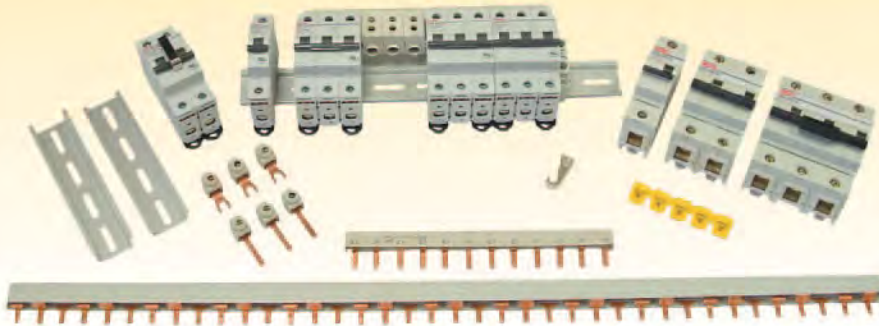


ELFA E90S MINI BREAKERS



AEG MINI BREAKERS & ACCESSORIES

- Auxiliaries
- Fault Trip Aux.
- Shunt Trip
- Undervoltage Trip
- IP55 Enclosures with window
- Lock off device
- Buss bar and infeed terminals



AEG - ELFA
E90S SERIES
UL Approved
(UL1077)



10KA INTERRUPTION
CAPACITY

OPTIONS **FIELD KITS**

- Auxiliary Contacts
- Alarm Contact
- Shunt Trip
- UV Trip

- Current Limiting
Design (Class 3)

3 Different Trip **Characteristics**

B = Resistive Electrical Heating

**C = Small motors
Transformers
Socket outlets**

**D = Large motors
Heavy duty transformers
High / inrush loads**

Electrical Ratings to 480V
(E90S) 110VDC

CONTENTS	PAGE#
Features & Benefits	124, 130
0.5-63 Amp E90S Mini Breakers (10kA)	131
80-125 Amp E88S Mini Breakers (10kA)	133
0.5-63 Amp E90SUC (DC) Mini Breakers (6kA)	135
Dimensions: E90S	130
E88S	132
E90SUC	134
Accessories: Buss connections	136
Auxiliary devices	136
IP55 Enclosures/Din Rail	137
Trip Curves: Thermal / Magnetic	126, 127
Technical Data: E90S, E90SUC, E88S	129
UL489 EEC Mini Circuit Breakers p.248	
UL489 full size series molded case circuit breakers, pages 169-186 (15A-600A) cUL Listed	

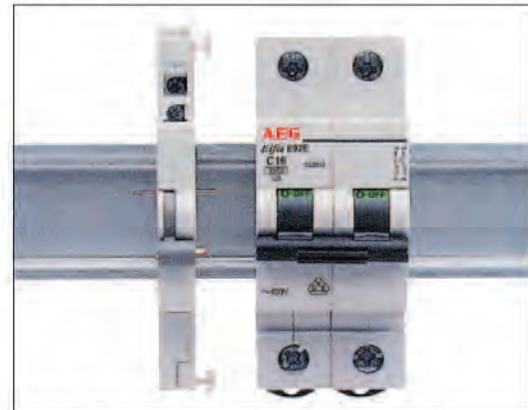
FEATURES & BENEFITS

- **cUL 1077 approved** (File # E151139)
- **High 10kA interruption capacity**
- **Electrical ratings to 277/480 Volts (AC)**
 - (1P) 48VDC, (2P) 110VDC
- **Available in 3 different trip characteristics**
 - **B** = (3-5X rated current)
Magnetic Operating Limit
 - **C** = (5-10X rated current)
Magnetic Operating Limit
 - **D** = (10-20X rated current)
Magnetic Operating Limit
- **IP20 finger safe design terminal connections**
- **Posi-drive philips and slotted screw head terminals**
- **Compact design (18mm) wide**
- **Current limiting (Class 3)**
- **35mm standard mount (Din Rail)**
- **Reverse connection approved**
- **Tropicalized to +55°C / 95% RH**
(Acc. IEC60068-2 / DIN 40046)



35mm Din Rail Mount

- Easy "two" position snap action mounting



Safety Terminals

- Easy field installed auxiliaries
- Easy wire fixing, finger safe terminals
- Protection degree IP20



Optional Wire Connecting

- Posi-drive, philips and slotted head screw terminals
- Pin type, fork type as well as hard wire connection ability
- Terminal torque to 4.5 Nm.
(E90S-E90S-UC)

1. The technical design

Elfa miniature circuit breakers were designed for high-quality electrical installations featuring high capacity, reliability and protection of man and property, pointing the way for the future.

Your advantage

Comprehensive assortment of miniature circuit breakers for all practical applications.

2. The current ratings

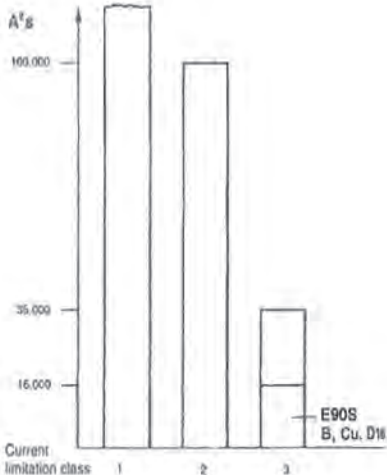
Elfa miniature circuit breakers with current ratings from 0.5 A to 125 A of uniform design protect all unusual circuits in residential and industrial buildings and switchboards.

Your advantage

The uniform miniature circuit breaker series is also suitable for copper conductor cross-sections to 35 mm², (#18-2 AWG).

3. The switching capacity

Elfa miniature circuit breakers have a switching capacity of 10 kA (E90S) according to DIN VDE0641 or EN 60 898. In accordance with Europa Standard EN 60 898 Elfa miniature circuit breakers have a switching capacity of up to 25kA at some current ratings.

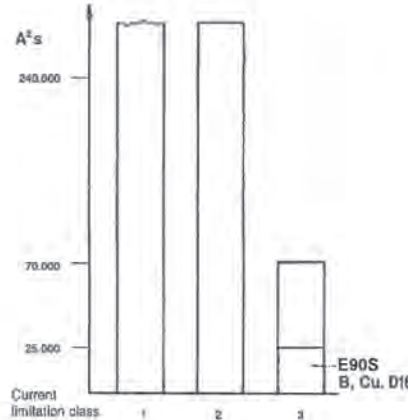


Your Advantage

Elfa miniature circuit breakers with international test marks also perform extreme protection duties in installation technology.

