

Molded Current-Limiting Fuses provide full-range fault current protection through 50kA interrupting current.

Construction is modular with a center replaceable fuse section and interchangeable end fittings for elbow connection or direct attachment to equipment mounted bushings. The various end fittings allow fuses to be applied throughout the system including switchgear, junctions, transformers, cable runs and taps.

Elastimold® Molded Current-Limiting Fuses are available in:

- 80 thru 180 Amp ratings for applications on 5kV systems
- 6 thru 115 Amp ratings for applications on 8.7/15kV grounded Wye systems
- 6 thru 100 Amp ratings for applications on 15/25kV grounded Wye systems
- 6 thru 50 Amp ratings for applications on 20/35kV grounded Wye systems



FEATURE	BENEFIT/DESCRIPTION
EPDM Molded Rubber Deadfront Construction	Fully sealed and submersible Light weight Insulate, shield and eliminate exposed live parts
Specially designed fuse elements with built-in low and high current interrupting capability	Full-Range fault current protection through 50kA
Current-limiting protection. Fault clearing occurs in less than one half cycle	Limits the system available fault current and dramatically reduces stresses on equipment
Modular construction with a center replaceable fuse section and interchangeable end fittings	Allow elbow connection or direct attachment to equipment mounted bushings Flexibility of installation on junctions, transformers, cable runs, taps
Compact	Suitable for padmount, subsurface or vault installations
304 stainless steel brackets and hold down straps available	Accommodate a wide variety of mounting arrangements

CERTIFIED TESTS & PERFORMANCE

Elastimold® Molded Current-Limiting Fuses have been designed and tested per applicable portions of IEEE, ANSI, NEMA and other industry standards including:

ANSI C37.40 Standard for Current-Limiting Fuse Service Conditions.

ANSI C37.41 Standard for Current-Limiting Fuse Design and Testing.

ANSI C37.47 Standard for Current-Limiting Fuse Ratings and Specifications.

ANSI/IEEE 386 Standard for Separable Connectors & Bushing Interfaces.

RATINGS

System Voltage Class (kV)	5	15	25/28+	35
Rated Maximum Fuse Voltage (kV)	5.5	10*	17.2*	23
Frequency (Hz)	50/60	50/60	50/60	50/60
BIL Impulse Withstand (kV)	60	95	125/140	150
One Minute AC Withstand (kV)	34	34	40-45	50
Fifteen Minute DC Withstand (kV)	53	53	78	103
Corona Extinction (kV)	11	11	19/21.5	26
Symmetrical Interrupting Capability (Amp)	50,000	50,000	50,000	50,000
Current Rating (Amp)	80-180	10-115	10-100	10-50

APPLICATION INFORMATION

Construction: Submersible, non-venting, deadfront, corrosion resistant.

Ambient Temperature Range: - 30 to +65 degrees centigrade for 6-50 Amp fuses; - 30 to +40 degrees centigrade for >50 Amp fuses.

Fuses are only suitable for the system voltage class shown if the recovery voltage across the fuse will not exceed its rated maximum voltage. For three-phase applications, this generally requires that protected transformers be gndy-gndy and have at least 50% grounded load.

* These maximum design voltages apply to fuses rated between 6-50 Amp; for fuses with higher amperage rating the maximum design voltage is 8.3 kV for 15 kV systems and 15.5 kV for 25/28 kV systems.

+15.5kV L-G rated fuses require 75% grounded load to be applied on a 25kV system. The 17.2kV L-G rated fuses require at least 75% grounded load to be applied on a 28kV system.

Fuse replacement requires the MCLF to be de-energized.

