

CIRCUIT PROTECTORS

idec

NRF SERIES

IDEC IZUMI CORPORATION



NRF110
(Without Auxiliary Contacts)



NRF111
(With Auxiliary Contacts)

Easy-to-use Economical Circuit Protectors Snaps into a 16-mm-diameter hole

FEATURES

The NRF series circuit protectors feature IDEC's original "Simple Trigger Action Release" mechanism to ensure reliable tripping during an overload. Their small 16-mm-dia size, like a fuse holder, together with their high performance, high reliability and long life is ideal for protecting small electric appliances from overcurrent.

● **Pop-out Indicator**

When the circuit is overloaded, the NRF breaks the circuit and the red-sided pushbutton pops out to indicate tripping.

● **Simple Mechanism for Reliability**

The simple trigger action release mechanism trips when an overcurrent flows. The mechanism can be re-thrown by simply pressing the button. A tripfree mechanism is also incorporated to keep the circuit open even when the button is pressed during an overload.

● **16-mm-dia Fuse Holder Size**

The NRF can snap into a 16-mm-dia hole like a fuse holder. DIN rail and surface mount adapters are available for installation in a panel.

● **Beautiful Design & Colorful Bezels**

Their front design matches every control panel. Bezels are available in six colors; black (standard), red, blue, green, yellow, and white for color-coding each circuit.

● **Solder or Receptacle Connection**

The housing is made of a thermoplastic resin with a high heat-resistance to allow the terminals to be soldered. The terminals also accept #250 receptacles, suited for easy maintenance and applications in quantities.

● **Variety of Rated Current**

The rated current is available in 9 types ranging from 300mA to 15A.

● **More Than 1,000 Repeat Operations**

The NRF can be used for more than 1,000 operations when tripping at 200% the rated current. Unlike fuses, their capability of repeated operations saves cost and maintenance.

● **Auxiliary Contacts and/or Manual OFF Mechanism**





The NRF is available with 1NO auxiliary contacts (125V AC/32V DC, 50mA), which can be used to make an alarm or control circuit. Optional manual OFF mechanism opens the main contacts by pressing the button, convenient function for checking the circuit with power OFF. (The contacts can be opened only when power is OFF.)

● **UL Recognized and CSA Certified**

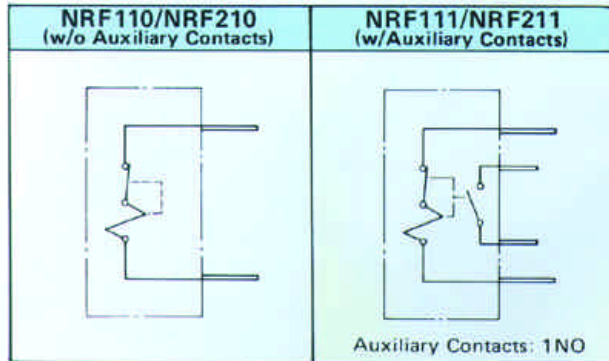
NRF series circuit protectors without manual OFF mechanism are recognized by UL (File No. E68029), certified by CSA (File No. LR47985), and approved by TÜV test.

NRF SERIES CIRCUIT PROTECTORS

TYPES

Type No.	Auxiliary Contacts	Manual OFF Mechanism
 NRF110□-□	NO	NO
 NRF111□-□	YES	NO
 NRF210□-□	NO	YES
 NRF211□-□	YES	YES

INTERNAL CIRCUIT



APPLICATIONS

The NRF series circuit protectors are designed to protect control circuits and small electric appliances from over-currents. Their capability of repeated operations are suited for use in relay circuits, motor circuits, heater circuits, transformers, solenoids, solenoid valves, semiconductor circuits, and many other applications.

[Examples]

