



E 90 range of fuse holders  
for the North American market  
Uncompromising performance

# Simplicity of Design

## ABB Excellence Meets Customer Demands



Your customer demands devices for circuit protection with effective heat dissipation, in addition to meeting mandatory requirements and international standards.

The dedicated designers at ABB have directed their passion, expertise and creativity in the development of the E 90 Series of fuse holders designed for the North American market.

This range of fuse holders includes class CC, class J, PV and midget fuse holders, all certified according to North American standards.

# The new ABB standard Certified according to these important North American and international marks



A passport to the world.  
International quality marks and UL certification make  
E 90 the ideal choice for designers and manufacturers  
of switchboards and installations.



# E 90 range for the North American market

## ABB Design Meets Customer Demands



### Branch circuit protection

#### E 90 CC fuse holders

- One module per pole
- 1, 1N, 2, 3, 3N, 4-pole versions
- Rated current 30 A
- Rated voltage 600 V AC/DC according to UL 4248-4
- For use with Class CC fuses only
- All versions are available with optical blown fuse indicator
- Certified according to UL 4248-4
- Rejection member feature according to UL 4248-4







## Industrial installations E 90/30 J and E 90/60 J fuse holders

- 1, 2 and 3-pole versions
- Rated current 30 and 60 A
- Rated voltage 600V AC/DC according to UL 4248-8
- For use with Class J fuses only
- All versions are available with optical blown fuse indicator
- UL listed according to UL 4248-8



# E 90 range for the North American market

## ABB Design Meets Customer Demands



## Photovoltaic installations

### E 90 PV fuse holders

- One module per pole
- 1 and 2-pole versions
- Certified according to UL 4248-18
- Rated current 32 A
- Rated voltage 1000 V DC according to IEC 60947-3 and UL 4248-18
- For use with 10.3mm (.406") x 38mm (1.496") gPV fuses only
- Designed for isolation and protection of circuits in photovoltaic installations up to 1000 V DC
- All versions are available with optical blown fuse indicator
- DC-20B according to IEC 60947-3





## Industrial automation E 90/32 fuse holders

- One module per pole
- Versions 1, 1N, 2, 3, 3N, 4
- Rated current 32 A
- Rated voltage 400 V AC-22B and 690 V AC-20B according to IEC 60947-3
- Rated voltage 600 V AC/DC according to UL 4248-1
- For use with 10.3mm (.406") x 38mm (1.496") aM and gG fuses only
- Designed for protection of secondary circuits of industrial plants
- All versions are available with optical blown fuse indicator
- Compatible with ABB busbars of S 200 series and Unifix plug-in system
- cURus certification





# E 90 range for the North American market

## ABB Design Meets Customer Demands



## Industrial circuit protection

### E 90/50 and E 90/125 fuse holders

- Versions 1, 1N, 2, 3, 3N
- AC-20B according to IEC 60947-3
- Rated current 50 and 125 A
- Rated voltage 600 V AC/DC according to UL 4248-1
- Rated voltage 690 V AC according to IEC 60947-3
- For use any type of cylindrical fuses
  - 14mm (.551") x 51mm (2.008") (E 90/50) and
  - 22mm (.866") x 58mm (2.283") (E 90/125) only
- Specifically designed for industrial circuit protection
- All versions are available with optical blown fuse indicator
- Certified according to UL 4248-1





# Choosing the best ABB sets performance standard

## Tip-top performance

E 90 fuse holders can be used in any application where you need to ensure electrical protection and isolation.

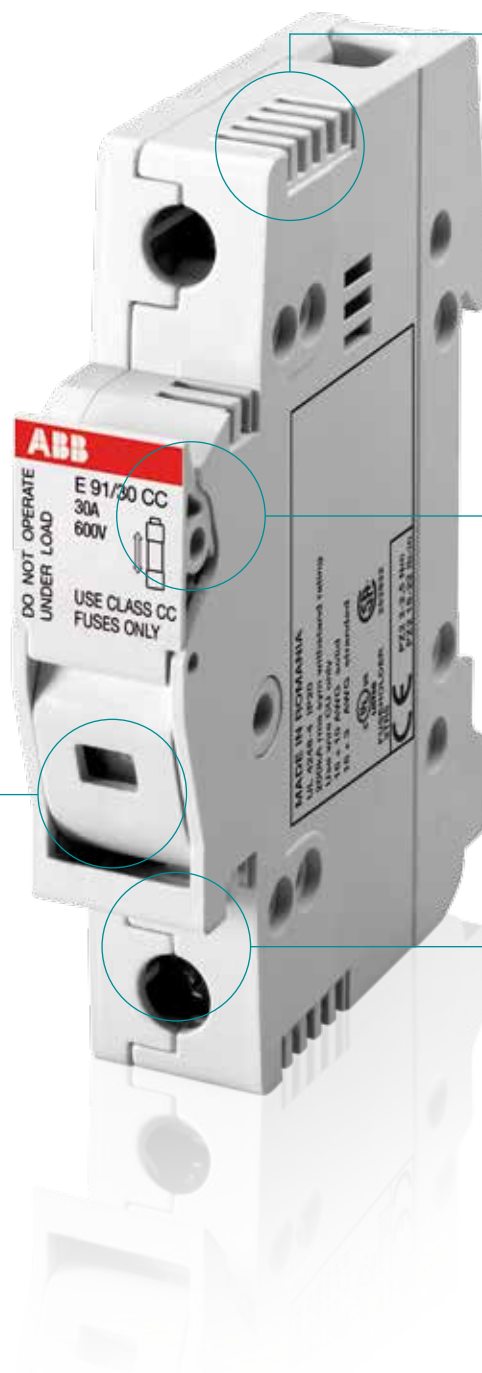
The technology solutions applied to reduce power dissipation help minimize module heating.

## Completeness

Fuse tripping can be easily displayed, thanks to the special blown fuse indicator light.

Ease of installation.

E 90 fuse holders are fully compatible with the Unifix-L wiring system



## Reliability

Venting grooves and cooling chambers improve heat dissipation even in multiple-pole configurations. The reduced operating temperature inside fuse holders ensures durability and reliability of the devices over time.

## Compactness

The compact dimensions enable the switchboard door to be closed, even when the fuse holder is open, thus ensuring total safety during maintenance.

## Universal use

Screw holes with increased diameter accommodate insulated screwdrivers and electric screwdrivers. With the Pozidrive PZ2 screws, tightening can be performed by exerting less torque than conventional screws, and the same electric screwdriver can be used for all terminals.

Moreover, the PS connection busbars facilitate the connecting operations, making the wiring both simple and safe, providing complete integration with S 200 and SN 201 System pro M compact<sup>®</sup> circuit breakers.

The E 90 safe and smart range is designed for quick and flawless installations. Because of its unique features, the E 90 series sets a new safety standard.

## Reliable connections

**Wide terminals** allow the use of cables with sections up to (1/0 AWG) depending on the type of fuseholder. The antivibration **knurling** on the terminal cages ensures safe and reliable connections.

