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# FUSE SELECTION GUIDE

*Always for your safety*


ZHEJIANG ETEK
ELECTRICAL TECHNOLOGY CO.,LTD.

*Always for your safety*

# COMPANY INTRODUCTION

**Zhejiang ETEK Electrical Technology Co., Ltd.** (Abbreviation: ETEK Electric) is a professional manufacturing company dedicated to the research, development, production, and sales of low-voltage electrical appliances. The company was established in 2011 and is located in Wenzhou City, Zhejiang Province. At present, the company has 40K sqm of modern manufacturing bases in Wenzhou and Wuhu with over 500 employees, including over 50 R&D and technical personnel. ETEK Electric has multiple production workshops for mold design, parts manufacturing, welding, and assembly. Additionally, they have multiple automated production lines for MCB and RCCB. Our products include MCB, RCCB, RCBO, AFDD, MCCB, ACB, EV Chargers, Photovoltaic DC products, etc., which can meet the needs of different countries and are widely used in fields such as residential, commercial, and industrial.

ETEK Electric has passed ISO9001 quality management system and environmental management system certification. The company have built our own low-voltage electrical testing center, and most of the testing items can meet the requirements of international IEC standards, in addition, our products have obtained international CB, TUV, VDE, CE, RoHS and other quality certificates.

ETEK Electric constantly masters and breaks through the core technology of circuit breakers, with more than 100 national patents. Focusing on independent brand construction is crucial for the company's development. The "ETEK" trademark is registered in over 80 countries. Products are exported to over 60 countries and regions including the European Union, South America, the Middle East, Africa, and Southeast Asia.

We also support OEM, ODM, OBM, SKD, CKD and other business cooperation models, and provide customers with a full range of services covering market cultivation, technical training, and factory construction.

ETEK Electric has been adhering to the business policy of "Growth", "Quality", "Efficiency", and "Innovation". In 2023, ETEK Electric has formulated the fifth 3-year strategic plan, which specifies the three major initiatives of expanding the production scale, enhancing the new energy market share, and expanding the independent brand, to realize the annual revenue target of $50 million by 2026.

Looking forward to the future, ETEK Electric will be committed to becoming a globally renowned manufacturer in the power distribution and electrical industry, safeguarding the power safety of global customers, and helping the development of green and digital energy.


Wenzhou Factory


Wuhu Factory

# WORKSHOPS





# OEM & ODM BUSINESS

OEM & OEM

Customer request provide quotation

Research & development product design

Comfirmation PO & arrange advanced payment

Planning production & raw material inspection

Arrange production & quality inspection

Shipment ready & arrange balance payment

Delivery to customer

# CONTENTS

## NH Fuse Series



## Photovoltaic Fuse Series

# NH Fuse Links Overview

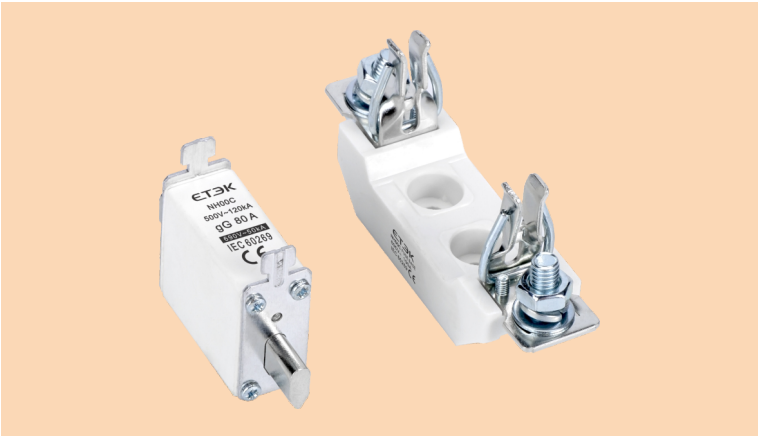
NH fuses, also known as NH Knife Blade Fuses or DIN NH Blade Fuses,  They were primarily designed as general-purpose fuses for the protection of conductors. These fuses conform with IEC 60269 standards. It is important to note that NH fuses are one-time fuses, which means that once they have blown, they must be replaced with a new fuse that has the same characteristics.

## Different types and applications of NH Fuse links

| Application | Type | NH Fuse Size | Voltage |
|---|---|---|---|
| General Purpose | gL / gG | 000 to 4a | 500VAC to 690VAC |
| Motor protection | aM | 000 to 4a | 500VAC to 690VAC |
| Semiconductor protection | aR / gR | 000 to 3 | 690V AC/DC |
| Semiconductor protection | aR / gR | 000 to 3 | 1000V AC/DC |
| Solar PV protection | gPV | 00 to 3 | 1000VDC |
| Battery protection | gS | 000 to 3 | 440VDC to 550VDC |

| | |
|---|---|
| aR, gR | Protection of semiconductor devices, Very Fast Acting fuse |
| gL, gG | General Purpose, Fast Acting fuse |
| aM | Motor Protection, Slow Acting fuse |
| gPV | Protection of solar photovoltaic arrays |
| gS | Protection of Batteries |

## NH Series Fuse



## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 2A~100A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

