	**AD29167K**	**TC01200003E**	**TC01209009E**	**TC01210019E**
Technical document	**TD01203013E**	**TD01213001E**	**AD29170K**	**TD01200001E**	**TD03801003E**	**TD01209004E**
Instructional leaflet	**IL01203001E**	**IL01204002E**	**IL012001E**	**IL01207006E**	**IL01209005E**	**IL29C107N**

Catalog numbering systems

Note: B2x suffixes cannot be combined with B2x suffixes.

225A F-Frame Assembly

FDCE 3 225 36 ZG L

Performance at 480 Vac
- **FDE** = 35 kAIC
- **HFDE** = 65 kAIC
- **FDCE** = 100 kAIC

Poles
- **3** = Three

Amperes
- **080**
- **160**
- **225**

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **36** = 310+ Electronic LSIG

Terminals
- **Blank** = Load only
- **L** = Line and load
- **W** = No terminals

Feature
- **Blank** = No feature
- **ZG** = Zone selective interlocking

250A J-Frame Assembly

JG H 3 250 36 ZG G C

Frame
- **JG**

Performance at 480 Vac
- **E** = 35 kAIC
- **S** = 50 kAIC
- **H** = 65 kAIC
- **C** = 100 kAIC
- **U** = 150 kAIC
- **X** = 200 kAIC

Poles
- **3** = Three
- **4** = Four

Amperes
- **050**
- **100**
- **160**
- **250**

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip

Terminals
- **G** = Line/load standard

Rating
- **Blank** = 80% rated
- **C** = 100% rated

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

250A J-Frame Electronic Trip Unit

JT 3 250 36 ZG

Trip Unit Type
- **JT**

Poles
- **3** = Three
- **4** = Four

Amperes
- **050**
- **100**
- **160**
- **250**

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

250/400A K-Frame Assembly

KDB 3 400 F T36 ZG W

Performance at 480 Vac
- **KDB** = 35 kAIC
- **HKDB** = 65 kAIC

Poles
- **3** = Three

Amperes
- **250**
- **400**

Frame Designation

Trip Unit
- **T33** = 310+ Electronic LS
- **T32** = 310+ Electronic LSI
- **T35** = 310+ Electronic LSG
- **T35B22** = 310+ Electronic LS(A), GFA, no trip
- **T36** = 310+ Electronic LSIG
- **T36B22** = 310+ Electronic LSI(A), GFA, no trip
- **T38** = 310+ Electronic ALSI with Maintenance Mode
- **T39** = 310+ Electronic ALSIG with Maintenance Mode
- **T39B22** = 310+ Electronic ALSI(A) with Maintenance Mode and GFA, no trip

Terminals
- **W** = No terminals

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, with trip
- **ZG** = Zone selective interlocking

Note: Frames and trip units sold separately for four-pole applications.

250/400A K-Frame Electronic Trip Unit

KES 3 400 LSIG ZG

Trip Unit Type
- **KES**

Poles
- **3** = Three
- **4** = Four

Amperes
- **125**
- **250**
- **400**

Trip Unit
- **LS** = 310+ Electronic LS
- **LSI** = 310+ Electronic LSI
- **LSG** = 310+ Electronic LSG
- **LSGB22** = 310+ Electronic LS(A), GFA, no trip
- **LSIG** = 310+ Electronic LSIG
- **LSIGB22** = 310+ Electronic LSI(A), GFA, no trip
- **ALSI** = 310+ Electronic LSI with Maintenance Mode
- **ALSIG** = 310+ Electronic LSIG with Maintenance Mode
- **ALSIGB22** = 310+ Electronic ALSIG(A) with Maintenance Mode and GFA, no trip

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, with trip
- **ZG** = Zone selective interlocking

Note: B21 feature not available in four-pole configurations.

Note: LSG, LSIG, LSGB22, ALSIG, LSIGB22 and ALSIGB22 not available in four-pole configurations.