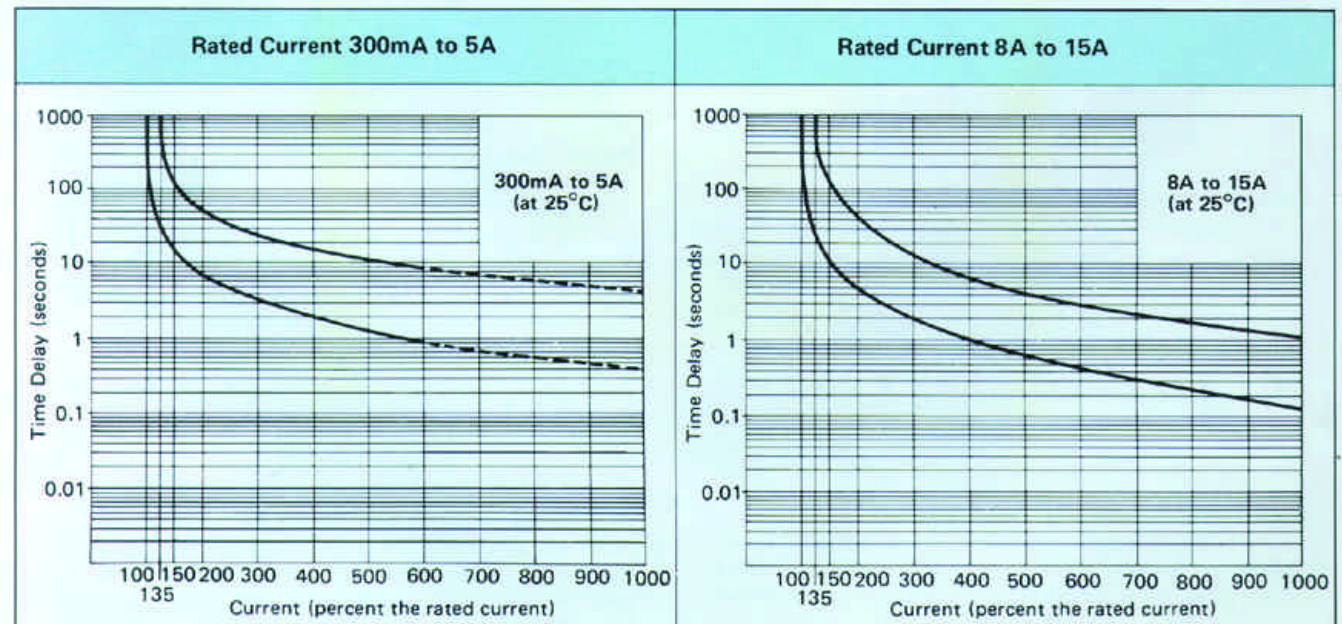
•Office Automation Equipment

Copiers, shredders, personal computers, word processors, facsimile telegraphs, printers, computer terminals, communication equipment, and power supplies.

•Measuring Instruments

Electrical measuring instruments, industrial meters, analyzers, recorders, data processors, test equipment, and chemical equipment.

TIME DELAY CURVES



NOTE: Dashed lines are reference values.

SPECIFICATIONS

Protection Method	Thermal tripping
Internal Circuit	Series trip Series trip (with auxiliary contacts)
No. of Poles	1
Applicable Voltage	32V DC, 250V AC maximum
Rated Current	300mA, 500mA, 1A, 2A, 3A, 5A, 8A, 10A, 15A
Rated Interrupting Capacity	300mA to 5A: Rated current x 6 8A to 15A: Rated current x 10
Auxiliary Contact Rating	1NO, 50mA 125V AC/32V DC
Reference Temperature	25°C
Operating Temperature	-10 to +60°C (no freezing) (NOTE)
Trip Time (at 25°C)	No trip at the rated current Within 1 hour at 135% the rated current
Reset Time	60 sec minimum
Vibration Resistance	100m/sec ² (10 to 55Hz) (Approx. 10G)
Shock Resistance	1,000 m/sec ² (Approx. 100G)
Life	Overcurrent durability: 1,000 operations minimum (tripping at 200% the rated current) Mechanical life of models with manual OFF mechanism: 240 operations minimum (switching at no load)
Insulation Resistance	100 MΩ minimum (500V DC megger)
Dielectric Strength	Between main contacts and between main contact and ground: 2,000V AC, 1 minute Between main and auxiliary contacts: 1,500V AC, 1 minute
Terminal Style	Main terminal: #250 Tab terminal Auxiliary contact terminal: 1.4W x 0.2 mm thick solder terminal
Weight	Approx. 15g

NOTE: The rated current is the value at the reference ambient temperature of 25°C, and varies with the operating temperature. The rated current can be corrected according to the curves on page 3.

NRF^{SERIES} CIRCUIT PROTECTORS

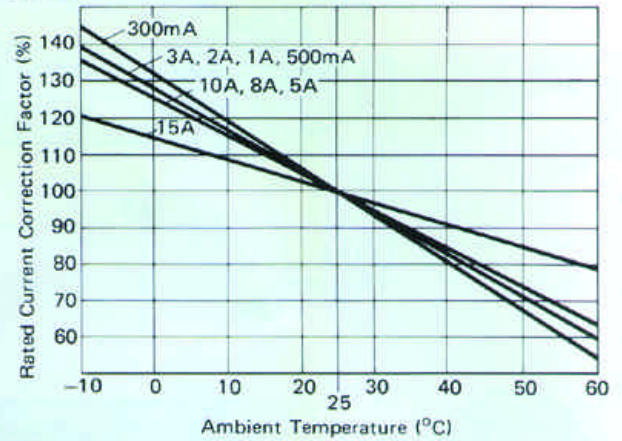
RATED CURRENT VS INTERNAL RESISTANCE

Rated Current	Internal Resistance (Ω) $\pm 15\%$	Temperature
300mA	9.08	25°C
500mA	3.27	
1A	0.81	
2A	0.235	
3A	0.128	
5A	0.0503	
8A	0.0085	
10A	0.0095	
15A	0.0064	

The internal resistance tends to be larger for a smaller rated current. When the circuit protector is used in a low-voltage circuit, voltage drop should be taken into consideration.