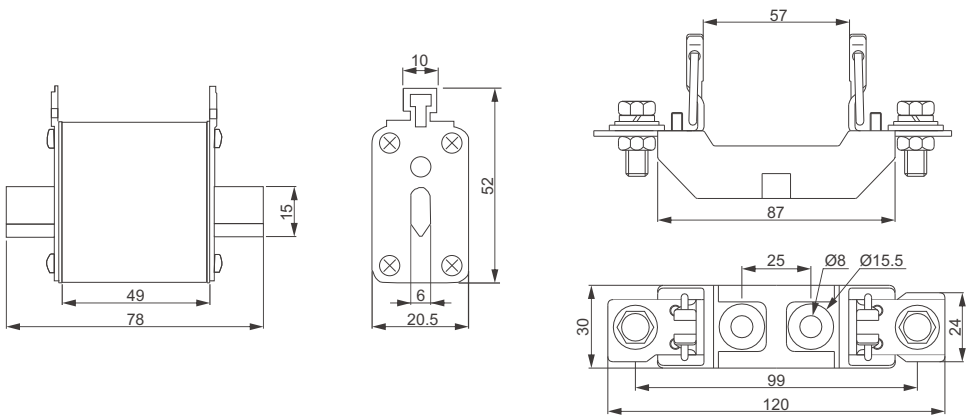
**Pollution level:** Level 3

**Installation category:** Class III

## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH000-2A | RT16-000<br>NT000<br>RT20-000<br>RO30A<br>3NA3 | 2 | 500<br>690 | 3 | 6 | 3.9 |
| NH000-4A | | 4 | | 6 | 12 | 1.8 |
| NH000-6A | | 6 | | 14 | 21 | 2 |
| NH000-10A | | 10 | | 58 | 290 | 1.5 |
| NH000-16A | | 16 | | 234 | 1200 | 2.3 |
| NH000-20A | | 20 | | 490 | 2500 | 2.2 |
| NH000-25A | | 25 | | 920 | 4600 | 3.1 |
| NH000-32A | | 32 | | 1800 | 9000 | 3.4 |
| NH000-35A | | 35 | | 2400 | 11800 | 3.7 |
| NH000-40A | | 40 | | 3300 | 16500 | 4 |
| NH000-50A | | 50 | | 5900 | 29500 | 4.9 |
| NH000-63A | | 63 | | 6300 | 24900 | 4.6 |
| NH000-80A | | 80 | | 9800 | 38900 | 6.3 |
| NH000-100A | | 100 | | 18100 | 72300 | 7.4 |

## Dimension (mm)




## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 50A~160A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

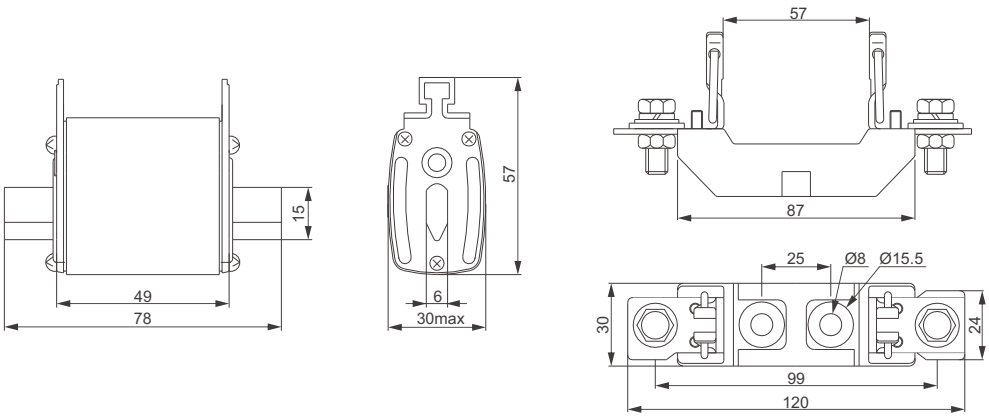
**Pollution level:** Level 3

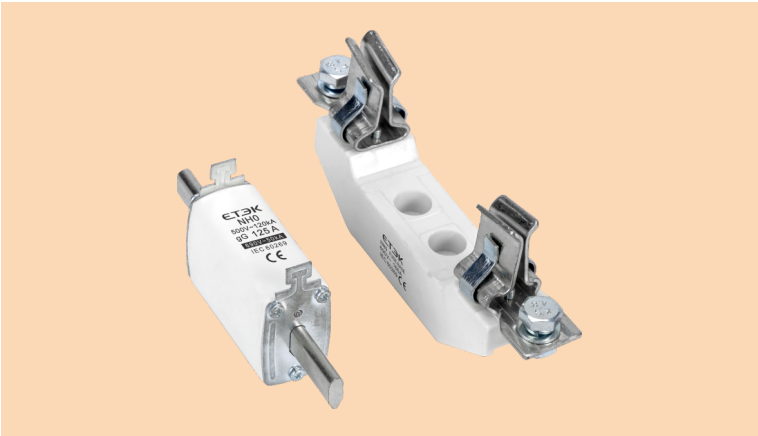
**Installation category:** Class III

## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH00-50A | RT16-00<br>NT00<br>RT20-00<br>RO31<br>3NA3 | 50 | 500<br>690 | 5800 | 21500 | 5 |
| NH00-63A | | 63 | | 5800 | 25000 | 5 |
| NH00-80A | | 80 | | 11000 | 35000 | 7 |
| NH00-100A | | 100 | | 19000 | 60000 | 7.5 |
| NH00-125A | | 125 | | 25000 | 125000 | 10 |
| NH00-160A | | 160 | | 64000 | 310000 | 10 |

## Dimension (mm)





## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 20A~160A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