400A Frame Only

KD 3 400 F

Performance at 480 Vac
- **KD** = 35 kAIC
- **HKD** = 65 kAIC
- **KDC** = 100 kAIC
- **CKD** = 35 kAIC 100% rated
- **CHKD** = 65 kAIC 100% rated

Poles
- **3** = Three
- **4** = Four

Amperes
- **400**

Frame Designation

Note: 100% rating not available in four-pole configurations.

600A L-Frame Assembly

LG H 3 600 39 ZG G C

Frame
- **LG**

Performance at 480 Vac
- **E** = 35 kAIC
- **S** = 50 kAIC
- **H** = 65 kAIC
- **C** = 100 kAIC
- **U** = 150 kAIC
- **X** = 200 kAIC

Poles
- **3** = Three
- **4** = Four

Amperes
- **250**
- **400**
- **600**

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip
- **38** = 310+ Electronic ALSI w/ Maintenance Mode
- **39** = 310+ Electronic ALSIG w/ Maintenance Mode
- **39B22** = 310+ Electronic ALSI(A) w/ Maintenance Mode and GFA, no trip

Rating
- **Blank** = 80% rated
- **C** = 100% rated

Terminals
- **G** = Line/load standard

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

600A L-Frame Electronic Trip Unit

LT 3 600 39

Trip Unit Type
- **LT**

Poles
- **3** = Three
- **4** = Four

Amperes
- **250**
- **400**
- **600**

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **36** = 310+ Electronic LSIG
- **38** = 310+ Electronic ALSI w/ Maintenance Mode
- **39** = 310+ Electronic ALSIG w/ Maintenance Mode

Note: B20, B21, B22 and ZG features are only available in frame assembly.

800/1200A N-Frame Assembly

NG H 3 080 39 ZG E C

Frame
- **NG**

Performance at 480 Vac
- **S** = 50 kAIC
- **H** = 65 kAIC
- **C** = 100 kAIC
- **U** = 150 kAIC ❶

❶ 800A only.

Poles
- **3** = Three
- **4** = Four; neutral ❷ 0% protected
- **7** = Four; neutral ❷ 100% protected
- **9** = Four; neutral ❷ 0/60/100% adjustable protection

❷ Neutral in left pole on GN; right pole on NG.

Amperes
- **080** = 800
- **120** = 1200

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip
- **38** = 310+ Electronic ALSI w/ Maintenance Mode
- **39** = 310+ Electronic ALSIG w/ Maintenance Mode
- **39B22** = 310+ Electronic ALSI(A) w/ Maintenance Mode and GFA, no trip

Rating
- **Blank** = 80% rated
- **C** = 100% rated

Terminations
- **M** = Metric tapped line/load conductors
- **E** = Imperial tapped line/load conductors

Note: Breakers do not ship with lugs.

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

Feature suffixes are determined by ETU type as follows:

ETU	B2x Suffix	ZSI Suffix	Suffix Note
33	B20	—	Consumes RH pocket of J- and L-Frames
32	B20	ZG	Consumes RH pocket of J- and L-Frames
35	B20 or B21	—	Consumes RH pocket of J- and L-Frames
35B22	—	—	Consumes RH pocket of J- and L-Frames
36	B20 or B21	ZG	Consumes RH pocket of J- and L-Frames
36B22	—	ZG	Consumes RH pocket of J- and L-Frames
38	B20	ZG	Consumes LH and RH pockets of L-Frame
39	B20 or B21	ZG	Consumes LH and RH pockets of L-Frame
39B22	—	ZG	Consumes LH and RH pockets of L-Frame

1600/2000/2500A R-Frame Assembly

RG H 3 250 39 ZG E C

Frame
- **RG**

Performance at 480 Vac
- **H** = 65 kAIC
- **C** = 100 kAIC

Poles
- **3** = Three
- **4** = Four

Amperes
- **160** = 1600
- **200** = 2000
- **250** = 2500

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip
- **38** = 310+ Electronic ALSI w/ Maintenance Mode
- **39** = 310+ Electronic ALSIG w/ Maintenance Mode
- **39B22** = 310+ Electronic ALSI(A) w/ Maintenance Mode and GFA, no trip