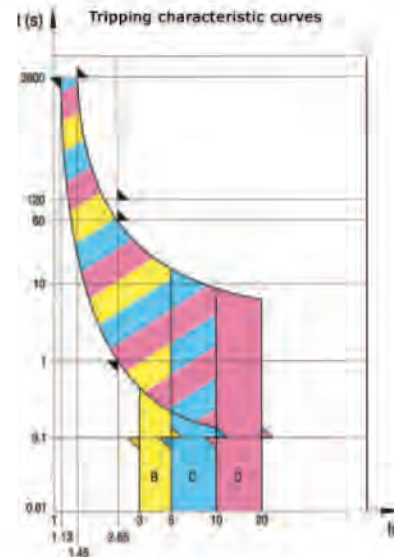
4. The current limitation

Elfa miniature circuit breakers in the event of a fault limit the short-circuit power to less than 50% of the values permitted by most international testing stations.



Your advantage

Increased protection of electrical equipment allows supplementary thermal fuses to be omitted.



5. The tripping characteristics

Elfa miniature circuit breakers are "Europa breakers" with the uniform tripping characteristics B, C and D standardized for the future, and the test marks of all European testing stations. B, C and D are approved per UL 1077, as supplementary protectors. (277/480 Volts max)

Rated current and characteristic Series E90S

B-characteristic

According to DIN VDE 6041 A4/11.8 with rated current ranges from 6 to 63 A, according to EN 60 898 with rated current ranges from 80 to 125 A. Thermal operating limit 1.13 to 1.45 times rated current (reference) ambient temperature 30°C) Magnetic operating limit 3 to 5 times rated current.

Miniature circuit breakers with B characteristic are used primarily for wiring protection in lighting, socket outlet and control circuits.

C-characteristic

According to DIN VDE 0641 Part 11/08.92 with rated current ranges from 0.5 to 63 A, according to EN 60 898 with rated current ranges from 80 to 125A.

Thermal operating limit 1.13 to 1.45 times rated current. (Reference ambient temperature 30°C) Magnetic operating limit 5 to 10 times rated current.

Miniature circuit breakers with C characteristic are used for overload and short-circuit protection primarily to protect equipment with high making currents (e.g. motors and transformers).

D-characteristics

(series E90S)

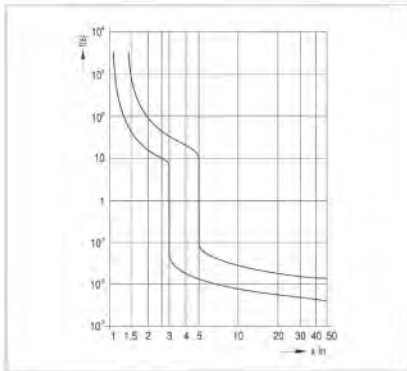
According to EN 60 898 with rated current ranges from 0.5 to 125 A.

Thermal operating limit 1.13 to 1.45 rated current (reference ambient temperature 30°C). Magnetic operating limit 10 to 20 times rated current.

Miniature circuit breakers with D characteristic ensure that even electrical equipment with very high making current, as heavy-starting motors, transformers, groups of lights, do not lead to undesired early tripping.

Curves Acc. EN60898 (Thermal / Magnetic Release)

Curve B



6. The modular equipment program

Elfa miniature circuit breakers can be combined with residual-current trips, remote-control drives and auxiliary contacts. As variants they are also intended for direct-current systems, marine construction and railway engineering as well as for plants at increased ambient temperatures.

Your advantage

Using the complete delivery program widely different duties can be rationally and economically performed by compact equipment combinations. Supplementary elements can be fitted on later.

7. The remote-control facility

Elfa miniature circuit breakers up to 63 A current rating with remote-control drive can be switched on and off over distances by press of a button.

Your Advantage

Elfa miniature circuit breakers do not have to be mounted within hand reach.

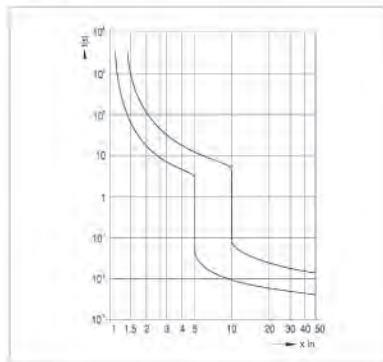
8. The input terminal

The large-sized input box terminal permits both the connection of conductors up to 35 mm², (#2 AWG) and simultaneous busbar connection. Elfa miniature circuit breakers of more than 63 A current rating can even clamp conductors up to 70 mm², (#2/0 AWG).

Your advantage

Elfa miniature circuit breakers save supplementary terminals and reduce installation costs.

Curve C



9. The output terminals

Elfa E90S miniature circuit breakers have an IP20 finger safe protected box terminal that has a wide range of connections. From #18-#2 awg wire, including pin and fork type buss. (35 / 2 x 16mm² max.)

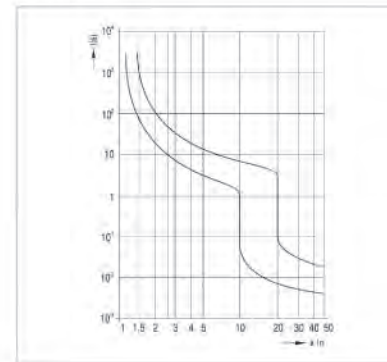
Your Advantage

Short installation times and simple wiring of multi-strand conductors.

10. "Two" position snap mount makes installing breakers a snap. Positive lock in "open" and locked position. A real plus when removing multi pole breakers.



Curve D



11. The operating toggle

Elfa miniature circuit breakers have color coded switch position indicators. If the green marking is visible, the switch contacts are open, if the red marking is visible, the switch contacts are closed.



O-OFF

Contacts in open position. Ensure a distance between contacts > 4mm.



I-ON

Contacts in closed position. Ensure continuity in the main circuit.