## Rejection Member function

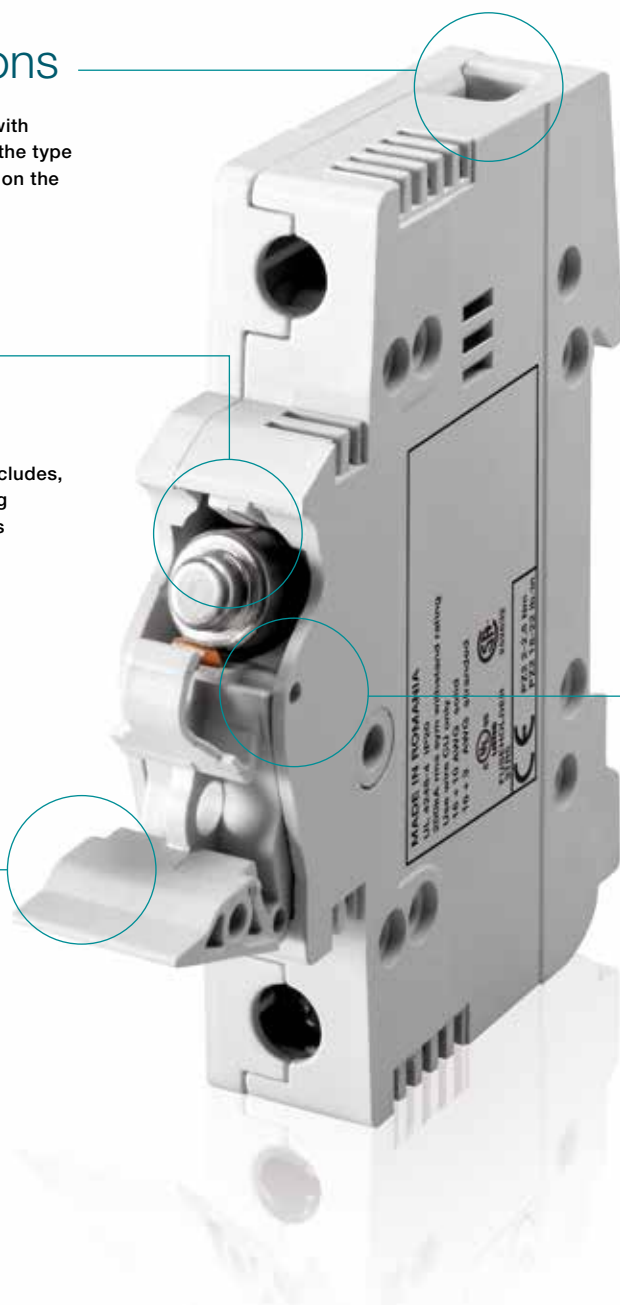
The E 90/30 CC range of fuse holders includes rejection member functionality according to UL 4248-4 in order to insert only class CC fuses.

## Ease of use

Fuse holder profile has been designed for maximum ease of use. The 90° flip hinge with **ergonomic knob** makes the replacement of fuses easier, even in small spaces or when wearing protective gloves.

## Environmental protection.

The fuse holders are compliant with RoHS (Restriction of Hazardous Substances) European directive, which prohibits the use of hazardous substances in the manufacture of electrical and electronic equipment.



## Safety

To ensure protection and safety during maintenance operations and to avoid any accidental switching, fuse holders **can be sealed** in closed position, and **padlocked** in open position. The protection degree is IP20.

# Smart protection for installations with E 90s

The entire E 90 series is available with an optical blown fuse indicator light. E 90s PV is the first fuse holder for photovoltaic installations with an optical blown fuse indicator, which efficiently monitors DC installations up to 1000 V.

## Flexible

- E 90 CC: 24 to 600 V operation in AC/DC networks. Can be powered from both the load side and the supply side
- E 90 PV: 24 to 1000 V operation in DC networks with upstream supply

## Simple

The indicator light doesn't need auxiliary power supply or dedicated wiring

## Effective

Local fuse tripping signal  
Allows the faulty phase to be detected immediately





# E 90 CC fuse holders

## Designed for the North American market



# E 90 CC fuse holders

## Specifically developed for branch circuit protection

### Features:

- UL Listed according to UL 4248-1 and UL 4248-4
- For use with Class CC fuses only
- Rated voltage 600 V AC/DC according to UL 4248-4
- Rated current 30 A
- 1, 1N, 2, 3, 3N, 4-pole versions
- Rejection member only allows insertion of a class CC fuse

E 90 CC range has been designed to comply with North American market regulations. This enables worldwide manufacturers to sell their equipment in conformity with safety requirements in these countries.

Class CC fuses have specific characteristics dedicated to terminal protection of components and apparatuses against short-term overloads and protection against the short circuiting of motors. Maximum rated current of a Class CC fuse is 30 A, whereas the maximum rated voltage is 600 V. The breaking capacity reaches 200 kA. The specific properties of the Class CC fuses are valued in the North American market because they provide protection against short-circuits, even with equipment with limited resistance. The use of Class CC fuses is continuously increasing in the North American market, since the safety and reliability requirements of end users have become stricter and do not tolerate any permanent damage to motor starts.





Developed for the North American market  
universally reliable  
E 90/30 J and E 90/60 J fuse holders





# E 90 J fuse holders

## Specifically designed to be equipped with class J fuses

### Features:

- UL listed according to UL 4248-8
- For use with Class J fuses only
- Rated voltage 600 V AC/DC according to UL 4248-8
- Rated current up to 60 A
- With 1, 2 and 3-pole versions



E 90 J range has been designed to comply with North American market regulations. The E 90 J fuse carriers are the ideal solution for industrial installations, motors and transformer protection, heating systems and control circuits.

In accordance with the reference standard UL 4248-8, they come in voltage and current ratings up to 600 V and 30/60 A. The breaking capacity reaches 200 kA. They are available in 1P, 2P and 3P versions. The versions with blown fuse indicator light provide a visual signal of the fuse break condition. They can be padlocked open and sealed closed to ensure operator safety during maintenance operations.



# E 90 PV fuse holders for photovoltaic applications Designed for industry professionals

## Features:

- For use with 10.3mm (.406") x 38mm (1.496") gPV fuses only
- Rated voltage 1000 V DC
- Rated current 32 A
- Reference standards:  
IEC 60947-3, UL 4248-18
- DC-20B utilization category

E 90 PV fuse holders have been specifically designed for photovoltaic applications. Because of their rated voltage up to 1000 V DC, they are the ideal solution for protecting cells, inverters, or surge arresters. During maintenance operations they ensure isolation of circuits and strings up to 1000V DC, all in total safety.

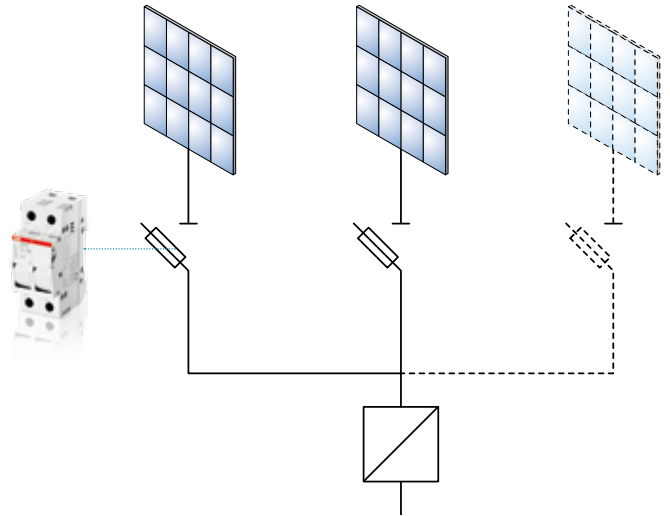


# Isolation and protection of strings up to 1000 V

## Application examples

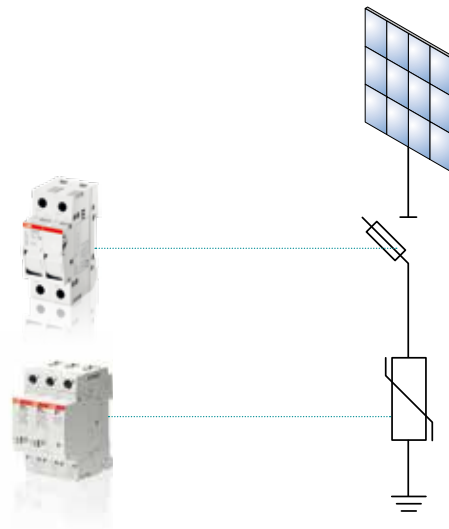
### String protection

To prevent damage to the equipment in the direct current lines of photovoltaic installations and ensure that it remains **isolated** when maintenance work is performed, E 90 PV fuse holders can be installed downstream of the inverter so that each string is protected. The fuses must be selected to match the rated current of the line.