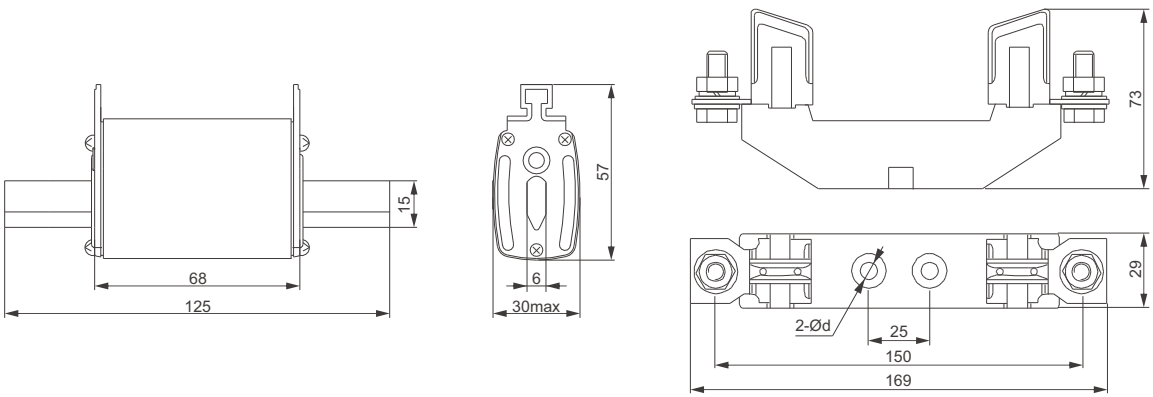
**Pollution level:** Level 3

**Installation category:** Class III

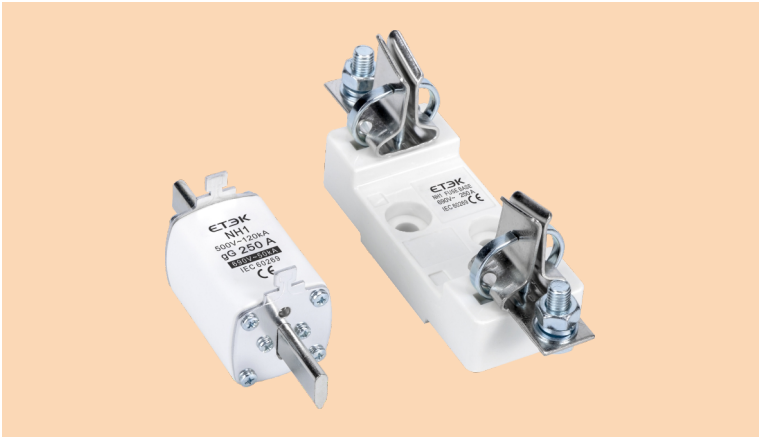
## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH0-20A | RT16-0<br>NT0<br>RT20-0<br>RO31B<br>3NA3 | 20 | 500<br>690 | 490 | 2500 | 3.5 |
| NH0-25A | | 25 | | 1200 | 5600 | 3.2 |
| NH0-32A | | 32 | | 1800 | 9000 | 4.8 |
| NH0-35A | | 35 | | 2400 | 11800 | 4.7 |
| NH0-40A | | 40 | | 3300 | 16500 | 5 |
| NH0-50A | | 50 | | 5600 | 27800 | 6.3 |
| NH0-63A | | 63 | | 6600 | 26100 | 5.6 |
| NH0-80A | | 80 | | 9800 | 38900 | 7.1 |
| NH0-100A | | 100 | | 20600 | 82300 | 7.5 |
| NH0-125A | | 125 | | 25000 | 125000 | 11.8 |
| NH0-160A | | 160 | | 62000 | 310000 | 12.3 |

## Dimension (mm)



## NH Series Fuse



## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 50A~250A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

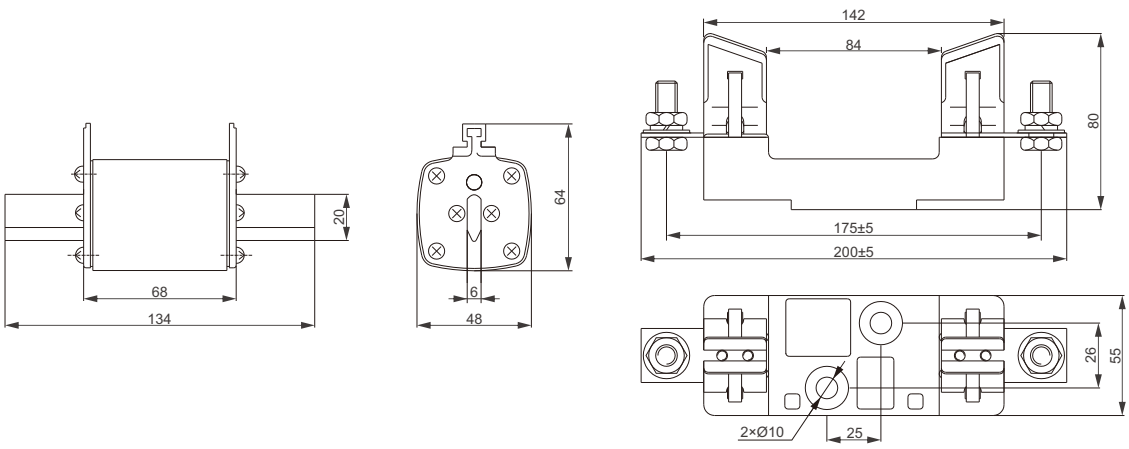
**Pollution level:** Level 3

**Installation category:** Class III

## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH1-50A | RT16-1<br>NT1<br>RT20-1<br>RO32<br>3NA3 | 50 | 500<br>690 | 6350 | 18000 | 6.4 |
| NH1-63A | | 63 | | 6800 | 23000 | 5.6 |
| NH1-80A | | 80 | | 10500 | 31200 | 7.7 |
| NH1-100A | | 100 | | 22000 | 68200 | 8.2 |
| NH1-125A | | 125 | | 29000 | 82000 | 13 |
| NH1-160A | | 160 | | 62000 | 310000 | 12.3 |
| NH1-200A | | 200 | | 97000 | 368600 | 15 |
| NH1-224A | | 224 | | 124000 | 471200 | 18 |
| NH1-250A | | 250 | | 151300 | 574900 | 19 |