APPROVALS

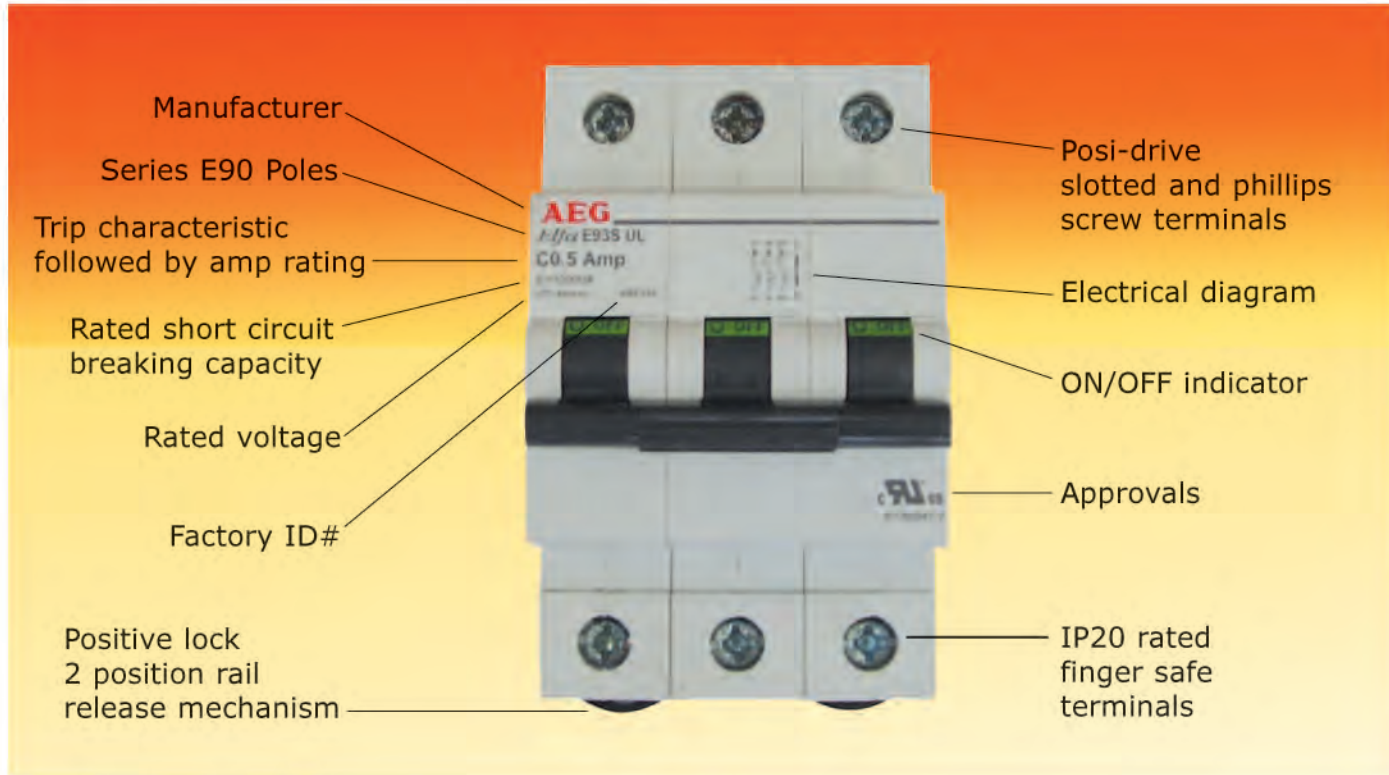
UL (UL 1077), CSA RATINGS
277/480 VAC (0.5 TO 63A) @ 10KA

Approvals International Type E90 Breakers are used worldwide and meet international standards:
CE, IEC, VDE, CEBEC, KEMA, BS, IMQ.

European Standard Ratings
240/415 VAC, 6 to 110 Volt DC

UL 1077 Standard for Supplementary Equipment. UL 1077 is used for over current protection within electrical equipment, where branch circuit protection is already provided or not required.

FEATURES EXPLAINED



ACCESSORY / MOUNTING OPTIONS





TECHNICAL DATA INTERNATIONAL RATINGS

ELFA SERIES E90S Mini Breaker

TECHNICAL DATA				E90S	E880	E90S UC	
Standards				EN 60898	EN 60947-2	VDE 0641 Part 2/3	
Tripping Characteristics				B, C, D	3-5In/5-10In/10-20In	B, C	
Nominal current				A	80 up to 125	B 6-63, C 0.5-63	
Calibration temperature				*C	30	30	
Number of poles (#mod)				1/1+N/2/3/4	1/2/3/4 (1 ^{1/3} , 3, 4 ^{1/2} , 6)	1/2	
Neutral pole protected				yes	-	-	
Nominal voltage Un	AC	1P	V	230/400	230/400	230/400	
		1P+N	V	230	-	-	
		2P	V	400	400	400	
	DC	3P/3P+N/4P	V	400	-	-	
		1P ⁽¹⁾	VDC	48	220	220	
		2P (in series) ⁽¹⁾	VDC	110	440	440	
Frequency				Hz	50/60 and DC	50/60 and DC	
				Hz	DC: mag. trip +40%	DC: mag. trip +40%	
				Hz	400: mag. trip +50%	400: mag. trip +50%	
Maximum service voltage U _{bmax} between two wires				V	250/440;53/120	250/440;53/120	
Minimum service voltage U _{bmin}				V	12; 12	12; 12	
Selectivity class (IEC 60898)					3	3	
Isolator application				IEC 60947-2	yes	yes	
Rated insulation voltage				Pollution degree 2	500	500	
				Pollution degree 3	440	440	
Impulse withstand test voltage				kV	6	6	
Insulation resistance				MOhm	10,000	10,000	
Dielectric rigidity				kV	2,5	2,5	
Vibrations resistance (in x,y,z direction)(IEC 77/16.3)					3g	5g	
				electrical at Un, In	10,000	4,000	
				mechanical	20,000	10,000	
Utilization category (IEC 60947-2)				A	A	A	
Protection degree (outside/inside enclosure with door)				IP20/IP40	IP20/IP40	IP20/IP40	
Self-extinguish degree (according to UL94)				V2	V2	V2	
Tropicalization (according to IEC 60068-2/DIN 40046)				*C/RH	+55°C/95%RH	+55°C/95%RH	
Operating temperature					-25/+55	-25/+55	
*C					-55/+55	-55/+55	
Storage temperature				*C	1/35	1/35	
Terminal capacity					70	1/35	
Rigid cable min./max (top)				mm ²	0.75/35	0.75/25	
Flexible cable min./max (top)				mm ²	1/35	1/35	
Rigid cable min./max (bottom)				mm ²	0.75/35	0.75/25	
Flexible cable min./max (bottom)				mm ²	-	-	
(*Flexible cable 0.75/1/1.5 mm ² with cable lug)					4.5	4.5	
Torque				Nm	yes	yes	
Add on devices (side add on)					yes	yes	
Auxiliary contacts					yes	yes	
Undervoltage					yes	yes	
Short trip					yes	yes	
Remote drive					yes	yes	
Panel board switch					yes	yes	
Busbar systems					yes	yes	
Pin (top/bottom)					yes	yes	
Fork (top/bottom)					yes	yes	
Accessories							
Dimensions, weights, packaging					18	18	
(HxDxW) 86x68xW				mm/mod	125gr	125gr	
Weight/mod				g	12	12	
Package				mod	VDE	VDE ⁽¹⁾	
Approvals					yes	yes	
Short-circuit capacity AC (kA)							
I _{cn}	1P	230/400V		10	-	6 (220VDC) ⁽²⁾	
	1P+N	230V		10	-	-	
	2P	230/400V		10	-	6 (440VDC) ⁽³⁾	
	3P/3P+N/4P	230/400V		10	-	-	
I _{cs} (service)					75% I _{cn}	100% I _{cn}	
I _{cu} (ultimate)	1P	127V		30	-	-	
		240V		15	B/C 10; D 7.5	10 ⁽¹⁾	
		415V		4	4.5	-	
	1P+N/2P	127V		40	-	-	
		240V		30	B/C 15	-	
		415V		15	B/C 10; D 7.5	10 ⁽¹⁾	
	2P	240V		30	B/C 15	-	
		415V		15	B/C 10; D 7.5	-	
		440V		10	-	-	
	I _{cs} (service)					50% I _{cu}	100% I _{cu}
	NEMA AB1 (120/240V)					30	-
	Short circuit capacity DC (kA)						
I _{cu} (ultimate)	1P	≤60V		25	10	-	
		≤220V		-	-	-	
	2P	≤125V		30	15	-	
					-	-	
					-	-	
I _{cs} (service)					100% I _{cu}	100% I _{cu}	

