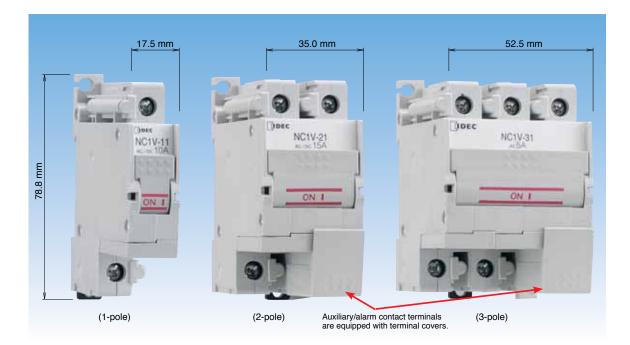


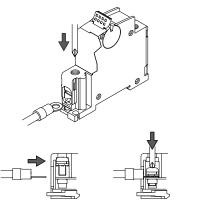
IDEC CORPORATION

IDEC's original Spring-up Terminals and Cover Provide IP20 Finger-safe Protection.



Finger-safe, spring-up terminals reduce wiring time.

Ring terminal tabs can be installed easily, and screws are held secure.

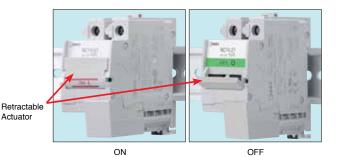


Main Circuit Terminals are Fingersafe (IP20)

Spring-up, fingersafe structure requires no terminal cover.

Retractable Actuator

The actuator retracts when the circuit protector turns on. Inadvertent operation, due to touching the actuator, is prevented. Status of the circuit protector can easily be confirmed by viewing the position of the actuator.



Slim Housing Saves Space

1-pole	17.5mm Wide
2-pole	35.0mm Wide
3-pole	52.5mm Wide

Auxiliary/Alarm Contact Terminals are Equipped with a Terminal Cover

Voltage coil terminals on the relay trip version are also equipped with a terminal cover as standard.

Auxiliary/Alarm Contact, and Relay Trip Voltage Coil Terminals are Equipped with a Terminal Cover.

35mm-wide DIN Rail Mounting or Direct Panel Mounting



Distinguishing Characteristics

Wide variety of rated currents and tripping curves. One and 2-pole models are AC/DC compatible and allow for a reduction in inventory.

Rated Short-circuit Capacity 2500A

Available with Inertia Delay

Allows for use with large inrush currents such as motors and lamps.

Safe Trip-free Mechanism

The circuit remains open even when the operator is turned on after tripping (unit must be manually reset after removing the cause of the tripping).

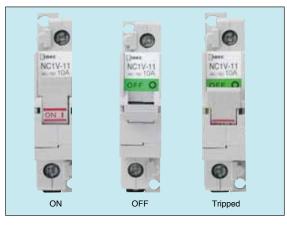
Available with Auxiliary or Alarm Contacts

Conforms to various international standards



After tripping, the retractable actuator is in the middle position.

Circuit protector must be turned off before it can be reset.





Auxiliary or Alarm Contact (Shown without terminal cover.)



NC1V Circuit Protectors

IDEC's original spring-up, fingersafe terminals enhance reliability and safety.

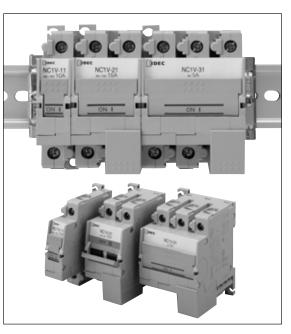
- Integrated electric shock protection structure (IP20).
- Auxiliary/alarm contact terminals and voltage coil terminals on the relay trip types are equipped with terminal covers.
- Spring-up, fingersafe terminals reduce wiring time.
- Ring terminals can be installed. Captive terminal screws.
- Available with inertia delay
- · Available with auxiliary or alarm contacts
- Rated short-circuit capacity: 2500A
- Slim, space-saving housing 1-pole: 17.5mm wide
 2-pole: 35.0mm wide
 3-pole: 52.5mm wide

- Retractable actuator
- The trip-free mechanism maintains the circuit open even when the operator is turned on after tripping.