## Dimension (mm)



## NH Series Fuse

## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 250A~400A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

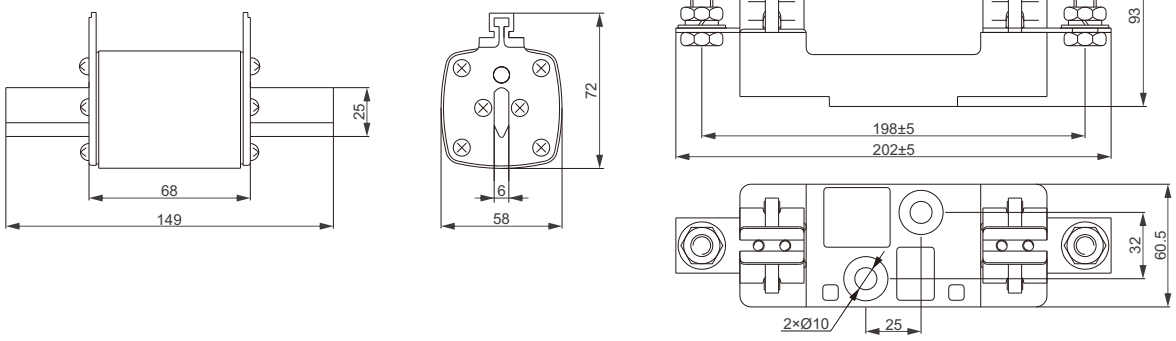
**Pollution level:** Level 3

**Installation category:** Class III

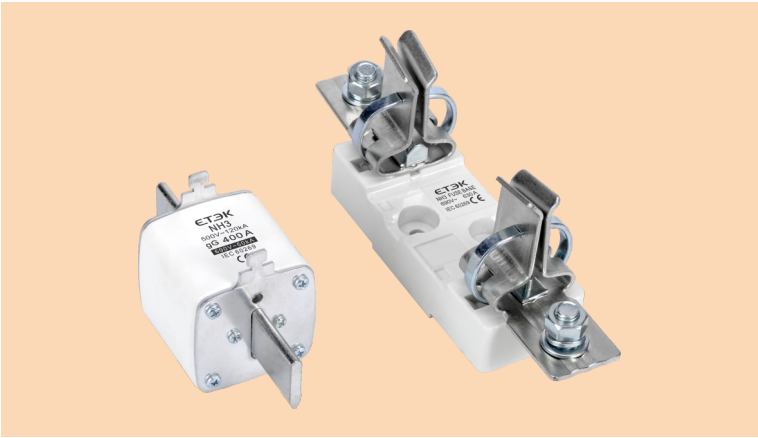
## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH2-250A | RT16-2<br>NT2<br>RT20-2<br>RO33<br>3NA3 | 250 | 500<br>690 | 170000 | 437000 | 23 |
| NH2-200A | | 300 | | 320000 | 840000 | 20 |
| NH2-315A | | 315 | | 361700 | 1446500 | 21 |
| NH2-355A | | 355 | | 446500 | 1785800 | 27 |
| NH2-400A | | 400 | | 642900 | 2571500 | 30 |

## Dimension (mm)



## NH Series Fuse



## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 315A~630A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