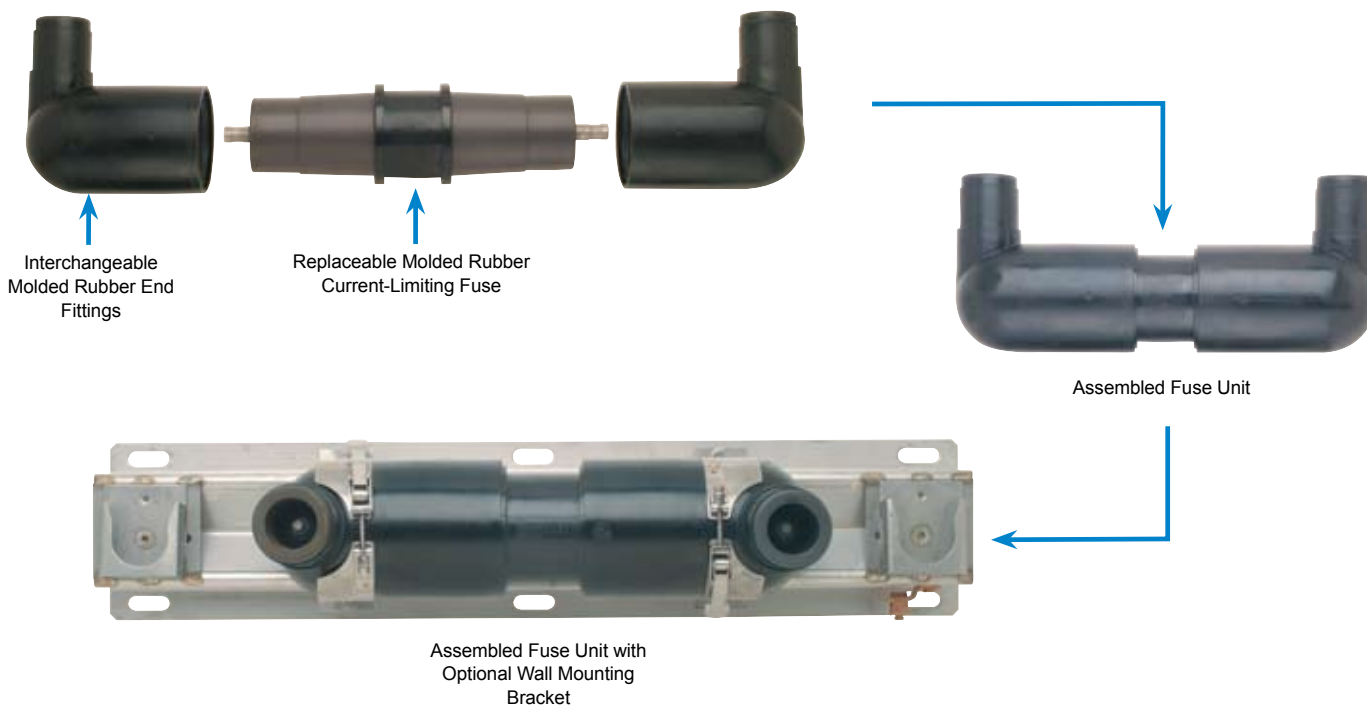


TABLE 34 – ELECTRICAL CHARACTERISTICS OF ENCAPSULATED FUSES USED IN MCLF

Nominal Fuse Voltage Rating (kV)	Current Rating (Amps)	Fuse Catalog Number	Rated Maximum Voltage (kV)	Maximum Continuous Current (2) (6)		Peak Arc Voltage (kV) (5)	Minimum Melt I ² t (AMP ² -SEC)	Maximum Total I ² t (3) (4) (AMP ² -SEC)
				25°C	40°C			
5.5	80	M05CLF080	5.5	86	84	15	22,100	110,000
	100	M05CLF100		108	105	15	56,700	280,000
	125	M05CLF125		137	133	15	109,200	530,000
	150	M05CLF150		159	154	15	176,000	860,000
	180	M05CLF180		185	180	15	259,000	1,270,000
8.3	10	M15CLF010	10.0	14	13	28	800	4,000
	20	M15CLF020		23	22	26	1,620	11,000
	30	M15CLF030		35	33	26	5,250	30,000
	40	M15CLF040		43	41	26	8,700	50,000
	50	M15CLF050		50	47	26	12,800	70,000
	65	M15CLF065	8.3	73	71	25	25,200	100,000
	80	M15CLF080		87	84	25	47,000	185,000
	100	M15CLF100		106	103	25	78,300	330,000
115	M15CLF115		120	116	25	115,150	480,000	
15.5	10	M25CLF010	17.2	14	13	46	800	3,700
	20	M25CLF020		23	22	45	1,620	10,000
	30	M25CLF030		35	33	45	5,250	30,000
	40	M25CLF040		43	41	45	8,700	50,000
	50	M25CLF050		47	45	45	12,800	70,000
	65	M25CLF065	15.5	68	66	40	25,200	110,000
	80	M25CLF080		88	85	40	54,400	255,000
	100	M25CLF100		100	100	40	80,000	380,000
23.0	10	M35CLF010	23.0	14	13	61	800	4,800
	20	M35CLF020		23	22	60	1,620	13,000
	30	M35CLF030		35	33	60	5,250	38,000
	40	M35CLF040		41	40	60	8,700	61,000
	50	M35CLF050		47	46	60	12,800	82,000