⁽¹⁾On request, ⁽²⁾10(125VDC), ⁽³⁾10(250VDC)



TECHNICAL DATA

- **0.5 Amp - 63 Amp UL**
- **Short circuit capacity (10kA) IC**
- **35mm Din Rail** mounted
- **Screw torque** to 4.5 N.m
- **Mechanical endurance** (20,000 operations)
- **Electrical endurance** (10,000 operations)
- **Current limiting design**
(Energy limit class 3)
- **Wire range** - #2 AWG or 2 x #6 AWG (max.)
#18 AWG (min.)
(35/2 x 16 mm²)max.
- **Max. AC Volts** 277/480V
- **Max. DC Volts** (1P)48 VDC
(2P)110 VDC
- **Operating temperature**
From -25°C to +50°C according to IEC 60898
- **Thermal operating limit:** (1.13-1.45 x In)
- **Shock resistance** (in x, y, z direction)
20g with shock duration of 10ms
(minimum 18 shocks)
40g with shock duration of 5ms
(minimum 18 shocks)
- **Vibration resistance** (in x, y, z direction)
3g in frequency range 10 to 55Hz
(operating time at least 30 minutes)
according to IEC 77 16.3 and DIN 40046 part 8
- **Storage temperature**
From -55°C up to +55°C
according to IEC 88 part 2-1
- **Tropicalized to +55°C / 95% RH**
(Acc. IEC60068-2 / DIN 40046)

STANDARDS / APPROVALS

- UL 1077/CSA (File# E151139)
- CE
- IEC 60898 / 60947-2
- CEBEC
- VDE
- KEMA
- BS4293
- IMQ

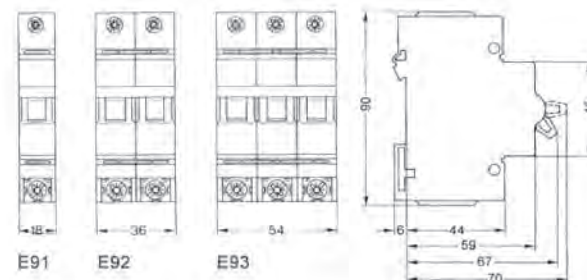
TECHNICAL PERFORMANCE

- 3 optional trip characteristics
 - B = 3-5x magnetic release
 - C = 5-10x magnetic release
 - D = 10-20x magnetic release

	Test current	Tripping time	Application
B	3 In 5 In	t ≥ 0.1s t < 0.1s	Only for resistive loads such as: - electrical heating - water heater - stoves
C	5 In 10 In	t ≥ 0.1s t < 0.1s	Usual loads such as: - lighting - socket outlets - small motors
D	10 In 20 In	t > 0.1s t < 0.1s	Control and protection of circuits having important transient inrush currents (large motors)

DIMENSIONAL DATA

Dimensions Approx. mm(inch)
E91S, E92S, E93S - 0.5A to 63A (B,C Trip)





E90S SERIES - 10KA
MINI CIRCUIT BREAKERS
 (0.5 Amp - 63 Amp)