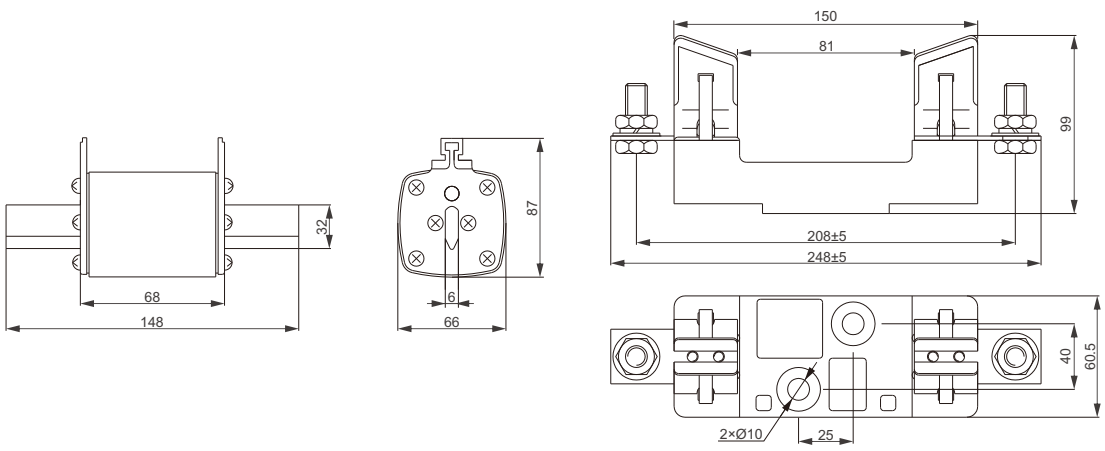
**Pollution level:** Level 3

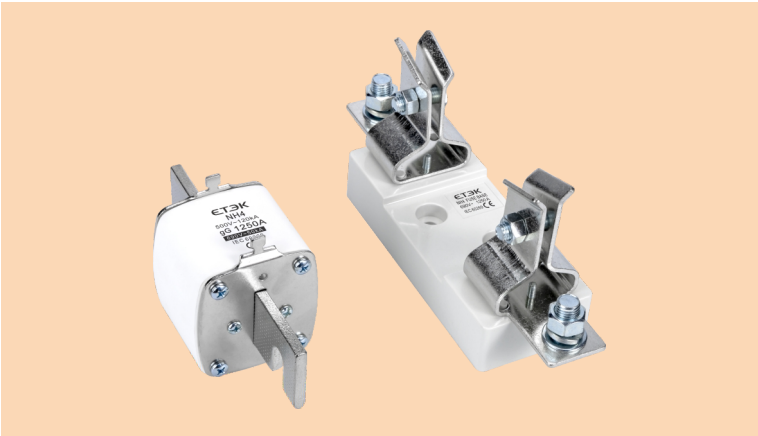
**Installation category:** Class III

## Main Technical Data

| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH3-315A | RT16-3<br>NT3<br>RT20-3<br>RO34<br>3NA3 | 315 | 500<br>690 | 375000 | 970000 | 22 |
| NH3-355A | | 355 | | 400000 | 1110000 | 25 |
| NH3-400A | | 400 | | 642900 | 2571500 | 30 |
| NH3-425A | | 425 | | 570000 | 1934000 | 30 |
| NH3-450A | | 450 | | 670000 | 2260000 | 33 |
| NH3-500A | | 500 | | 886000 | 3898400 | 37 |
| NH3-630A | | 630 | | 1590000 | 6996000 | 47 |

## Dimension (mm)





## General

**Rated voltage:** 500VAC, 690VAC

**Rated current:** 500A~1250A

**Breaking capacity:** 120kA(500VAC), 50kA(690VAC)

**Rated frequency:** 50Hz

**Utilization category:** gG/gL

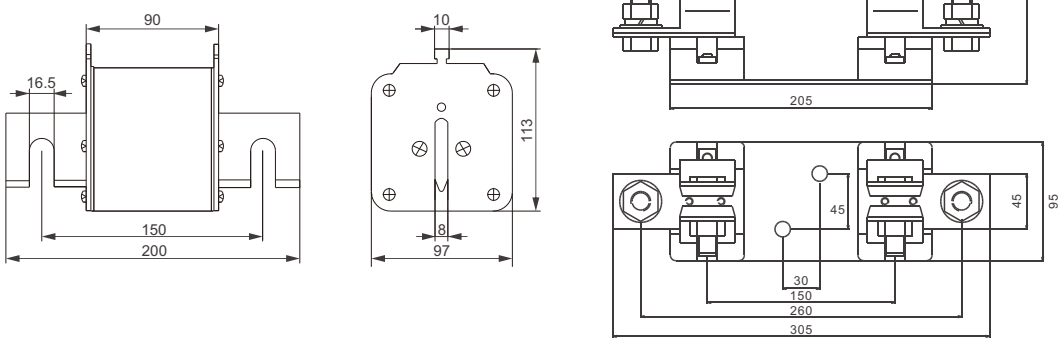
**Pollution level:** Level 3

**Installation category:** Class III

## Main Technical Data

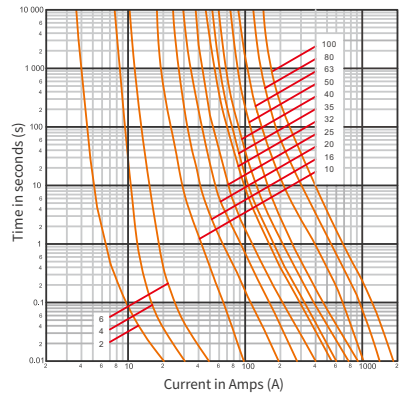
| Model | Equivalent models | Rated current (A) | Rated voltage (V) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) |
|---|---|---|---|---|---|---|
| | | | | Pre-arcing | $I_1$ 120kA at 500V | |
| NH4-500A | RT16-4<br>NT4<br>RT20-4<br>RO39<br>3NA3 | 500 | 500<br>690 | 800000 | 3850000 | 37 |
| NH4-630A | | 630 | | 880000 | 4100000 | 48 |
| NH4-800A | | 800 | | 1500000 | 6480000 | 68 |
| NH4-1000A | | 1000 | | 4800000 | 13000000 | 80 |
| NH4-1250A | | 1250 | | 7000000 | 18000000 | 108 |