TEMPERATURE CORRECTION CURVES

The rated current is based on an ambient temperature of 25°C. Since a thermal tripping method is employed, the rated current should be corrected according to the ambient temperature with reference to the curves shown below.



ACCESSORIES

• Adapters

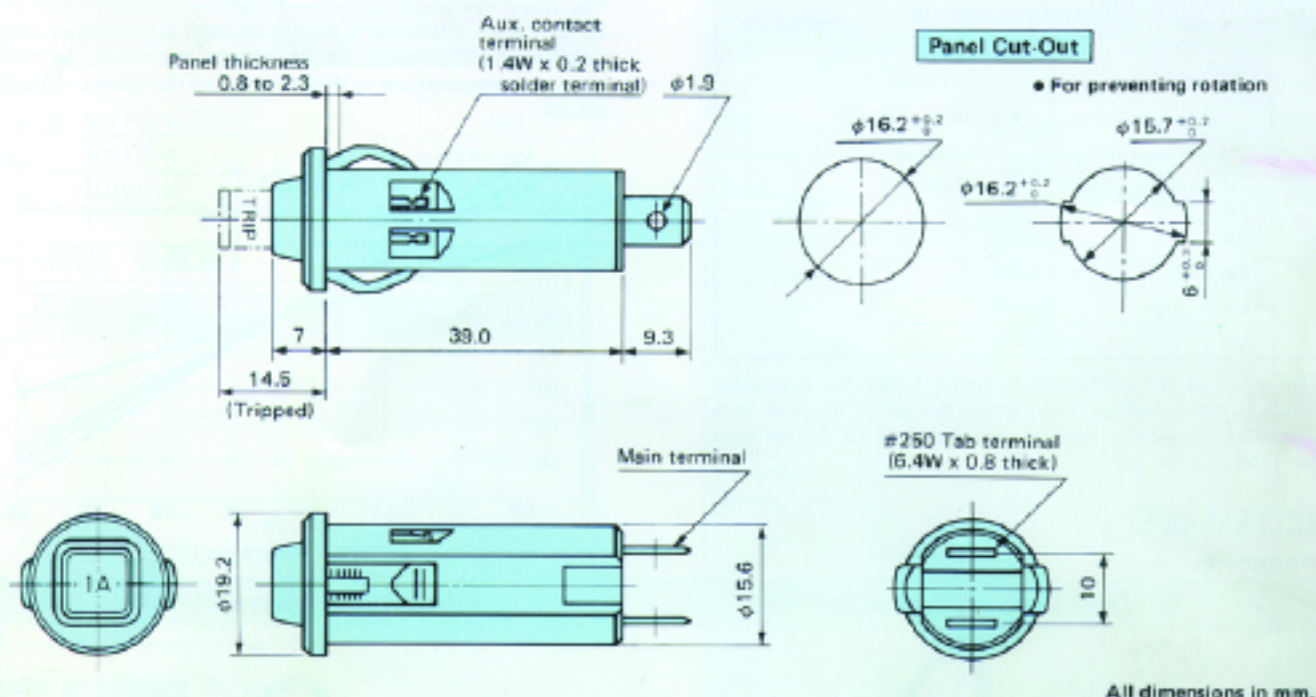
	DIN Rail Mount Adapter (NRF-D)	Surface Mount Adapter (NRF-M)
Appearance		
Dimensions (mm)		

• DIN Rails

Length	Type No.		
	BADA	BAA	BAP
1,000mm	BADA1000	BAA1000	BAP1000

NRF SERIES CIRCUIT PROTECTORS

DIMENSIONS & PANEL CUT-OUT



INSTRUCTIONS

1. Since the NRF is designed for protection against overload in principle, it should be used within the rated interrupting capacity. An excessive overcurrent may affect the bimetal characteristics or damage the internal mechanism.
2. After tripping, the NRF cannot be re-thrown until the bimetal cools down. Allow the NRF at least 60 seconds before re-throwing.
3. The NRF may not trip at an instantaneous overcurrent due to its principle. When a short time delay is required, IDEC's NRA series circuit protectors of the electromagnetic tripping system are recommended.
4. The NRF is shipped with the button depressed and the internal circuit closed. To confirm operation of the models without manual OFF mechanism, apply approximately 200% the rated current to trip the NRF.
5. When installing receptacles to the terminals, hold the NRF body and press in the receptacles.

6. Unlike conventional switches, the models with manual OFF mechanism are not suited for frequent switching due to their construction and should be operated without load. Their mechanical life is 240 operations at minimum when switching at no load.

ORDERING INFORMATION

When ordering, specify the type number, the bezel color code, and the rated current.

[Example]

NRF111 R - 5A		
Type No.	Rated Current	
See TYPES on page 2.	300mA, 500mA, 1A, 2A, 3A, 5A, 8A, 10A, 15A	
Bezel Color Code		
blank: Black Y: Yellow		
R: Red S: Blue		
G: Green W: White		

Specifications and other descriptions in this catalog are subject to change without notice.

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