NOTES:

1. Designs have a 50,000 Amps rms. Symmetrical Rating.
2. 10-50A fuses have a Rated Maximum Application Temperature of 65°C, and 65-180A fuses have a Rated Maximum Application Temperature of 40°C (RMAT is the maximum temperature of the air in contact with the MCLF housing, at which the fuses have been shown suitable for use).
3. Tabulated Maximum Total I²t values are for currents of 50,000A at the nominal voltage of the fuse. Fuses that have a Rated Maximum Voltage higher than their Nominal Voltage Rating will have a higher I²t let-through when applied at voltages up to these higher values. For example, Maximum Total I²t values are increased by approximately 30% when 8.3kV fuses are applied at 10kV and approximately 25% when 15.5kV fuses are used at 17.2kV.
4. Maximum total I²t values are reduced for currents below 50,000A. For example, at 10,000A, I²t values are approximately 15% less than the published values.
5. Peak arc voltages quoted are for 50,000A currents at the rated maximum voltage listed. Reduced currents and voltages will reduce the peak arc voltage. Consult the factory for further information.
6. Maximum continuous currents at higher ambient temperatures may be determined by derating the fuses by 0.2% per degree C over 25°C. For example: At 40°C the derating would be 15 x .97 = 22A.

TABLE 35 – RECOMMENDED MCLF AT 40°C AMBIENT TEMPERATURE

Fuse Voltage	Recommended Fuse Current Ratings (Amperes)																	
	(5.5kV) 8.3kV						15.5kV						23kV					
	Transformer 1-Phase Voltage Rating (kV) Phase-to-Ground																	
1-Phase Transformer kVA	2.4		4.16		4.8		7.2		7.62		12		14.4		16		19.9	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
15		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
25		20		10		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
37.5	20	30		20		20		10		10		10 ^a		10 ^a		10 ^a		10 ^a
50	30	40	20	30		20		10		10		10 ^a		10 ^a		10 ^a		10 ^a
75	50	65	30	40	20	30		20		20		10		10		10		10 ^a
100	65	(80)	40	50	30	50	20	30	20	30		20		10		10		10
167	(100)	(150)	65	(80)	50	65	30	50	30	50	20	30	20	30		20		20
250	(150)		(100)	(125)	(80)	(100)	50	65	50	65	30	50	30	40	20	30	20	30
333	(180)		(125)	(180)	(100)	(150)	65	100	65	100	50	65	30	50	30	50	20	40
500			(180)		(150)		115		115		65	100	65	80	50		40	
750											100		80	100				
1000													100					