## Dimension (mm)

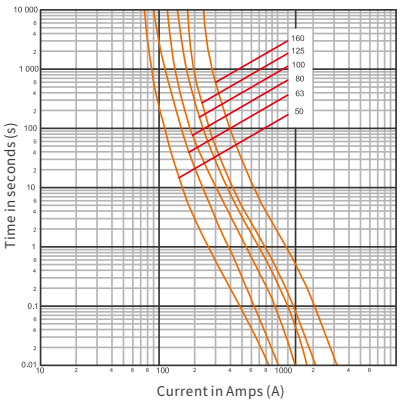


# Time-current Characteristics

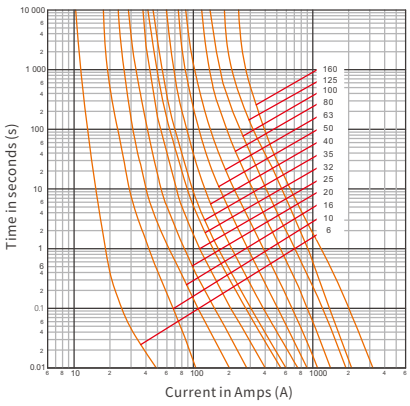
## NH Series Fuse



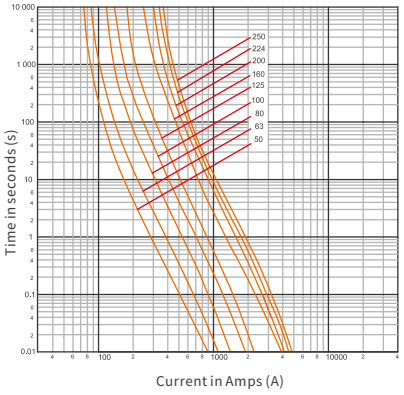

NH000



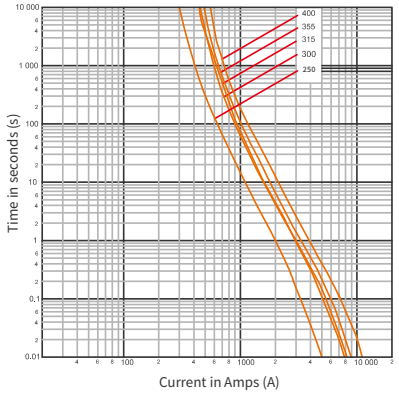

NH00



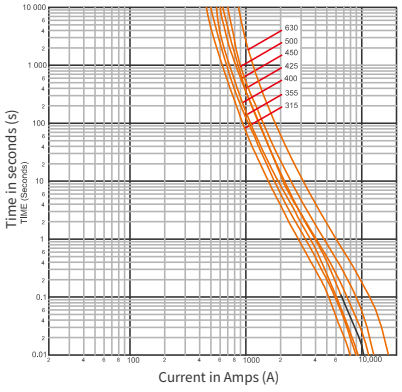

NH0



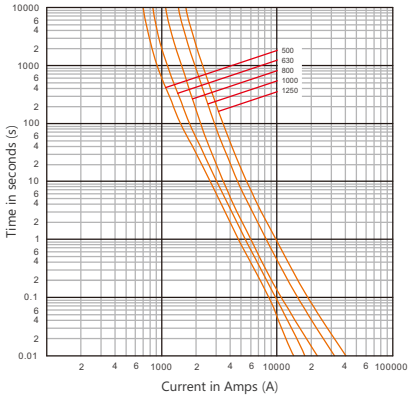

NH1




NH2




NH3




NH4

# Fuse Protection of PV Strings

Photovoltaic (PV) fuses are a critical component in solar energy systems. They are designed to provide protection for cables and PV modules from line-line, line-ground, and mismatch faults. Their primary purpose is to prevent fire and safely open a faulted circuit in the event of an overcurrent situation. By incorporating PV fuses, we can ensure the safety of people and equipment while maximizing system efficiency.

ETEK's series photovoltaic gPV solar fuses are specifically designed to protect DC systems up to 1500 VDC. They are suitable for the DC protection of solar panels, combiner boxes, and battery storage etc.

### Some key considerations when selecting photovoltaic fuses:

1.**Rated Voltage:** The voltage rating of a fuse must be greater than or equal to the maximum system voltage.

2.**Rated Current:** The fuse should be rated to carry the maximum current that your PV system can produce but not too high that it wouldn't protect the system in case of an overcurrent situation.

3.**Breaking Capacity:** This is the maximum current that can safely be interrupted by the fuse. Fuse datasheets often include breaking current-time characteristics, which can be helpful in determining the appropriate fuse.

4.**Environmental Considerations:** PV fuses must be able to withstand the environmental conditions where they will be installed. This includes temperature extremes, humidity, and exposure to sunlight.

5.**Standards Compliance:** Ensure that the chosen fuse complies with all relevant standards and regulations.

Remember, installing an appropriately rated fuse is essential to protect your solar panel system from potential damage due to overcurrent or short circuit situations. It's always a clever idea to consult with a professional if you're unsure about which fuse to choose.

## Fuse Base Product Selection Guide

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | DC Voltage Grade:<br>10: 1000VDC<br>15: 1500VDC | | For Solar DC system:<br>PV: General type<br>PVH: High enclosurer type<br>(for EKF1-10PVH-10 new type only) | | |
| | Fuse Base | | | | | | |
| EK | F | 1 | – 10 | X | PV | – | 10 |
| Company Code | | Design No. | | Blank: Without Lamp<br>X : With Lamp | | | Fitting to Size of Fuse link:<br>10: for 10x38mm 1000V<br>10L: for 10x85mm 1500V<br>14L: for 14x85mm 1500V |

# EKFL10D10

Cylindrical Fuse Link

## General

**Rated voltage:** 1000V

**Rated current:** 2A~32A

**Core size:** 10×38mm

**Utilization category:** gPV

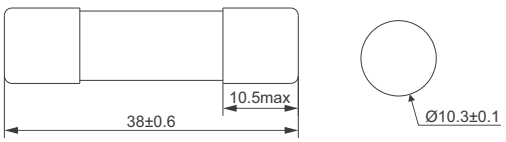
**Standard:** IEC60269-6

**Breaking capacity:** 30kA

## Main Technical Data

| Model | Rated current (A) | $I^2t$ (Amps² seconds) | | Power loss (W) | |
|---|---|---|---|---|---|
| | | Pre-arcing | Total clear | 0.8In | 1.0In |
| EKFL10D1002 | 2 | 1.2 | 3.3 | 0.68 | 1.36 |
| EKFL10D1003 | 3 | 3.9 | 11 | 0.75 | 1.42 |
| EKFL10D1004 | 4 | 10 | 27 | 0.94 | 1.58 |
| EKFL10D1005 | 5 | 18 | 48 | 0.98 | 1.83 |
| EKFL10D1006 | 6 | 31 | 89 | 1.10 | 1.84 |
| EKFL10D1008 | 8 | 3.1 | 31 | 1.13 | 1.86 |
| EKFL10D1010 | 10 | 7.2 | 68 | 1.21 | 2.08 |
| EKFL10D1012 | 12 | 16 | 136 | 1.38 | 2.62 |
| EKFL10D1015 | 15 | 24 | 215 | 1.67 | 2.95 |
| EKFL10D1020 | 20 | 38 | 392 | 1.92 | 3.12 |
| EKFL10D1025 | 25 | 71 | 508 | 2.10 | 3.46 |
| EKFL10D1030 | 30 | 102 | 821 | 2.30 | 3.78 |
| EKFL10D1032 | 32 | 264 | 1020 | 2.60 | 4.20 |