UL1077
VDE

"B" TRIP (3-5 X In)			"C" TRIP (5-10 X In)			"D" TRIP (10-20 X In)		
Amps	Part#	List	Amps	Part#	List	Amps	Part#	List
			0,5	E91SULC0,5	\$40	0,5	E91SULD0,5	\$45
			1	E91SULC01	\$40	1	E91SULD01	\$45
			2	E91SULC02	\$40	2	E91SULD02	\$45
			3	E91SULC03	\$40	3	E91SULD03	\$45
			4	E91SULC04	\$40	4	E91SULD04	\$45
5	E91SULB05	\$40	5	E91SULC05	\$40	5	E91SULD05	\$45
6	E91SULB06	\$40	6	E91SULC06	\$40	6	E91SULD06	\$45
10	E91SULB10	\$40	10	E91SULC10	\$40	10	E91SULD10	\$45
13	E91SULB13	\$40	13	E91SULC13	\$40	13	E91SULD13	\$45
15	E91SULB15	\$40	15	E91SULC15	\$40	15	E91SULD15	\$45
16	E91SULB16	\$40	16	E91SULC16	\$40	16	E91SULD16	\$45
20	E91SULB20	\$40	20	E91SULC20	\$40	20	E91SULD20	\$45
25	E91SULB25	\$42	25	E91SULC25	\$42	25	E91SULD25	\$47
30	E91SULB30	\$44	30	E91SULC30	\$44	30	E91SULD30	\$49
32	E91SULB32	\$44	32	E91SULC32	\$44	32	E91SULD32	\$49
40	E91SULB40	\$48	40	E91SULC40	\$48	40	E91SULD40	\$53
50	E91SULB50	\$52	50	E91SULC50	\$52	50	E91SULD50	\$57
60	E91SULB60	\$68	60	E91SULC60	\$68	60	E91SULD60	\$73
63	E91SULB63	\$68	63	E91SULC63	\$68	63	E91SULD63	\$73
			0,5	E92SULC0,5	\$84	0,5	E92SULD0,5	\$94
			1	E92SULC01	\$84	1	E92SULD01	\$94
			2	E92SULC02	\$84	2	E92SULD02	\$94
			3	E92SULC03	\$84	3	E92SULD03	\$94
			4	E92SULC04	\$84	4	E92SULD04	\$94
5	E92SULB05	\$84	5	E92SULC05	\$84	5	E92SULD05	\$94
6	E92SULB06	\$84	6	E92SULC06	\$84	6	E92SULD06	\$94
10	E92SULB10	\$84	10	E92SULC10	\$84	10	E92SULD10	\$94
13	E92SULB13	\$84	13	E92SULC13	\$84	13	E92SULD13	\$94
15	E92SULB15	\$84	15	E92SULC15	\$84	15	E92SULD15	\$94
16	E92SULB16	\$84	16	E92SULC16	\$84	16	E92SULD16	\$94
20	E92SULB20	\$84	20	E92SULC20	\$84	20	E92SULD20	\$94
25	E92SULB25	\$90	25	E92SULC25	\$90	25	E92SULD25	\$100
30	E92SULB30	\$94	30	E92SULC30	\$94	30	E92SULD30	\$104
32	E92SULB32	\$94	32	E92SULC32	\$94	32	E92SULD32	\$104
40	E92SULB40	\$102	40	E92SULC40	\$102	40	E92SULD40	\$112
50	E92SULB50	\$110	50	E92SULC50	\$110	50	E92SULD50	\$120
60	E92SULB60	\$124	60	E92SULC60	\$124	60	E92SULD60	\$134
63	E92SULB63	\$124	63	E92SULC63	\$124	63	E92SULD63	\$134
			0,5	E93SULC0,5	\$146	0,5	E93SULD0,5	\$161
			1	E93SULC01	\$146	1	E93SULD01	\$161
			2	E93SULC02	\$146	2	E93SULD02	\$161
			3	E93SULC03	\$146	3	E93SULD03	\$161
			4	E93SULC04	\$146	4	E93SULD04	\$161
5	E93SULB05	\$146	5	E93SULC05	\$146	5	E93SULD05	\$161
6	E93SULB06	\$146	6	E93SULC06	\$146	6	E93SULD06	\$161
10	E93SULB10	\$146	10	E93SULC10	\$146	10	E93SULD10	\$161
13	E93SULB13	\$146	13	E93SULC13	\$146	13	E93SULD13	\$161
15	E93SULB15	\$146	15	E93SULC15	\$146	15	E93SULD15	\$161
16	E93SULB16	\$146	16	E93SULC16	\$146	16	E93SULD16	\$161
20	E93SULB20	\$146	20	E93SULC20	\$146	20	E93SULD20	\$161
25	E93SULB25	\$154	25	E93SULC25	\$154	25	E93SULD25	\$169
30	E93SULB30	\$162	30	E93SULC30	\$162	30	E93SULD30	\$177
32	E93SULB32	\$162	32	E93SULC32	\$162	32	E93SULD32	\$177
40	E93SULB40	\$162	40	E93SULC40	\$162	40	E93SULD40	\$177
50	E93SULB50	\$182	50	E93SULC50	\$182	50	E93SULD50	\$197
60	E93SULB60	\$204	60	E93SULC60	\$204	60	E93SULD60	\$219
63	E93SULB63	\$204	63	E93SULC63	\$204	63	E93SULD63	\$219



1 Pole



2 Poles



3 Poles

(80A - 125A)



STANDARDS / APPROVALS

- EN60947-2
- VDE
- CE

TECHNICAL DATA

- **80 Amp - 125 Amp** Rated (80-120 Amp Non-UL)
- **Short circuit capacity (10kA) IC**
- **35mm Din Rail** mounted
- **Screw torque** to 5 Nm.
- **Mechanical endurance** (10,000 operations)
- **Electrical endurance** (4,000 operations)
- **Current limiting design**
(Energy limit class 3)
- **Max. AC Volts** 277/480V
- **Max. DC Volts** (1P)48 VDC
(2P)110 VDC
- **Operating temperature**
From -25°C to +50°C according to IEC 60898
- **Thermal operating limit:** (1.13-1.45 x In)
- **Storage temperature**
From -55°C up to +55°C
according to IEC 88 part 2-1
- **Use at 400Hz**
At 400Hz the magnetic tripping current is
approximately 50% higher than at AC 50/60Hz

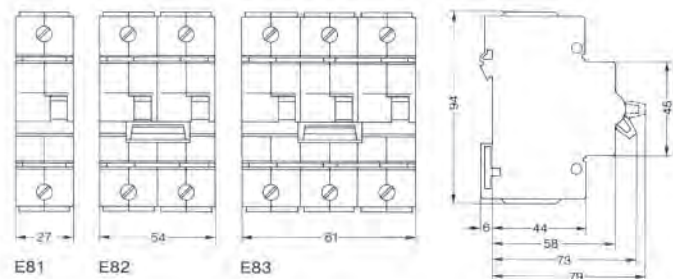
TECHNICAL PERFORMANCE

- 3 optional trip characteristics
 - B = 3-5x magnetic release
 - C = 5-10x magnetic release
 - D = 10-20x magnetic release