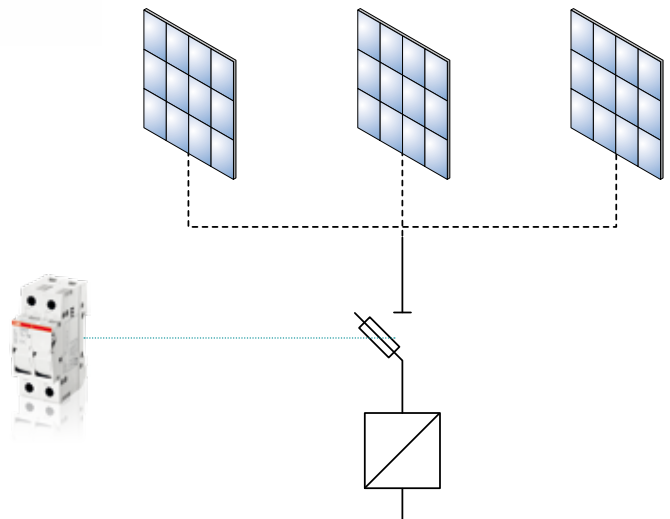
### Surge arrester back-up

When the short-circuit current at the installation point exceeds 100 A DC, **OVR PV** surge arresters require back-up protection with a specific gR-type fuse.



### DC side of the inverter

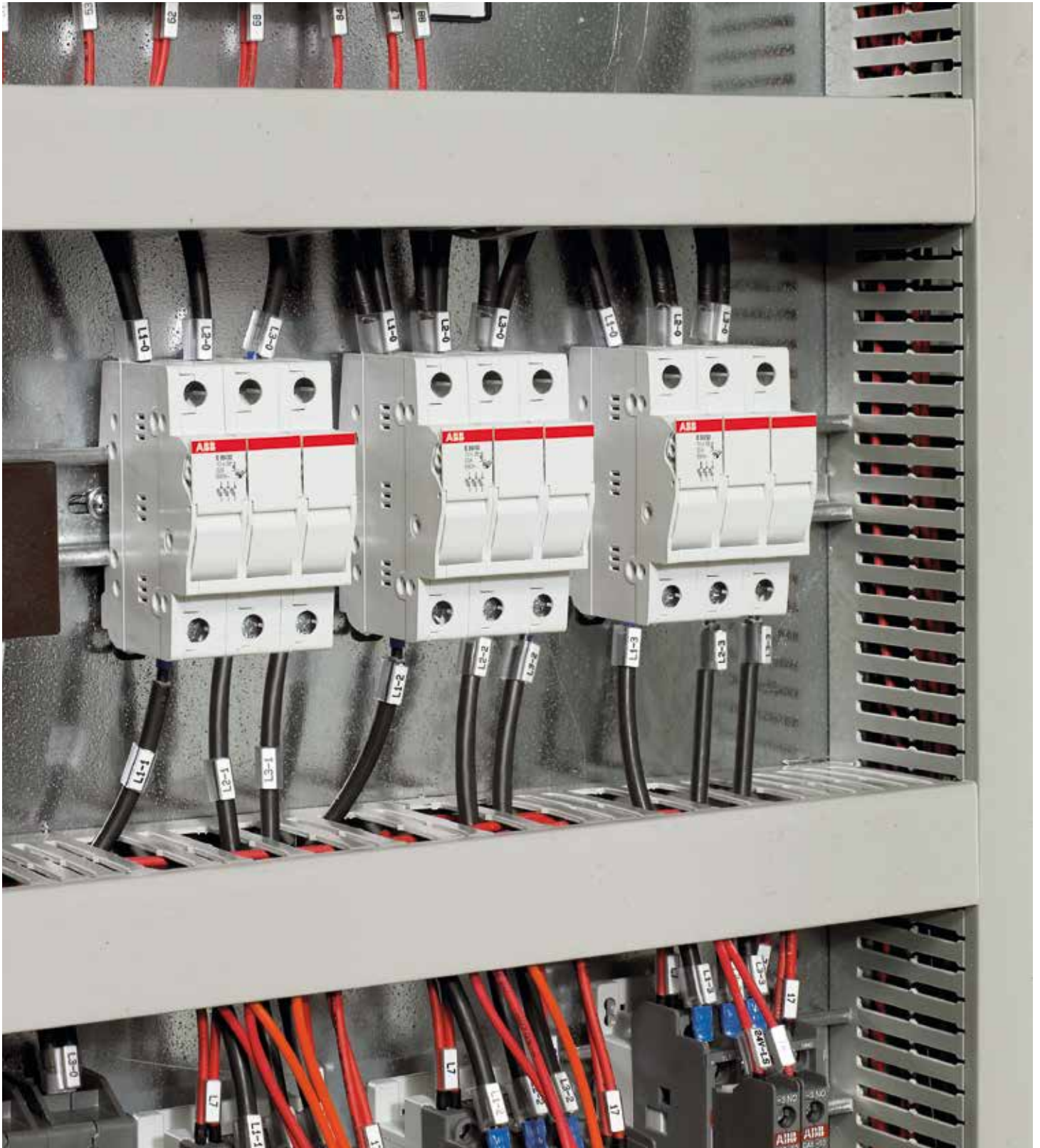
In small photovoltaic installations, E 90 PV fuse holders can be used to protect the direct current side of the inverter. Fuse holder should be selected according to the inverter rated current.