TABLE 36 – RECOMMENDED MCLF AT 40°C AMBIENT TEMPERATURE

Fuse Voltage	Recommended Fuse Current Ratings (Amperes)																			
	(5.5kV) 8.3kV								15.5kV								23kV			
	Transformer 3-Phase Voltage Rating (kV) Phase-to-Phase																			
3-Phase Transformer kVA	2.4		4.16		4.8		7.2-7.96		8.32		12.47		13.2-14.4		22.9-24.9 ^b		20.8		34.5 ^b	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
15		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
22.5		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
30		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
45		20		10		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
75	30	40		20		20		10		10		10 ^a		10 ^a		10 ^a		10 ^a		10 ^a
100	40	50	20	30	20	30		20		10		10		10		10 ^a		10 ^a		10 ^a
112.5	40	65	20	30	20	30		20		20		10		10		10 ^a		10 ^a		10 ^a
150	50	(80)	30	50	30	40	20	30		20		10		10		10 ^a		10 ^a		10 ^a
200	65	(100)	40	65	40	50	20	30	20	30		20		20		10		10		10 ^a
225	(80)	(125)	50	65	40	65	30	40	30	50		20		20		10		10		10 ^a
300	(100)	(150)	65	(100)	65	(80)	40	50	30	50	20	30	20	30	10	20		20		10
500	(180)		(100)	(150)	(100)	(125)	65	80	50		30	50	30	50	20	30	20	30		20
750			(180)		(125)	(180)	80	115			65	80	50	65	30	40	30	50	20	30
1000					(180)		115				65	100	65	100	40		50		30	40
1500											100		100						40	

NOTES FOR TABLES 35 AND 36:

Column A = 140-200% of transformer rating and Column B = 200-300% of transformer rating.

- Ratings in parenthesis are 5.5kV fuses.

- Recommended fuses meet inrush criteria of 12 times transformer full load current for 0.1 second and 25 times transformer full load current for 0.01 second. Fuses also meet cold load pickup criteria of 6 times transformer full load current for 1 second and 3 times transformer full load current for 10 seconds.

a Fuse allows greater than 300% of transformer rating.

b Recommendations limited to gndY-gndY transformers with no more than 50% delta connected secondary load. Phase-to-ground rated fuses are frequently recommended for gndY-gndY three phase transformers.

Molded Fuse Products

FUSE ORDERING INFORMATION

To completely specify and order a Molded Current-Limiting Fuse:

1. Select the Fuse Catalog Number from Table 34 based on the amperage and system voltage. This table is also used to order spare or replacement fuses.
2. From Table 37 select a suffix for the Model Number based on the required fuse end fittings. If end fittings are to be ordered and shipped separately from the fuse, use Table 39.
3. Select Mounting Options (if required) from Table 38.

EXAMPLE:

To order a fuse for application in a 25kV gndy-gndy system (17.2 line-to-ground), rated 50 Amp with factory assembled 200 Amp Deepwell end fittings and no mounting provision, specify: **CATALOG NO. M25CLF050-22**

Mounting Options (See Table 38)

TABLE 37 – FUSE END FITTING ARRANGEMENTS

Outline	Model No.	Description
<p>Approx. Weight 30 lbs. / 13.6 kg.</p>	22	200 Amp Deepwell on both ends.
<p>Approx. Weight 35 lbs. / 15.8 kg.</p>	222	200 Amp Deepwell on one end and two 200 Amp Deepwells on the other end.
<p>Approx. Weight 40 lbs. / 18.1 kg.</p>	2222	Two 200 Amp Deepwell on both ends.
<p>Approx. Weight 30 lbs. / 13.6 kg.</p>	66	600 Amp Bushing on both ends.

TABLE 37 – FUSE END FITTING ARRANGEMENTS (CONTINUED)

Outline	Model No.	Description
<p>Lifting Eye</p> <p>9/16" 14 mm x 1" 25 mm Mounting Slots on 5 1/2" 140 mm Centers</p> <p>2 3/4" 70 mm</p> <p>11 1/8" 283 mm</p> <p>5 1/8" 130 mm</p> <p>18 5/8" 473 mm</p> <p>22 1/2" 572 mm</p> <p>6 3/8" 162 mm</p> <p>3/4" 19 mm</p> <p>Approx. Weight 30 lbs. / 13.6 kg.</p>	6E2	<p>600 Amp Elbow Connector on one end for attachment to equipment and a 200 Amp Deepwell on the other end.</p> <p>This arrangement is not available at 20/35kV</p>
<p>Lifting Eye</p> <p>9/16" 14 mm x 1" 25 mm Mounting Slots on 5 1/2" 140 mm Centers</p> <p>2 3/4" 70 mm</p> <p>11 1/8" 283 mm</p> <p>5 1/8" 130 mm</p> <p>18 5/8" 473 mm</p> <p>22 1/2" 572 mm</p> <p>6 3/8" 162 mm</p> <p>1/2" 13 mm</p> <p>Approx. Weight 30 lbs. / 13.6 kg.</p>	6E6	<p>600 Amp Elbow Connector on one end for attachment to equipment and a 600 Amp bushing on the other end.</p> <p>This arrangement is not available at 20/35kV</p>