Rating
- **Blank** = 80% rated
- **C** = 100% rated (except 2500A)

Terminations
- **M** = Metric tapped line/load conductors
- **E** = Imperial tapped line/load conductors

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

1600/2000/2500A R-Frame Electronic Trip Unit

RT 3 250 39 ZG

Trip Unit Type
- **RT**

Poles
- **3** = Three

Amperes
- **160** = 1600
- **200** = 2000
- **250** = 2500

Trip Unit
- **33** = 310+ Electronic LS
- **32** = 310+ Electronic LSI
- **35** = 310+ Electronic LSG
- **35B22** = 310+ Electronic LS(A), GFA, no trip
- **36** = 310+ Electronic LSIG
- **36B22** = 310+ Electronic LSI(A), GFA, no trip
- **38** = 310+ Electronic ALSI w/ Maintenance Mode
- **39** = 310+ Electronic ALSIG w/ Maintenance Mode
- **39B22** = 310+ Electronic ALSI(A) w/ Maintenance Mode and GFA, no trip

Feature
- **Blank** = No feature
- **B20** = High load alarm
- **B21** = Ground fault alarm, w/trip
- **ZG** = Zone selective interlocking

Adjustability specifications ❶

310+ Settings	Frame Break	F-Frame	F-Frame	F-Frame	J-Frame	J-Frame	J-Frame	J-Frame	K-Frame	K-Frame	K-Frame	L-Frame	L-Frame	L-Frame	N-Frame	N-Frame	RG	RG	RG
I_r = continuous current or long delay pickup (A) (All 310+)	I_r \ I_n	**80A**	**160A**	**225A**	**50A**	**100A**	**160A**	**250A**	**125A**	**250A**	**400A**	**250A**	**400A**	**600A**	**800A**	**1200A**	**1600A**	**2000A**	**2500A**
	A (=I_r)	15A	60A	100A	20A	40A	63A	100A	55A	100A	160A	100A	160A	250A	320A	500A	800A	1000A	1600A
	B (=I_r)	20A	70A	110A	20A	45A	80A	125A	60A	125A	200A	125A	200A	300A	400A	600A	900A	1200A	1700A
	C (=I_r)	30A	80A	125A	25A	50A	90A	150A	70A	150A	225A	150A	225A	315A	450A	630A	1000A	1400A	1800A
	D (=I_r)	40A	90A	150A	30A	63A	100A	160A	80A	160A	250A	160A	250A	350A	500A	700A	1100A	1600A	2000A
	E (=I_r)	50A	100A	160A	32A	70A	110A	175A	90A	175A	300A	175A	300A	400A	600A	800A	1200A	1700A	2100A
	F (=I_r)	60A	125A	175A	40A	80A	125A	200A	100A	200A	315A	200A	315A	450A	630A	900A	1400A	1800A	2200A
	G (=I_r)	70A	150A	200A	45A	90A	150A	225A	110A	225A	350A	225A	350A	500A	700A	1000A	1500A	1900A	2400A
	H (=I_r=I_n)	80A	160A	225A	50A	100A	160A	250A	125A	250A	400A	250A	400A	600A	800A	1200A	1600A	2000A	2500A
t_{LD} = long delay time (s) (All 310+)	2	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s	2s
	4	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s	4s
	7	7s	7s	7s	7s	7s	7s	7s	7s	7s	7s	7s	7s	7s	6s	7s	7s	7s	7s
	10	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	10s	8s	10s	10s	10s	10s
	12	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	12s	10s	12s	12s	12s	12s
	15	15s	15s	15s	15s	15s	15s	15s	15s	15s	15s	15s	15s	15s	12s	15s	15s	15s	15s
	20	20s	20s	20s	20s	20s	20s	20s	20s	20s	20s	20s	20s	20s	14s	20s	20s	20s	20s
	24	24s	24s	24s	24s	24s	24s	24s	24s	24s	24s	24s	24s	24s	14s	24s	24s	24s	24s
I_{SD} x I_r = short delay pickup (A) (All 310+)	Position 1	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r	2 x I_r
	Position 2	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	3 x I_r	2 x I_r
	Position 3	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	4 x I_r	2 x I_r
	Position 4	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	5 x I_r	3 x I_r
	Position 5	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	6 x I_r	4 x I_r
	Position 6	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	7 x I_r	5 x I_r
	Position 7	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	8 x I_r	6 x I_r
	Position 8	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	10 x I_r	9 x I_r	9 x I_r	8 x I_r	8 x I_r	6 x I_r
	Position 9	12 x I_r	12 x I_r	12 x I_r	14 x I_r	14 x I_r	14 x I_r	14 x I_r	12 x I_r	12 x I_r	12 x I_r	12 x I_r	12 x I_r	12 x I_r	9 x I_r	9 x I_r	8 x I_r	8 x I_r	6 x I_r
I_g x I_n = ground fault pickup (A) (310+ with ground fault)	Position 1	16A	32A	45A	10A	20A	32A	50A	25A	50A	80A	50A	80A	120A	160A	240A	200A	200A	200A
	Position 2	24A	48A	67.5A	15A	30A	48A	75A	37.5A	75A	120A	75A	120A	180A	240A	360A	400A	400A	400A
	Position 3	32A	64A	90A	20A	40A	64A	100A	50A	100A	160A	100A	160A	240A	320A	480A	600A	600A	600A
	Position 4	48A	96A	135A	30A	60A	96A	150A	75A	150A	240A	150A	240A	360A	480A	720A	800A	800A	800A
	Position 5	64A	128A	180A	40A	80A	128A	200A	100A	200A	320A	200A	320A	480A	640A	960A	1000A	1000A	1000A
	Position 6	80A	160A	225A	50A	100A	160A	250A	125A	250A	400A	250A	400A	600A	800A	1200A	1200A	1200A	1200A
I_r x I_n = instantaneous Maintenance Mode (A) (310+ with Maintenance Mode)	Position 1 (2.5x)	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	625A	1000A	1500A	2000A	3000A	4000A	5000A	6250A
	Position 2 (4x)	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	1000A	1600A	2400A	3200A	4800A	6400A	8000A	10,000A
	Position 3 (6x)	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	1500A	2400A	3600A	4800A	7200A	9600A	12,000A	15,000A
	Position 4 ❷	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	1750A	2800A	4200A	5600A	8400A	11,200A	14,000A	15,000A
	Position 5 ❷	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	2000A	3200A	4800A	6400A	9600A	12,800A	16,000A	15,000A
	Position 6 ❷	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	2500A	4000A	6000A	8000A	12,000A	12,800A	16,000A	15,000A
	Position 7 ❷	—	—	—	—	—	—	—	312A ❸	625A ❸	1000A ❸	3000A	4800A	7200A	14,400A	14,400A	17,600A	18,000A	17,500A