# Results you can trust

## High performance E 90/32 fuse holders



# E 90/32 protection and control

## Developed for automation and industry

### Applications:

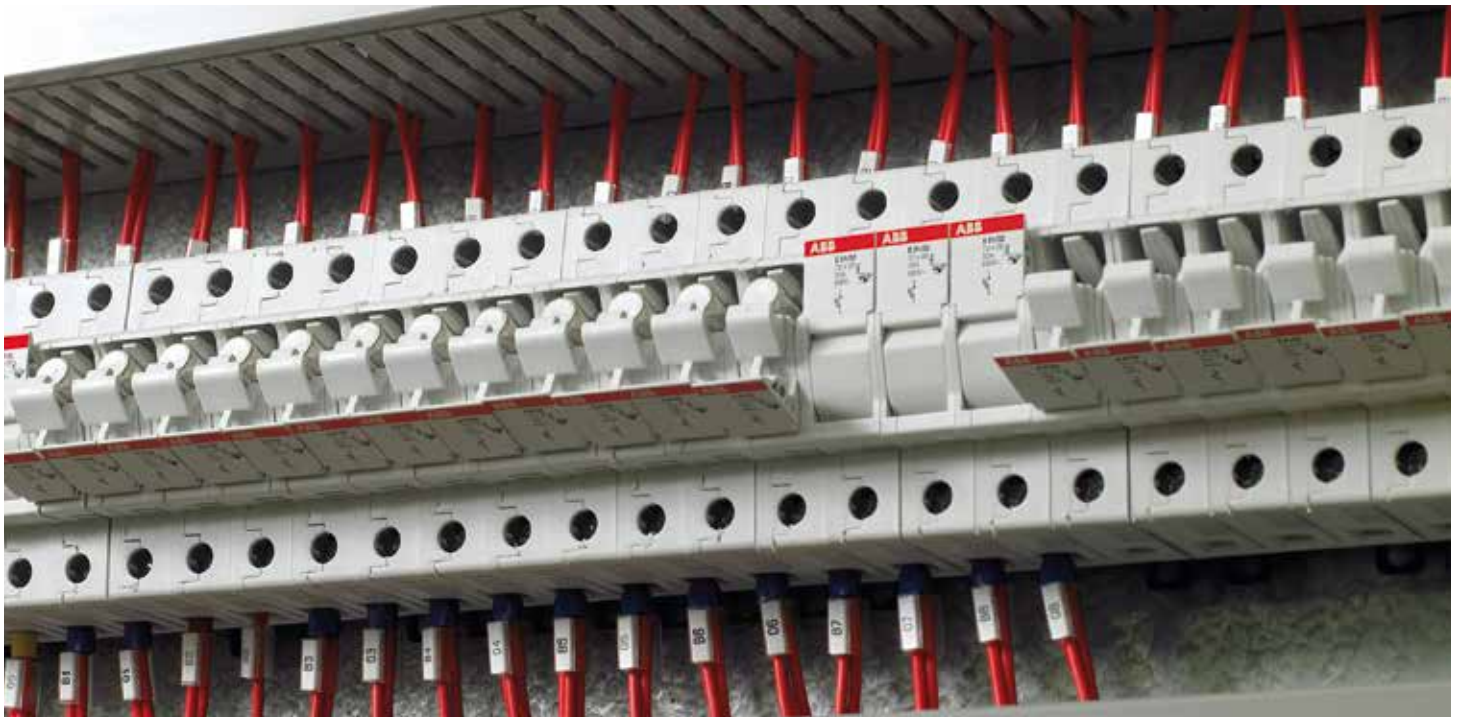
- For use with 10.3mm (.406") x 38mm (1.496") aM and gG fuses only
- Automation enclosures
- On-board switchboards
- Original equipment manufacturer (OEMs)

E 90/32 fuse holders are designed for protection against short circuit and overload, in compliance with the IEC 60947-3 Standard.

E 90/32 range is designed to comply with the strictest requirements of OEMs and panel builders. They are ideally installed in industrial automation switchboards to protect secondary circuits, primary and secondary transformers, motors, and other resistive or inductive loads. E 90/32 fuse holders are convenient, simple, and reliable devices. Fuse holders ensure selectivity, if equipped with appropriate fuses. Since they are cURus type-approved, they can be installed in UL-certified machines designed for the North American market.

### Main functions:

- Protection of terminal circuits
- Selectivity





# E 90/50 and E 90/125 fuse holders

## Protection for industrial circuits





# Perfect integration, guaranteed innovation

## Features:

- For use any type of cylindrical fuses 14mm (.551") x 51mm (2.008") (E 90/50) and 22mm (.866") x 58mm (2.283") (E 90/125) only
- Rated voltage 690V AC according to IEC 60947-3 and 600V AC/DC according to UL 4248-1
- UR type-approved

E 90/50 and E 90/125 fuse holders are specifically designed to protect industrial circuits because of aM and gG cylindrical fuses with 50 A and 125 A ratings.

The usage of 125 A fuses within E 90/125 fuse holder is allowed only in case the fuse power dissipation is lower than the maximum acceptable power dissipation value of the fuse holder. For more details see the "Questions and Answers" section on page 35.

The E 90/50 and E 90/125 fuse holders have been specifically designed to be used in all applications that require protection and isolation of high-current loads. Because of their compatibility with gG and aM cylindrical fuses, they offer maximum flexibility in terms of protection of installation with rated currents up to 125 A.

Since it can be padlocked in an open position, this ensures the safety of personnel who carry out maintenance operations. In addition, the availability of optical blown fuse indicators in all versions of the new E 90 50/125 enables easy and efficient monitoring of distribution networks with high current ratings.



# Technical data

## E 90 series for North American market

### Data according to UL

Type		E 90/32	E 90 PV	
Rated current	[A]	32	32	
Rated Voltage	[V]	600	1000	
Type of current		AC/DC	DC	
Withstand rating	[kA]	200 rms sym	50 rms sym	
Fuse		10.3mm (.406") x 38mm (1.496")	10.3mm (.406") x 38mm (1.496")	
Rated frequency	[Hz]	50-60	-	
Tightening torque	[Nm]	PZ2 2-2.5	PZ2 2-2.5	
Protection degree		IP20	IP20	
Terminals section	[mm <sup>2</sup> ] ([AWG])	25 (4)	25 (4)	
Cross section rigid copper conductor	[AWG]	16÷10	-	
Cross section stranded copper conductor	[AWG]	16÷3	8÷3	
Padlockable (when open)		•	•	
Sealable (when closed)		•	•	

#### Marks and Approvals

cULus			
UL		•(2)	
cURus	•(1)		
CSA			

- (1) = certified at 600 V in compliance with UL 4248-1  
 (2) = certified at 1000 V in compliance with UL 4248-18  
 (3) = certified at 600 V in compliance with UL 4248-8  
 (4) = certified at 600 V in compliance with UL 4248-4

	E 90/50	E 90/125	E 90/30 CC	E 90/30 J	E 90/60 J
	50	125	30	30	60
	600	600	600	600	600
	AC/DC	AC/DC	AC/DC	AC/DC	AC/DC
	200 rms sym	200 rms sym	200 rms sym	200 rms sym	200 rms sym
	14mm (.551") x 51mm (2.008")	22mm (.866") x 58mm (2.283")	Class CC 10.4mm (.409") x 38mm (1.496")	Class J 21mm (.827") x 57mm (2.244")	Class J 27mm (1.063") x 60mm (2.362")
	50-60	50-60	60	60	60
	PZ2 3-3.5	PZ2 3.5-4	PZ2 2-2.5	PZ2 3.5-4	PZ2 3.5-4
	IP20	IP20	IP20	IP20	IP20
	35 (2)	50 (1/0)	25 (4)	50 (1/0)	50 (1/0)
	14÷10	14÷10	16÷10	12÷10	12÷10
	14÷2	14÷1	16÷3	12÷1	12÷1
	•	•	•	•	•
	•	•	•	•	•

			•(4)	•(3)	•(3)
	•(1)	•(1)			
			•	•	•

# Technical data

## E 90 series for North American market

### Data according to IEC

<b>Type</b>		<b>E 90/32</b>	
Rated current	[A]	32	
Type of current		AC	
Fuse	[mm]	10.3 x 38	
Max power dissipation accepted	[W]	3	
Rated frequency	[Hz]	50-60	
Tightening torque	[Nm]	PZ 2-2.5	
Protection degree		IP20	
Terminals section	[mm <sup>2</sup> ]	25	
Cross section rigid copper conductor	[mm <sup>2</sup> ]	1.5 - 25	
Cross section stranded copper conductor	[mm <sup>2</sup> ]	1.5 - 26	
Padlockable (when open)		•	
Sealable (when closed)		•	
<b>IEC 60947-3</b>			
Utilization category		AC-22B	AC-20B
Rated voltage	[V]	400	690

<b>Marks and approvals</b>	<b>E 90/32</b>	
IMQ	•*(1)	
NF	•**(1)	
CCC - Cina	•*(1)	
RINA	•*(1)	
LLOYD	•*(1)	
BV	•(1)	
EAC	•	
GOST - Ukraina	•	