NOTE: Other models are available such as 26.

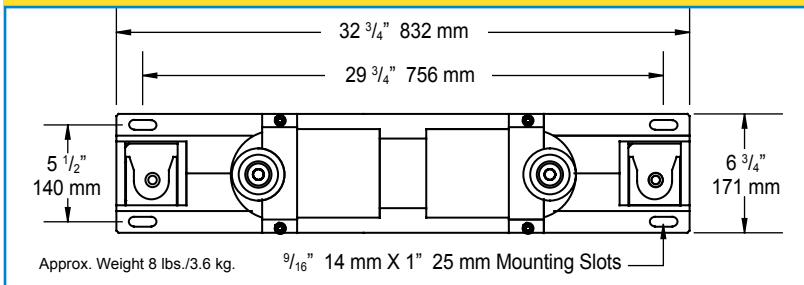
Molded Fuse Products

TABLE 38 – FUSE MOUNTING OPTIONS

Option Number	Description
HDS	Bolted Style Hold Down Strap (Qty: 1 required per end fitting)
QRS	Quick Release Style Hold Down Strap (Qty: 1 required per end fitting)
WMB	Wall Mounting Bracket with Parking Stands and Bolted Style Hold Down Straps (HDS)
WMBQ	Wall Mounting Bracket with Parking Stands and Quick Release Style Hold Down Straps (QRS)
SMB	Support Mounting Bracket for use with Models 6E2 or 6E6 endfitting arrangements. Includes Bolted Style Hold Down Strap (HDS).
TMA-EM	Tilt Mounting Adapter. Bolts to bottom of Wall Mounting Bracket WMB or WMBQ to allow up to 60° angle mounting. (Qty 2 required per installation)

NOTE: The Option number should be added as a suffix to the MCLF catalog number.

OPTIONAL MOUNTING BRACKET WITH ADJUSTABLE PARKING STANDS FOR VERTICAL MOUNTING AND FUSE HOLD DOWN STRAPS



OPTIONAL UNIVERSAL MOUNTING TILT ADAPTERS

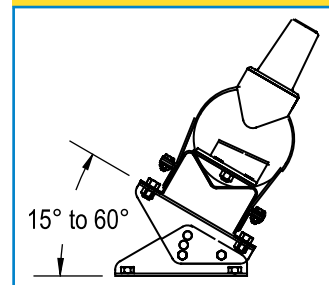


TABLE 39 – END FITTING CATALOG NUMBERS

Use this table only if end fittings are to be ordered and shipped separately from the fuse. Use Table 37 for assembled units.

Catalog Number	Description	System Voltage Class	IEEE 386-1995 Interface Reference
EF2	200 Amp Deepwell End Fitting (kV)	5,15,25 & 35	Figure 3
EF22	Double 200 Amp Deepwell End Fitting (kV)	5,15,25 & 35	Figure 3
EF6	600 Amp Bushing End Fitting(kV)	5, 15, 25 & 35	Figures 11 & 13
EF6E	600 Amp Elbow Connector End Fitting (kV)	5,15 & 25	Figure 11

NOTE: EF6E is equipped with a standard thru hole spade lug (Type 03700).

OTHER OPTIONS

Catalog Number	Description
MCLF-ADT (Assembly/Disassembly Tool)	Hex Wrench for set screw removal and replacement when disassembling end fittings. Supplied as standard with replacement fuses.
$\frac{3}{8}$ " 10mm Sq. Drive $\frac{3}{16}$ " 5mm Hex	