Applicable Standards	Certification Mark		Certification Organization (File No.)
UL1077	8	°.	E68029
CSA C22.2 No. 235	(f)	•	LR83454
EN60934	e)	B07 09 13332 063
EN00934	CE		European Commission's Low Voltage Directive
GB17701-1999)	No. 2008010307265840
Electrical Applicance and Material Safety Law	Series Trip	₽ S ■	JET
Technical Standard	Relay Trip	PS	JEI

Note: TÜV, CE, and CCC marks are applicable for series trip type only.

Specifications



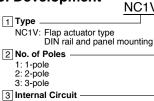
55°C 60°C

0.8 0.7

Operator Style		Retractable actuator				
Internal Circuit		Series trip (current trip), Relay trip (voltage trip)				
Protection Method		Hydraulic magnetic tripping system, Ma	agnetic tripping system (voltage tr	ip)		
No. of Poles		1-pole	2-pole	3-pole		
Rated Voltage (AC	/DC) (Note 1)	250V AC 50/60Hz, 65V DC	250V AC 50/60Hz, 125V DC	250V AC, 50/60Hz		
о. · т.	Rated Short-circuit Capacity	250V AC, 2500A 65V DC, 2500A	250V AC, 2500A 125V DC, 2500A	250V AC, 2500A		
Series Trip (Current Trip)	Rated Current	0.1A, 0.3A, 0.5A, 1A, 2A, 3A, 5A, 7A, 1	0A, 15A, 20A, 25A, 30A			
	Operation Characteristics (Note 2)	Time delay curve curve M (slow), curve Curves M and A are avilable with inertia				
Relay Trip	Rated Current	30A				
(Voltage Trip) (Note 3) Trip Voltage	24 to 48V DC (at 25°C) Voltage application duration 10 sec ma	ximum, tripping time 0.1 sec max	imum (at rated voltage)		
Auxiliary Contact/	Contact Rating	125V AC 3A (resistive load), 30V DC 2A (resistive load)				
Alarm Contact	Minimum Applicable Load	24V DC 1mA (resistive load, reference value)				
Insulation Resistan	се	100 MΩ minimum (500V DC megger)				
Dielectric Strength		2000V AC, 1 minute (between terminals when main contacts are open, between live parts of different poles, between live and dead parts) 600V AC (between terminals when auxiliary circuits are open)				
Vibration Resistand (with rated current	-	Damage limits: 147 m/s² (10 to 55 Hz) (1-pole, 2-pole), 78 m/s² (3-pole) Operating extremes: 98 m/s² (1-pole, 2-pole), 78 m/s² (3-pole)				
	e: 80% rated current, ve: 100% rated current)	Damage limits: 490 m/s ² (1-pole, 2-pole), 297 m/s ² (3-pole) Operating extremes: 196 m/s ² (S, A, M types)				
Electrical Life		10,000 cyles minimum (at rated curent), 10 operations per minute				
Reference Temper	ature	40°C				
Operating Temppe	rature	-10 to +60°C (no freezing) Rated current is based on an ambient temperature of 40°C. When the operating temperature exceeds 40°C, derate the rated current by using the factors shown below.				
Operating Humidity	/	45 to 85% RH (no condensation)				
	lain Circuit Terminal	Spring-up, fingersafe terminal: M4 scre	w (up to 20A), M5 screw (25A an	d 30A)		
	inal Style Auxiliary/Alarm Contacts, Voltage Coil Terminal M3.5 screw					
Weight (approx.)		1-pole: 90g, 2-pole: 170g, 3-pole: 260g				

To avoid unnecessary tripping, do not use in circuits where inrush currents may be present. Note 3: Relay trip (voltage trip) type is not equipped with an overcurrent trip function. • Do not use the NC1V circuit protectors in environments where they are exposed to extreme temperature, humidity, dust, corrosive gases, vibration, shock, or in a circuit where inrush current may be present, otherwise unnecessary operations and damage may occur.