•\*= without LED version

•\*\* = no neutral and without LED version

•\*\*\* = dedicated range with neutral on the left side

(1) = certified AC-22B at 400 V in compliance with IEC 60947-3

(2) = according to IEC 60296-2

(2b) = with aM-type fuses and in combination with a device that ensures overload protection



E 90 PV	E 90/50	E 90/125
32	50	100 <sup>(2)</sup> /125 <sup>(2b)</sup>
DC	AC	AC
10.3 x 38	14 x 51	22 x 58
3	5	9.5
–	50-60	
PZ2 2-2.5	PZ2 3-3.5	PZ2 3.5-4
IP20	IP20	
25	35	50
1.5 - 25	2.5 - 35	4 - 50
1.5 - 16	2.5 - 25	4 - 35
•	•	
•	•	
DC-20B	AC-20B	AC-20B
1000	690	690
E 90 PV	E 90/50	E 90/125
	•	•
•	•	•
	•	•
	•	•
•	•	•
•	•	•
•		

# Order codes

## E 90 series for North American market



Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90/32 fuse holder for 10.3 x 38 mm fuses</b>							
1	32	1	009238	E 91/32	2CSM200923R1801	0.061	6
1	32	1	024835	E 91/32s*	2CSM202483R1801	0.062	6
1+N	32	2	008934	E 91N/32	2CSM200893R1801	0.130	3
1+N	32	2	515036	E 91N/32s*	2CSM251503R1801	0.131	3
2	32	2	008835	E 92/32	2CSM200883R1801	0.122	3
2	32	2	514930	E 92/32s*	2CSM251493R1801	0.123	3
3	32	3	047537	E 93/32	2CSM204753R1801	0.183	2
3	32	3	020639	E 93/32s*	2CSM202063R1801	0.184	2
3+N	32	4	047339	E 93N/32	2CSM204733R1801	0.252	1
3+N	32	4	514831	E 93N/32s*	2CSM251483R1801	0.254	1
4	32	4	047230	E 94/32	2CSM204723R1801	0.244	1
4	32	4	020530	E 94/32s*	2CSM202053R1801	0.245	1



Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90 PV fuse holder for 10.3 x 38 mm fuses for DC</b>							
1	32	1	047131	E 91/32 PV	2CSM204713R1801	0.061	6
1	32	1	046936	E 91/32 PVs*	2CSM204693R1801	0.062	6
2	32	2	047032	E 92/32 PV	2CSM204703R1801	0.122	3
2	32	2	569138	E 92/32 PVs*	2CSM256913R1801	0.122	3



Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90/30 CC fuse holder for Class CC 10.4 x 38 mm fuses</b>							
1	30	1	998723	E 91/30 CC	2CSM299872R1801	0.061	6
1	30	1	998822	E 91/30 CCs*	2CSM299882R1801	0.062	6
1+N	30	2	998921	E 91N/30 CC	2CSM299892R1801	0.130	3
1+N	30	2	999027	E 91N/30 CCs*	2CSM299902R1801	0.131	3
2	30	2	999126	E 92/30 CC	2CSM299912R1801	0.122	3
2	30	2	999225	E 92/30 CCs*	2CSM299922R1801	0.123	3
3	30	3	999324	E 93/30 CC	2CSM299932R1801	0.183	2
3	30	3	999423	E 93/30 CCs*	2CSM299942R1801	0.184	2
3+N	30	4	999522	E 93N/30 CC	2CSM299952R1801	0.252	1
3+N	30	4	999621	E 93N/30 CCs*	2CSM299962R1801	0.253	1
4	30	4	999720	E 94/30 CC	2CSM299972R1801	0.244	1
4	30	4	999829	E 94/30 CCs*	2CSM299982R1801	0.245	1

\*s: version with blown fuse indicator



Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90/50 fuse holder for 14 x 51 mm fuses (AC-20B)</b>							
1	50	1.5	790228	E 91/50	2CSM279022R1801	0.095	4
1	50	1.5	372028	E 91/50s*	2CSM237202R1801	0.095	4
1+N	50	3	779827	E 91N/50	2CSM277982R1801	0.19	2
1+N	50	3	023920	E 91N/50s*	2CSM202392R1801	0.19	2
2	50	3	779728	E 92/50	2CSM277972R1801	0.19	2
2	50	3	070320	E 92/50s*	2CSM207032R1801	0.19	2
3	50	4.5	779629	E 93/50	2CSM277962R1801	0.285	1
3	50	4.5	574828	E 93/50s*	2CSM264362R1801	0.285	1
3+N	50	6	779520	E 93N/50	2CSM277952R1801	0.38	1
3+N	50	6	563020	E 93N/50s*	2CSM264342R1801	0.38	1



Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90/125 fuse holder for 22 x 58 mm fuses</b>							
1	125	2	775720	E 91/125	2CSM264352R1801	0.135	4
1	125	2	896326	E 91/125s*	2CSM289632R1801	0.135	4
1+N	125	4	773528	E 91N/125	2CSM264382R1801	0.27	2
1+N	125	4	049425	E 91N/125s*	2CSM204942R1801	0.27	2
2	125	4	771326	E 92/125	2CSM264372R1801	0.27	2
2	125	4	049326	E 92/125s*	2CSM204932R1801	0.27	2
3	125	6	775027	E 93/125	2CSM264332R1801	0.405	1
3	125	6	049227	E 93/125s*	2CSM204922R1801	0.405	1
3+N	125	8	965329	E 93N/125	2CSM296532R1801	0.54	1
3+N	125	8	049128	E 93N/125s*	2CSM204912R1801	0.54	1

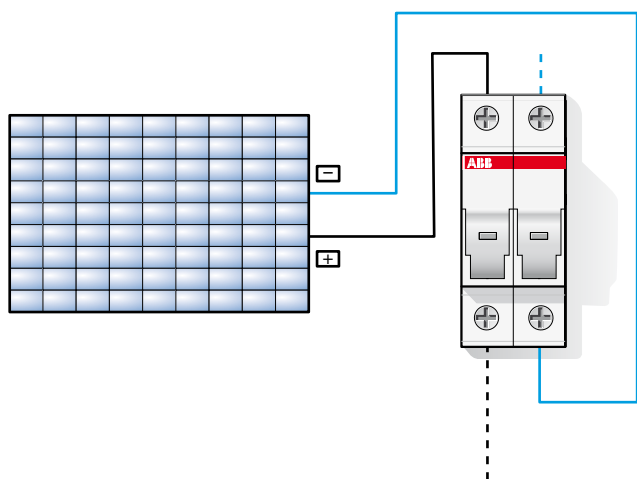


Poles	Rated current In [A]	Modules	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 90/30 J fuse holder for Class J 21 x 57 mm fuses</b>							
1	30	2	048220	E 91/30 J	2CSM204822R1801	0.135	4
2	30	4	048121	E 92/30 J	2CSM204812R1801	0.27	2
3	30	6	048022	E 93/30 J	2CSM204802R1801	0.405	1
1	30	2	047926	E 91/30 Js *	2CSM204792R1801	0.135	4
2	30	4	047827	E 92/30 Js *	2CSM204782R1801	0.27	2
3	30	6	047728	E 93/30 Js *	2CSM204772R1801	0.405	1
<b>E 90/60 J fuse holder for Class J 27 x 60 mm fuses</b>							
1	60	2.5	047629	E 91/60 J	2CSM204762R1801	0.175	3
2	60	5	049821	E 92/60 J	2CSM204982R1801	0.35	1
3	60	7.5	049722	E 93/60 J	2CSM204972R1801	0.525	1
1	60	2.5	049623	E 91/60 Js *	2CSM204962R1801	0.175	3
2	60	5	049524	E 92/60 Js *	2CSM204952R1801	0.35	1
3	60	7.5	738824	E 93/60 Js *	2CSM273882R1801	0.525	1