	Test current	Tripping time	Application
B	3 In 5 In	$t \geq 0.1s$ $t < 0.1s$	Only for resistive loads such as: - electrical heating - water heater - stoves
C	5 In 10 In	$t \geq 0.1s$ $t < 0.1s$	Usual loads such as: - lighting - socket outlets - small motors
D	10 In 20 In	$t > 0.1s$ $t < 0.1s$	Control and protection of circuits having important transient inrush currents (large motors)

DIMENSIONAL DATA

Dimensions Approx.. mm(inch)
E881S, E882S - 80A to 125A





**ME880S SERIES
MINI BREAKERS**

**ELFA SERIES E90S
Mini Breaker**

(80A - 120A)

"B" TRIP (3-5 X In)			"C" TRIP (5-10 X In)			"D" TRIP (10-20 X In)		
Amps	Part#	List	Amps	Part#	List	Amps	Part#	List
80	E881S B080	\$128	80	E881S C080	\$128	80	E881S D080	\$134
100	E881S B100	\$135	100	E881S C100	\$135	100	E881S D100	\$141
125	E881S B125	\$181	125	E881S C125	\$181	125	E881S D125	\$187
80	E882S B080	\$333	80	E882S C080	\$333	80	E882S D080	\$345
100	E882S B100	\$352	100	E882S C100	\$352	100	E882S D100	\$364
125	E882S B125	\$472	125	E882S C125	\$472	125	E882S D125	\$483
80	E883S B080	\$499	80	E883S C080	\$499	80	E883S D080	\$517
100	E883S B100	\$533	100	E883S C100	\$533	100	E883S D100	\$550
125	E883S B125	\$707	125	E883S C125	\$707	125	E883S D125	\$725



1 Pole



2 Poles



3 Poles

Questions & Answers

Q: Where can I use AEG's (UL1077) approved mini breakers?

A: Practically anywhere supplemental protection is required. Motor loads, transformers, heating resistive loads, control circuits.

Q: Is there any minimum distance between circuit breakers?

A: You can mount AEG mini breakers side by side with each other. There is a recommendation of approx.. 35mm (1.4") when mounting breakers above each other in a parallel plane.

Q: Do I need any additional upstream protection?

A: Local codes vary, however typically upstream protection is already provided via the primary plant & distribution panel (UL489 approved breaker).

Q: If I need a UL489 breaker for my application, can you supply?

A: Refer to pages 143-147 for a full line series of UL489 breakers from (15 Amps - 600 Amps).



STANDARDS / APPROVALS

- CE
- VDE0641
- IEC60898-2

TECHNICAL DATA

- **.5 Amp - 63 Amp** (C trip)
- **Short circuit capacity (6kA) IC**
- **6 - 63 Amp** (B trip)
- **Screw torque** to 4.5 Nm.
- **Mechanical endurance** (20,000 operations)
- **Electrical endurance** (10,000 operations)
- **Current limiting design**
(Energy limit class 3)
- **Max. DC Volts** (1P)220 VDC
(2P)440 VDC
- **Min.. DC Volts** 12 V
- **Shock resistance** (in x, y, z direction)
20g with shock duration of 10ms
(minimum 18 shocks)
40g with shock duration of 5ms
(minimum 18 shocks)
- **Vibration resistance** (in x, y, z direction)
3g in frequency range 10 to 55Hz
(operating time at least 30 minutes)
according to IEC 77 16.3 and DIN 40046 part 8
- **Storage temperature**
From -55°C up to +55°C
according to IEC 88 part 2-1
- **Tropicalized to +55°C / 95% RH**
(Acc. IEC60068-2 / DIN 40046)
- **Note:** must observe polarity markings due to permanent magnet in the MCB.

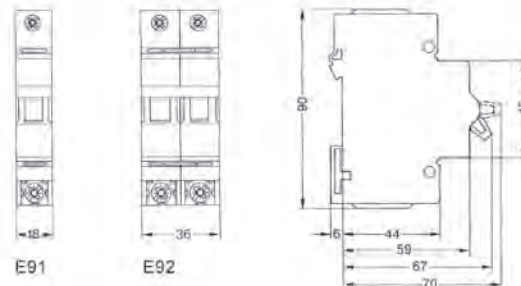
TECHNICAL PERFORMANCE

- **3 optional trip characteristics**
 - B = 3-5x magnetic release
 - C = 5-10x magnetic release
 - D = 10-20x magnetic release

	Test current	Tripping time	Application
B =	3 In 5 In	t ≥ 0.1s t < 0.1s	Only for resistive loads such as: - electrical heating - water heater - stoves
C =	5 In 10 In	t ≥ 0.1s t < 0.1s	Usual loads such as: - lighting - socket outlets - small motors
D =	10 In 20 In	t > 0.1s t < 0.1s	Control and protection of circuits having important transient inrush currents (large motors)

DIMENSIONAL DATA

Dimensions Approx.. mm(inch)
E91SUC, E92SUC - .5A to 63A



"B" TRIP (3-5 X In)			"C" TRIP (5-10 X In)		
Amps	Part#	List	Amps	Part#	List
			0,5	E91SUCC0,5	\$52
			1	E91SUCC01	\$52
			2	E91SUCC02	\$52
			3	E91SUCC03	\$52
			4	E91SUCC04	\$52
			6	E91SUCC06	\$52
6	E91SUCB06	\$52			
10	E91SUCB10	\$52	10	E91SUCC10	\$52
13	E91SUCB13	\$52	13	E91SUCC13	\$52
16	E91SUCB16	\$52	16	E91SUCC16	\$52
20	E91SUCB20	\$52	20	E91SUCC20	\$52
25	E91SUCB25	\$55	25	E91SUCC25	\$55
32	E91SUCB32	\$57	32	E91SUCC32	\$57
40	E91SUCB40	\$62	40	E91SUCC40	\$62
50	E91SUCB50	\$68	50	E91SUCC50	\$68
63	E91SUCB63	\$68	63	E91SUCC63	\$88
			0,5	E92SUCC0,5	\$109
			1	E92SUCC01	\$109
			2	E92SUCC02	\$109
			3	E92SUCC03	\$109
			4	E92SUCC04	\$109
			6	E92SUCC06	\$109
6	E92SUCB06	\$109	10	E92SUCC10	\$109
10	E92SUCB10	\$109	13	E92SUCC13	\$109
13	E92SUCB13	\$109	16	E92SUCC16	\$109
16	E92SUCB16	\$109	20	E92SUCC20	\$109
20	E92SUCB20	\$109	25	E92SUCC25	\$117
25	E92SUCB25	\$117	32	E92SUCC32	\$122
32	E92SUCB32	\$122	40	E92SUCC40	\$133
40	E92SUCB40	\$133	50	E92SUCC50	\$143
50	E92SUCB50	\$143	63	E92SUCC63	\$161
63	E92SUCB63	\$161			