## Dimension (mm)



# EKFL15D10L

Cylindrical Fuse Link

## General

**Rated voltage:** 1500V

**Rated current:** 2A~35A

**Core size:** 10×85mm

**Utilization category:** gPV

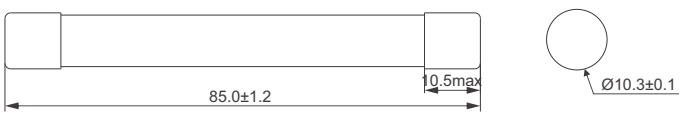
**Standard:** IEC60269-6

**Breaking capacity:** 50kA

## Main Technical Data

| Model | Rated current (A) | $I^2t$ (Amps² seconds) | | Power loss (W) | |
|---|---|---|---|---|---|
| | | Pre-arcing | Total clear | 0.8In | 1.0In |
| EKFL10D1002 | 2 | 4 | 8 | 1.0 | 2.0 |
| EKFL10D1003 | 3 | 6 | 11 | 1.1 | 2.1 |
| EKFL10D1004 | 4 | 8 | 14 | 1.2 | 2.2 |
| EKFL10D1005 | 5 | 11 | 22 | 1.4 | 2.4 |
| EKFL10D1006 | 6 | 15 | 30 | 1.5 | 2.6 |
| EKFL10D1008 | 8 | 9 | 35 | 1.8 | 3.0 |
| EKFL10D1010 | 10 | 10 | 98 | 2.2 | 3.5 |
| EKFL10D1012 | 12 | 12 | 120 | 2.5 | 3.8 |
| EKFL10D1015 | 15 | 14 | 170 | 3.0 | 4.8 |
| EKFL10D1020 | 20 | 34 | 400 | 3.5 | 6.2 |
| EKFL10D1025 | 25 | 65 | 550 | 4.0 | 7.2 |
| EKFL10D1030 | 30 | 95 | 750 | 4.5 | 8.3 |
| EKFL10D1032 | 32 | 116 | 792 | 4.8 | 8.9 |
| EKFL10D1035 | 35 | 143 | 980 | 5.0 | 9.3 |

## Dimension (mm)



# EKFL15D14L

Cylindrical Fuse Link

## General

**Rated voltage:** 1500V

**Rated current:** 25A~50A

**Core size:** 15×85mm

**Utilization category:** gPV

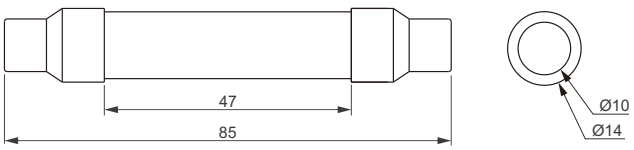
**Standard:** IEC60269-6

**Breaking capacity:** 30kA

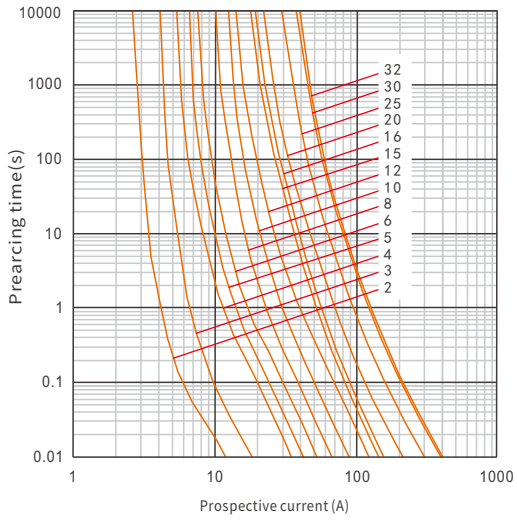
## Main Technical Data

| Model | Rated current (A) | $I^2t$ (Amps$^2$ seconds) | | Power loss (W) | |
|---|---|---|---|---|---|
| | | Pre-arcing | Total clear | 0.8In | 1.0In |
| EKFL15D14L25 | 25 | 160 | 580 | 4.3 | 7.8 |
| EKFL15D14L30 | 30 | 230 | 780 | 5.0 | 9.2 |
| EKFL15D14L32 | 32 | 250 | 1050 | 6.0 | 11 |
| EKFL15D14L40 | 40 | 650 | 2640 | 8.2 | 15 |
| EKFL15D14L45 | 45 | 900 | 3260 | 8.8 | 16 |
| EKFL15D14L50 | 50 | 1065 | 3820 | 10.3 | 18.8 |

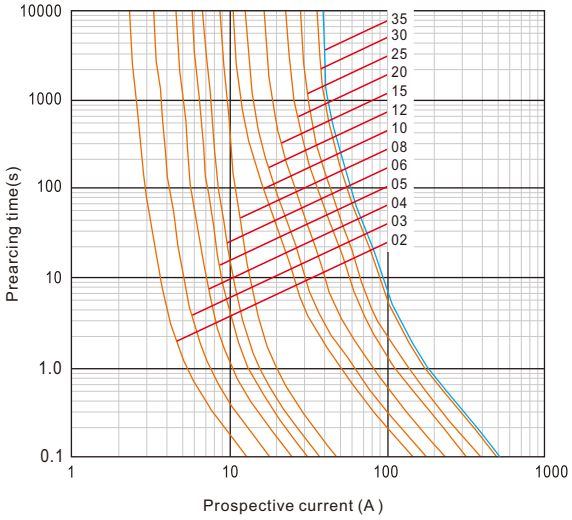
## Dimension (mm)