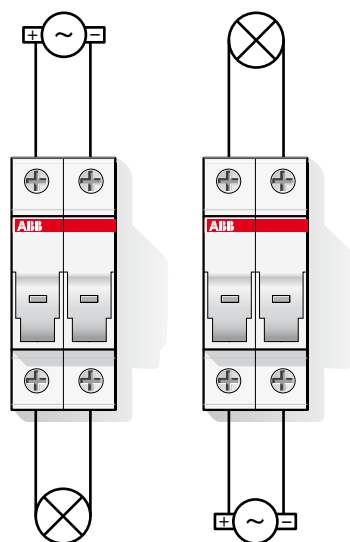
\*s: versione with blown fuse indicator

# Connection scheme and overall dimensions E 90 series for North American market

## Connection scheme



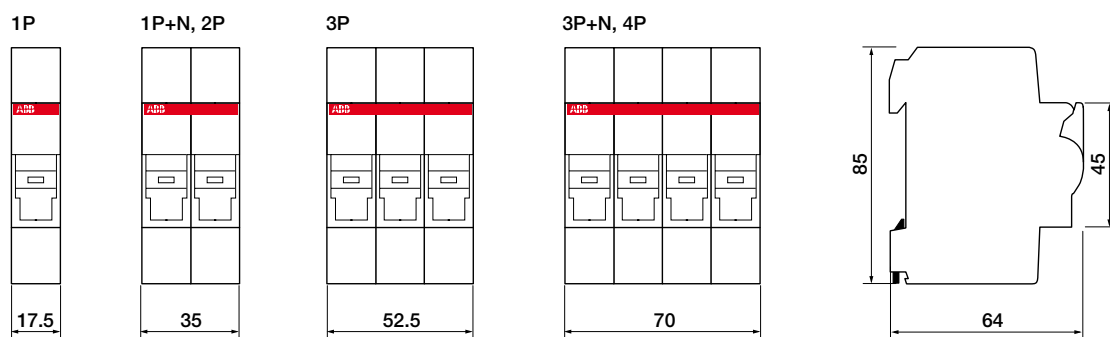
## Wiring diagram for DC networks



## Wiring diagram for AC networks

## Overall dimensions

E 90 CC, E 90 PV, E 90/32

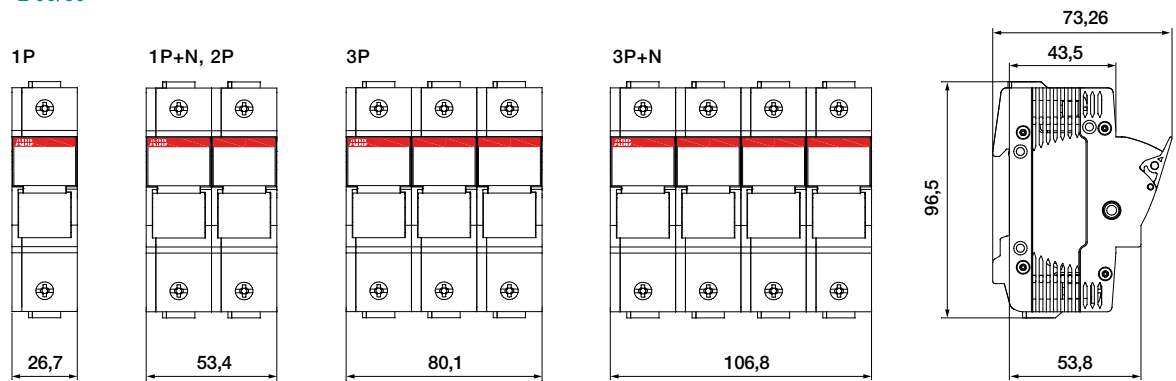




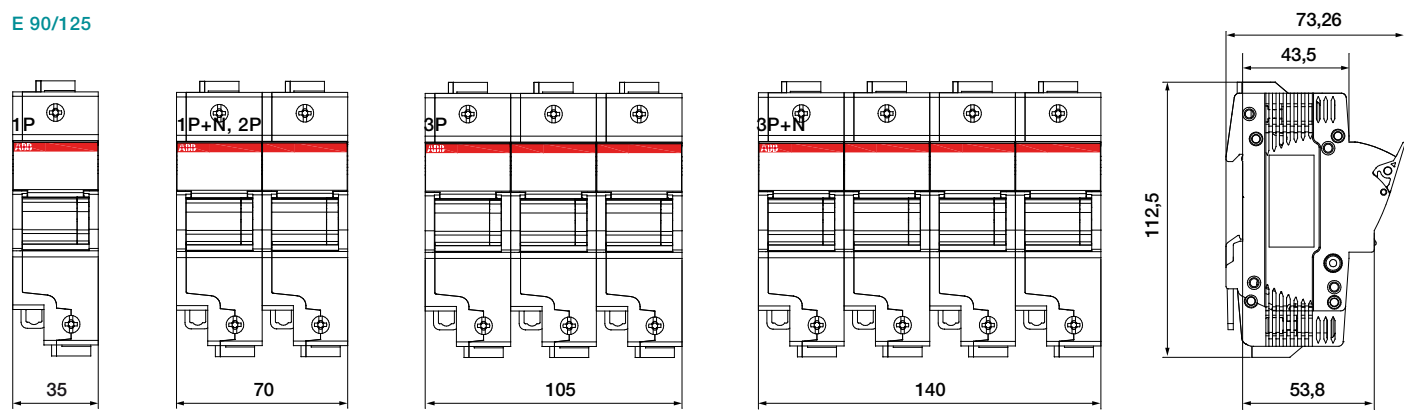
# Overall dimensions

## E 90/50 and E 90/125 series

### E 90/50



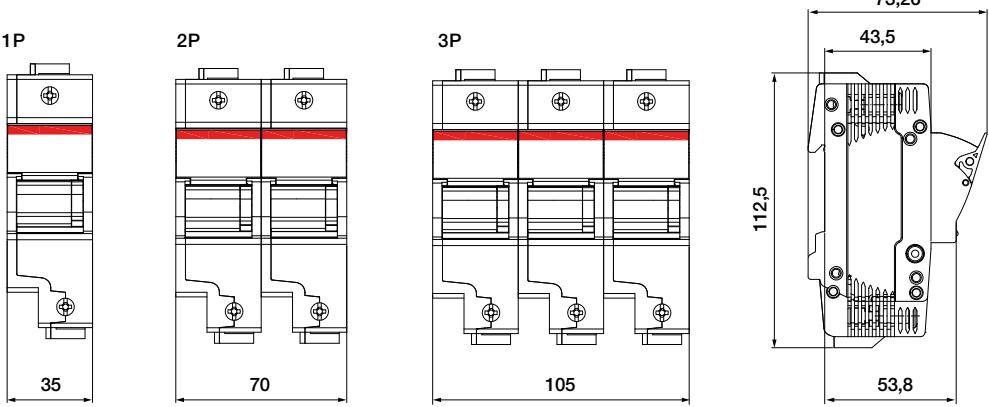
### E 90/125



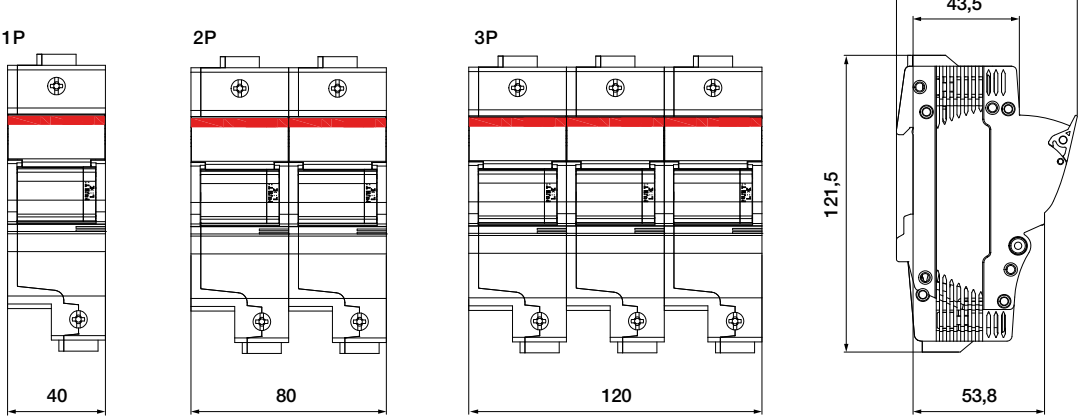
# Overall dimensions

## E 90/30 J and E 90/60 J

E 90/30 J



E 90/60 J



# E 90 fuseholders

## How to use it

E90 fuseholder design meets the most stringent security requirements during operations. Beyond the blown fuse indicator light, which provides a visual signal of the fuse break condition, the fuseholders can be padlocked open and sealed closed to ensure operator safety during maintenance operations.

1- E90 fuse holders are IP20 finger safe, ensuring operator safety against accidentally touching live wires when fuseholder is open.

2- Fuse holder profile has been designed for maximum ease of use. The 90° flip hinge with ergonomic knob makes the replacement of fuses easier, even in small spaces or when wearing protective gloves.

3- To ensure protection and safety during maintenance operations and to avoid any accidental switching, fuse holders can be sealed in closed position, and padlocked in open position.



# How to choose a protection system

When choosing a protection system, an important feature to consider is the power dissipation of the system “fuse + fuse holder.” It is important to make sure that the power dissipated by the fuse does not exceed the limit imposed by the fuse holder in which it is installed.



32 | E 90 range of fuse holders for the North American Market

- Other external factors should be taken into consideration:
- the current derating depends on the number of poles in the installation
  - the current derating depends on the climatic conditions