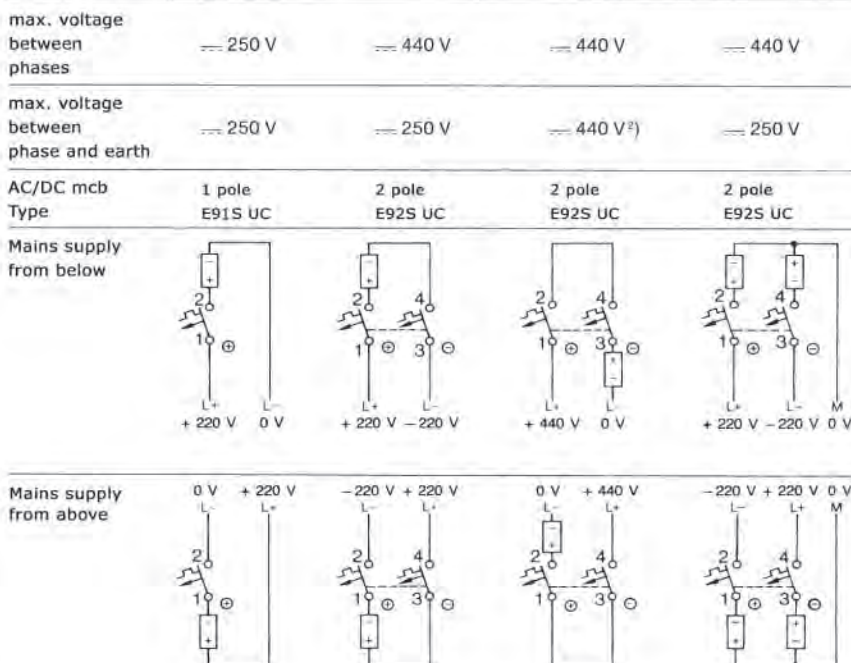
1 Pole



2 Poles

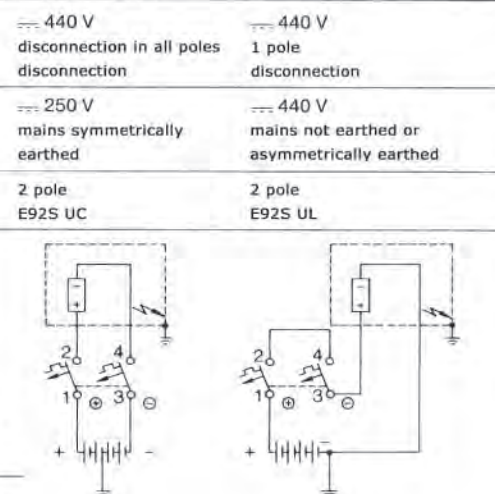
Connection examples

for max. permissible voltages between phases as a function of numbers of poles and connections:



Connection examples















for various voltages between phases as a function of numbers of poles and connection:





E90 SERIES ACCESSORIES

ELFA SERIES E90S Mini Breaker

Description	Part Number	List	Description	Part Number	List
Infeed terminals			Add on aux. devices		
 Fork Type 100Amp Max. (25mm ²)	M ELFA-946	\$5	Aux. form "C"  Coupled to E90S, E90UC Coupled to E880S	M ELFA-034 M ELFA-430	\$35
 Pin Type 100Amp Max. (25mm ²)	M ELFA-947	\$5	Fault Trip Aux.  •"SH" "SR"	Coupled to E90S, E90SUC 1 CO Coupled to E880S, 1 CO	M ELFA-SH M ELFA-SR \$50
 Long Pin Type 100Amp Max. (25mm ²)	M ELFA-948	\$6	Circuit Breaker Interlock  E90S E90SUC Only	M ELFA-NLVS	\$59
 Fork and Pin Alignable 150Amp Max. Heavy Duty	M ELFA-949	\$10	Remote Release "Shunt" Trip  E90S, E90SUC only AC 24-60V DC 24-48V AC 110-415V DC 110-125V	M ELFA-NF4 M ELFA-NF5	\$110
 Front Mount Option For E90S, E90SUC up to 3 poles	M ELFA-3FM	\$30	Under voltage Trip  E90S, E90SUC AC 230V AC/DC 12V AC/DC 24V AC/DC 48V	M ELFA-NUVR230 M ELFA-NUVR12 M ELFA-NUVR24 M ELFA-NUVR48	\$225
 Toggle Lockout Device for E90S, E90SUC	M ELFA-940	\$27	 MELFA 714 1 meter long 120 Amp Max (19x3 Connections) Cutable to length Comes with 10 end caps.		\$100
 Terminal Protectors For pin and fork type (for the protection of unused buss connections) 5 protectors included	M ELFA EV-BS	\$3	Special Notes on Auxiliary Devices Ratings of the contacts		
 Buss Bar End Caps 3 phase buss (10 pack)	M ELFA-760	\$3	• H, SH, SR		
			• Contact ratings for auxiliary device types "H, SH, SR"		
			Rated current In 5A at ~ 230VAC 0.4A at --- 220VDC 1A at --- 60VDC 4A at --- 24VDC		



Elfa Circuit Breaker Enclosures 35mm Din Rail

ELFA SERIES E90S
Mini Breaker

ELFA ENCLOSURES / IP55, NEMA 3R, 12

M ELFA-80908



(up to 8 poles)

M ELFA-80906



(up to 6 poles)

M ELFA-80904



(up to 4 poles)

Part Number	Description	List
M ELFA 80904	Up to 4 poles max.	\$147
M ELFA 80906	Up to 6 poles max.	\$159
M ELFA 80908	Up to 8 poles max.	\$169

- ELFA'S family of enclosures house up through 8 poles for E90SUC and E90S series mini breakers. Each enclosure seal tight lift up cover meets IP55 hoesight outdoor protection.



Discount Schedule "M" (for Enclosures)

35MM DIN RAIL

All Elfa Series Breakers are 35mm Din Rail Mount and give to the installer substantial installation and space savings. Units snap lock on to the rails, eliminating the need for specific +/- tolerances in layout as well as drilling and tapping each mounting hole.