❶

t_{SD}/t_g = Short Delay Time and Ground Fault Time (ms/ms) (310+ with Instantaneous and Ground Fault)	t_{SD} = Short Delay Time (ms) (310+ with Instantaneous, without Ground Fault)	t_g = Ground Fault Time (ms) (310+ with Ground Fault, without Instantaneous)
J = 50 ms / 50 ms	Position 1 = 50 ms	Position 1 = 50 ms
K = 50 ms / 120 ms	Position 2 = 50 ms	Position 2 = 50 ms
L = 50 ms / 300 ms	Position 3 = 50 ms	Position 3 = 50 ms
M = 120 ms / 50 ms	Position 4 = 120 ms	Position 4 = 120 ms
N = 120 ms / 120 ms	Position 5 = 120 ms	Position 5 = 120 ms
O = 120 ms / 300 ms	Position 6 = 120 ms	Position 6 = 120 ms
P = 300 ms / 50 ms	Position 7 = 300 ms	Position 7 = 300 ms
Q = 300 ms / 120 ms	Position 8 = 300 ms	Position 8 = 300 ms
R = 300 ms / 300 ms	Position 9 = 300 ms	Position 9 = 300 ms

❷ Varies by frame I_n.

❸ Fixed remote Maintenance Mode setting of 2.5x.

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