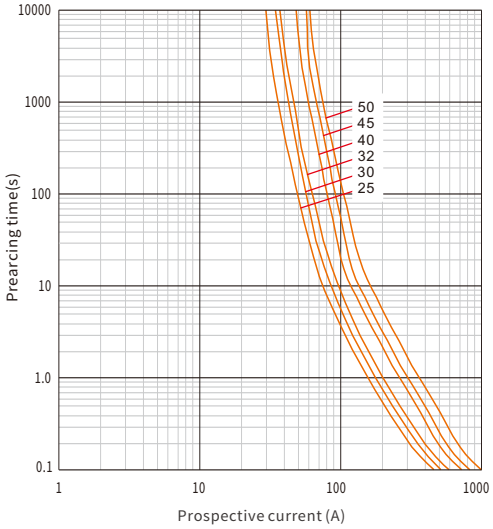
Cylindrical Fuse Link




EKFL10D10




EKFL15D10L



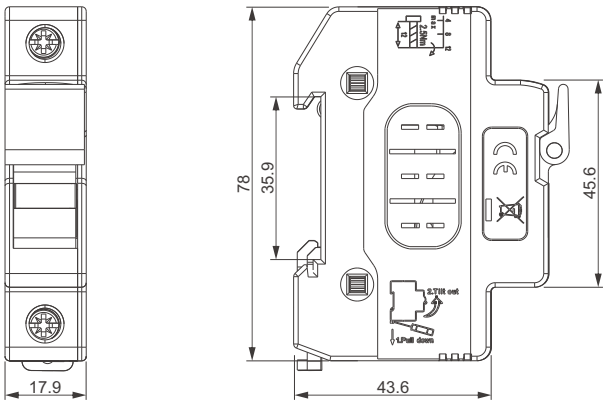

EKFL15D14L



## Main Technical Data

| | |
|---|---|
| Rated voltage | 1000VDC |
| Rated current | 32A |
| Size of Fuse Link | 10×38mm |
| Protection characteristics | gPV |
| Mechanical Life | 500 |
| Product Width | 18mm |
| Tightening Torque | 2.5Nm 14In-lbs |
| Terminal size for Cable | 6mm$^2$ 8-18AWG |
| Ambient temperature(<35°C) | -5°C~+40°C |
| Storage Temperature | -25°C~+40°C |
| Standard | IEC60269-6, IEC60947-3 |
| Mounting | On DIN rail EN60715(35mm) by means of fast clip device |

## Dimension (mm)

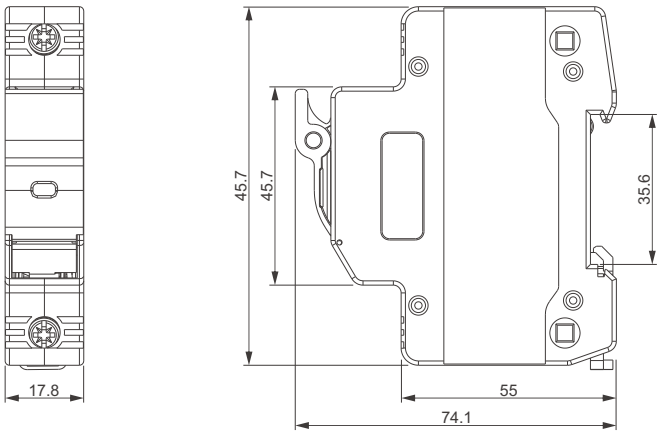




## Main Technical Data

| | |
|---|---|
| Rated voltage | 1000VDC |
| Rated current | 32A |
| Size of Fuse Link | 10×38mm |
| Protection characteristics | gPV |
| Mechanical Life | 500 |
| Product Width | 18mm |
| Tightening Torque | 2.5Nm 14In-lbs |
| Terminal size for Cable | 6mm$^2$ 8-18AWG |
| Ambient temperature(<35°C) | -5°C~+40°C |
| Storage Temperature | -25°C~+40°C |
| Standard | IEC60269-6, IEC60947-3 |
| Mounting | On DIN rail EN60715(35mm) by means of fast clip device |

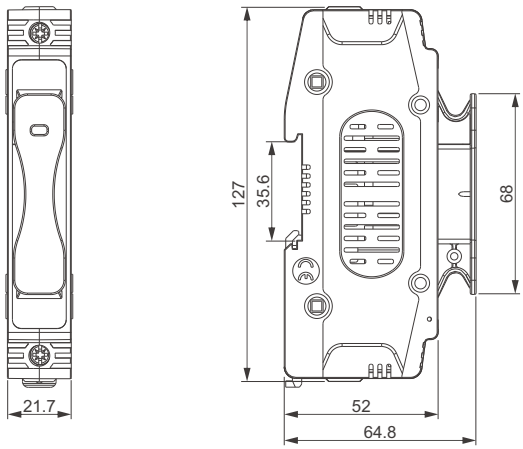
## Dimension (mm)



## Main Technical Data

| | |
|---|---|
| Rated voltage | 1500VDC |
| Rated current | 50A |
| Size of Fuse Link | 10×85mm, 14×85mm |
| Protection characteristics | gPV |
| Mechanical Life | 500 |
| Product Width | 22mm |
| Tightening Torque | 2.5Nm 14In-lbs |
| Terminal size for Cable | 10mm$^2$ 8-18AWG |
| Ambient temperature(<35°C) | -5°C~+40°C |
| Storage Temperature | -25°C~+40°C |
| Standard | IEC60269-6, IEC60947-3 |
| Mounting | On DIN rail EN60715(35mm) by means of fast clip device |

## Dimension (mm)



The product data referred to in the company shall be subject to material object. Subject to change without notice. The company has the final right to interpret.

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