## Derating values for E 90 fuse holders

The derating parameters in the table must be considered if several poles are installed side by side or if the equipment is installed in unusual climatic conditions.

Installation of single poles side by side			
E 90/32		E 90/50 and E 90/125	
Poles	Maximum current	Poles	Maximum current
1...4	In	1...3	In
5...7	0.80 x In	4...6	0.95 x In
more than 7	0.70 x In	more than 7	0.90 x In

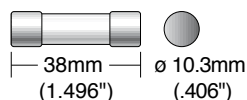
Climatic conditions			
E 90/32		E 90/50 and E 90/125	
Maximum temperature	Maximum current	Maximum temperature	Maximum current
20° C	In	20° C	In
30° C	0.95 x In	30° C	0.95 x In
40° C	0.90 x In	40° C	0.90 x In
50° C	0.80 x In	50° C	0.85 x In



# E 9F gPV cylindrical fuses

## The best protection for direct current photovoltaic installations

The E 9F gPV series of cylindrical fuses has been specifically designed for protecting direct current circuits up to 1000 V. Available in the 10.3mm (.406") x 38mm (1.496") size for up to 30 A rated current values, they are the best way to protect the strings, inverters and surge arresters in photovoltaic installations according to UL 4248-18.



Rated current In [A]	Bbn 8012542 EAN	Type code	Order code	Piece weight [kg]	Pack unit pcs
<b>E 9F gPV 10.3mm (.406\") x 38mm (1.496\") cylindrical fuses</b>					
1	134565	E 9F1PV	2CSM213456R1801	0.007	10
2	134664	E 9F2PV	2CSM213466R1801	0.007	10
3	134763	E 9F3PV	2CSM213476R1801	0.007	10
4	134862	E 9F4PV	2CSM213486R1801	0.007	10
5	134961	E 9F5PV	2CSM213496R1801	0.007	10
6	135067	E 9F6PV	2CSM213506R1801	0.007	10
7	135166	E 9F7PV	2CSM213516R1801	0.007	10
8	135265	E 9F8PV	2CSM213526R1801	0.007	10
10	135364	E 9F10PV	2CSM213536R1801	0.007	10
12	135463	E 9F12PV	2CSM213546R1801	0.007	10
15	135562	E 9F15PV	2CSM213556R1801	0.007	10
20	135661	E 9F20PV	2CSM213566R1801	0.007	10
25	135760	E 9F25PV	2CSM213576R1801	0.007	10
30	135869	E 9F30PV	2CSM213586R1801	0.007	10

### Technical specifications

Rated voltage	[V]	1000 DC
Rated current	[A]	1...30
Breaking capacity	[kA]	10
Minimum breaking capability		from 1A to 7A = 1.3 x In from 8A to 30A = 2.0 x In
Dimensions	[mm]	10.3mm (.406\") x 38mm (1.496\")
Weight	[g]	7
Standards		IEC 60269-6; ROHS 2002/98/CE; UL2579; CSA 22.2