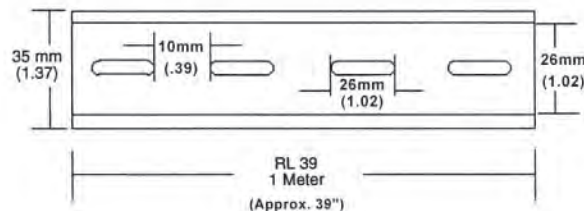
RL-5
cut 5" long



RL-39
Approx.. 1 meter

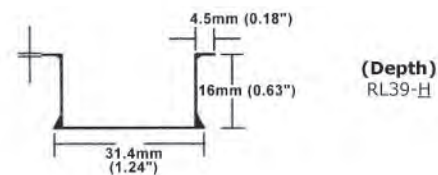


RL-39H
Approx.. 1 meter

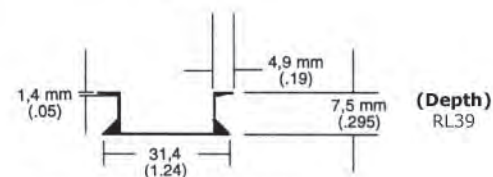


Part Number	Description	List
RL-5	5" long rail (35mm)	\$2
RL-39	39" long rail (35mm)	\$6
RL-5H	5" long rail (35mm) high version	\$2
RL-39H	39" long rail (35mm) high version	\$6

- Consult factory for other size options.
(Burr free cuts to size) 50 pcs. minimum



(Depth)
RL39-H



(Depth)
RL39

Discount Schedule PL

All dimensions approx.. in (inches).

1. The technical design

Elfa miniature circuit breakers were designed for high-quality electrical installations featuring high capacity, reliability and protection of man and property, pointing the way for the future.

Your advantage

Comprehensive assortment of miniature circuit breakers for all practical applications.

2. The current ratings

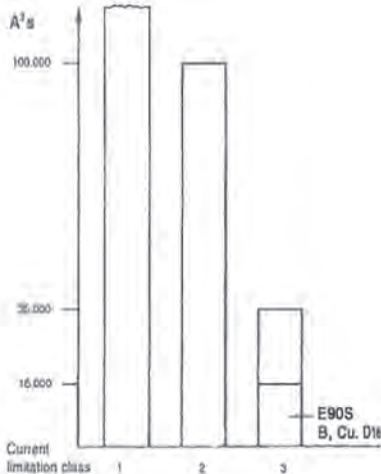
Elfa miniature circuit breakers with current ratings from 0.5 A to 125 A of uniform design protect all unusual circuits in residential and industrial buildings and switchboards.

Your advantage

The uniform miniature circuit breaker series is also suitable for copper conductor cross-sections to 35 mm², (#18-2 AWG).

3. The switching capacity

Elfa miniature circuit breakers have a switching capacity of 10 kA (E90S) according to DIN VDE0641 or EN 60 898. In accordance with Europa Standard EN 60 898 Elfa miniature circuit breakers have a switching capacity of up to 25kA at some current ratings.

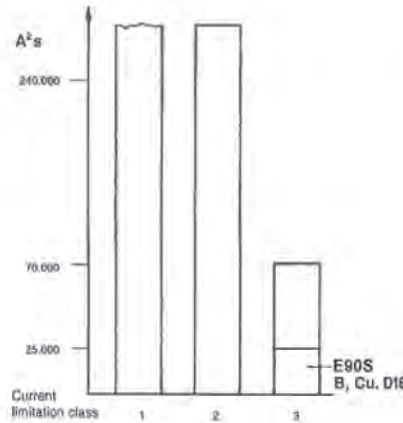


Your Advantage

Elfa miniature circuit breakers with international test marks also perform extreme protection duties in installation technology.

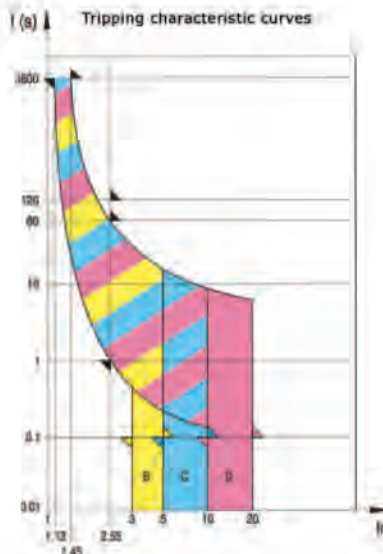
4. The current limitation

Elfa miniature circuit breakers in the event of a fault limit the short-circuit power to less than 50% of the values permitted by most international testing stations.



Your advantage

Increased protection of electrical equipment allows supplementary thermal fuses to be omitted.



5. The tripping characteristics

Elfa miniature circuit breakers are "Europa breakers" with the uniform tripping characteristics B, C and D standardized for the future, and the test marks of all European testing stations. B, C and D are approved per UL 1077, as supplementary protectors. (277/480 Volts max)

Rated current and characteristic Series E90S

B-characteristic

According to DIN VDE 6041 A4/11.8 with rated current ranges from 6 to 63 A, according to EN 60 898 with rated current ranges from 80 to 125 A. Thermal operating limit 1.13 to 1.45 times rated current (reference ambient temperature 30°C) Magnetic operating limit 3 to 5 times rated current.

Miniature circuit breakers with B characteristic are used primarily for wiring protection in lighting, socket outlet and control circuits.

C-characteristic

According to DIN VDE 0641 Part 11/08.92 with rated current ranges from 0.5 to 63 A, according to EN 60 898 with rated current ranges from 80 to 125A.

Thermal operating limit 1.13 to 1.45 times rated current. (Reference ambient temperature 30°C) Magnetic operating limit 5 to 10 times rated current.

Miniature circuit breakers with C characteristic are used for overload and short-circuit protection primarily to protect equipment with high making currents (e.g. motors and transformers).

D-characteristics

(series E90S)
According to EN 60 898 with rated current ranges from 0.5 to 125 A. Thermal operating limit 1.13 to 1.45 rated current (reference ambient temperature 30°C). Magnetic operating limit 10 to 20 times rated current.

Miniature circuit breakers with D characteristic ensure that even electrical equipment with very high making current, as heavy-starting motors, transformers, groups of lights, do not lead to undesired early tripping.