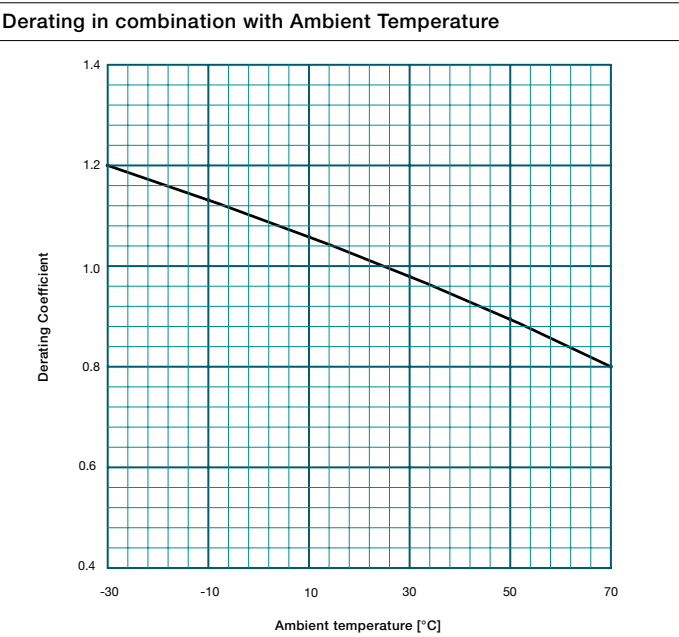
# E 9F gPV cylindrical fuses

## The best protection for direct current photovoltaic installations

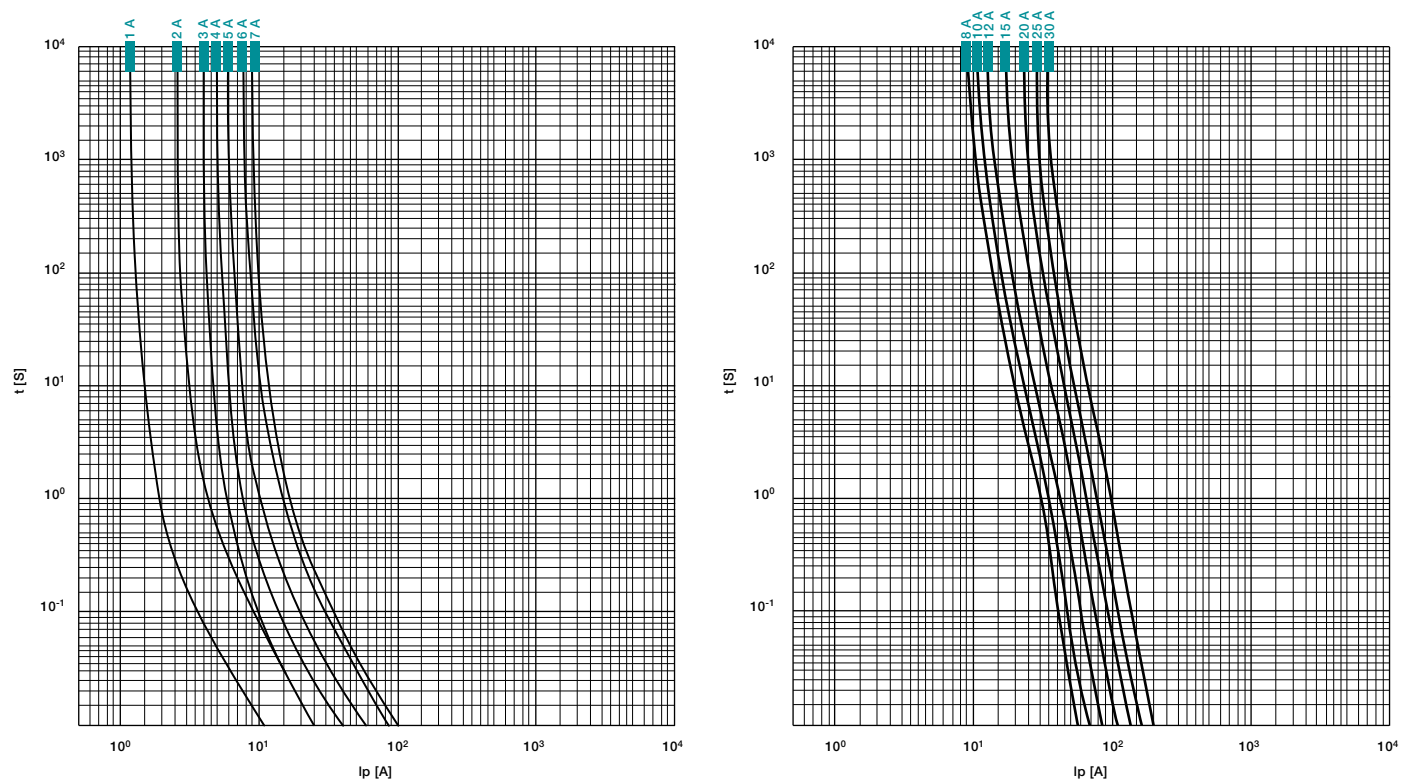
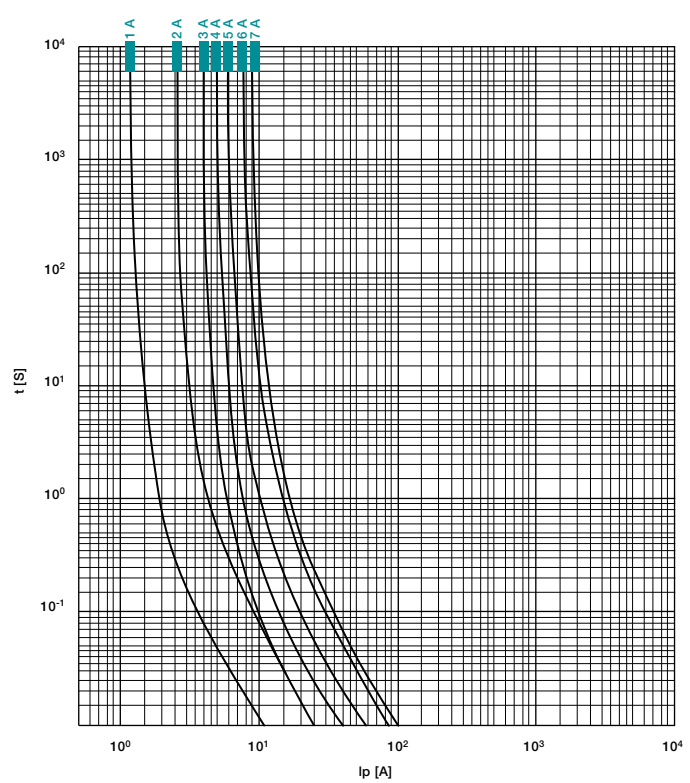
E 9F gPV 10.3mm (.406") x 38mm (1.496") cylindrical fuses

Type	Rated current [A]	Dissipated power 0.7 In [W]	Dissipated power 0.8 In [W]	Dissipated power In [W]
E 9F1 PV	1	0.125	0.175	0.25
E 9F2 PV	2	0.160	0.250	0.32
E 9F3 PV	3	0.66	0.87	1.36
E 9F4 PV	4	0.69	0.8	1.25
E 9F5 PV	5	0.59	0.73	1.12
E 9F6 PV	6	0.42	0.67	1.05
E 9F7 PV	7	0.40	0.64	1
E 9F8 PV	8	0.77	0.88	1.48
E 9F10 PV	10	0.67	0.9	1.5
E 9F12 PV	12	0.72	1	1.8
E 9F15 PV	15	0.9	1.3	2.2
E 9F20 PV	20	1.1	1.5	2.8
E 9F25 PV	25	1.3	1.8	3
E 9F30 PV	30	1.5	1.9	3.7

The power dissipation of the fuse cannot exceed the maximum power dissipation accepted by the fuse holder.



Time/current tripping characteristics



# Questions & answers

## Technical details and insights for E 90 fuse holders and fuses

### Why should I use a fuse for circuit protection?

There are 4 main reasons:

- **Safety:** Fuses don't cause dangerous situations (arcs, flames, gas production) since they protect the circuit by blowing. Moreover, the intervention speed on high short circuit currents limits significantly the flash hazard at the fault location.
- **Reliability:** When a fault is detected, the fuse operates, providing protection. A new fuse is then installed, restoring the protection to its original state. There is no risk of being contaminated by oil, corrosion or dust and no unexpected tripping.
- **Universal use:** The fuse's characteristics are standardized in order to ensure effective coordination with other devices.
- **Economic:** The fuse is still the most economical solution to prevent damages caused by short-circuits and overloads.

### What are the main characteristics of a class CC fuse?

A class CC fuse meets the following three conditions:

- Interrupts all available overcurrents within its interrupt rating.
- Within its current limiting range, limits the clearing time at rated voltage to an interval equal to, or less than, the first major or symmetrical current loop duration.
- Limits peak let-through current to a value less than the available peak current.

### What distinguishes a fuse holder for class CC fuses (E 90/30 CC) from a fuse holder for IEC fuses?

Class CC fuse holders are provided with a rejection member to prevent the installation of fuses of other classes according to UL 4248-4.

E 90/30 CC assure the rejection member functionality that has been certified by UL laboratories.

### What is the difference between Midget and Class CC fuses?

Class CC fuses are current limiting fuses with rejection tips on the bottom to prevent them from being used in holders not rated similarly.

Midget fuses are defined as supplemental fuses and are not rated for current limiting. They do not have rejection tips because they can be used in most fuse holders regardless of class ratings.

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