Type No. Development

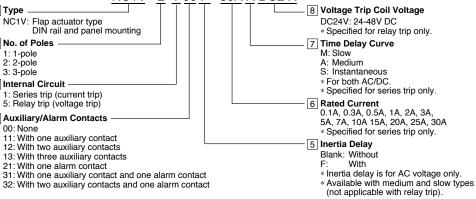


1: Series trip (current trip) 5: Relay trip (voltage trip)

4 Auxiliary/Alarm Contacts

00: None 11: With one auxiliary contacts 12: With two auxiliary contacts 13: With three auxiliary contacts

NC1V - 2 1 00 F - 30A A DC24V



Types

• Specity rated current, time delay curve, or voltage trip coil voltage in place of 6 78 in the Ordering Type No.

Internal	No. of	Inertia	Auxiliary Contact				Code	
Circuit	Poles	Delay	Alarm Contact	Ordering Type No.	Applicable Standards	6 Rated Current	7 Time Delay Curve	8 Voltage Trip Coil Voltage
			-	NC1V-1100-67	₽¥@.@((@⊘			
		-	One Auxiliary Contact	NC1V-1111-67	₽¥@.@((@@⊘]		
	1 0010		One Alarm Contact	NC1V-112167	₽¥@.@((@@⊘]		
	1-pole		-	NC1V-1100F-67	₽¥@.@((@⊘	1		
		With	One Auxiliary Contact	NC1V-1111F-67	<i>₽</i> ¥@.@((@@⊘	1		
			One Alarm Contact	NC1V-1121F-67	₽¥@.@((@@⊘]		
			-	NC1V-2100-67	₩@.@((@)]		
			One Auxiliary Contact	NC1V-2111-67	<i>₽</i> ¥@.@((@@⊘	1		
		_	Two Auxiliary Contacts	NC1V-2112-67	R @.@((<>	1		
			One Alarm Contact	NC1V-2121-67	<i>₽</i> ¥@.@((@@⊘	1		
			One Auxiliary Contact and One Alarm Contact	NC1V-2131-67	₽₩@.@((♦			
	2-pole		-	NC1V-2100F-67	₩@.@((@)	1		
			One Auxiliary Contact	NC1V-2111F-67	%®.@((@)	0.1A 0.3A	M (slow) A (medium) S (instantaneous)	
		With	Two Auxiliary Contacts	NC1V-2112F-67	FN:@.@((<>	0.5A 1A		
			One Alarm Contact	NC1V-2121F-67	₩@.@((@)	2A 3A		
Series Trip (Current Trip)			One Auxiliary Contact and One Alarm Contact	NC1V-2131F-67	<i>FN</i> @.@((5A 7A 10A 15A		-
			_	NC1V-3100-67	₽¥@.@((@)			
			One Auxiliary Contact	NC1V-3111-67	₽¥@.@((@⊘	20A 25A		
			Two Auxiliary Contacts	NC1V-3112-67	\$10.0((30A		
		_	Three Auxiliary Contacts	NC1V-3113-67	₩®.@(€ <>]		
			One Alarm Contact	NC1V-3121-67	₽₩®.0((@)			
			One Auxiliary Contact and One Alarm Contact	NC1V-3131-67	<i>¶</i> V@.@((<>			
	0		Two Auxiliary Contacts and One Alarm Contact	NC1V-3132-67	FN:@.@((]		
	3-pole		-	NC1V-3100F-67	<i>₽</i> ¥@.@(€@(\$	1		
			One Auxiliary Contact	NC1V-3111F-67	₩@.@((@)	1		
			Two Auxiliary Contacts	NC1V-3112F-67	R @.@((*	1		
		With	Three Auxiliary Contacts	NC1V-3113F-67	FN:@.@((<>	1		
			One Alarm Contact	NC1V-3121F-67	₩@.@((@)	1		
			One Auxiliary Contact and One Alarm Contact	NC1V-3131F-67	₽₩@.@((♦			
			Two Auxiliary Contacts and One Alarm Contact	NC1V-3132F-67	<i>FN</i> @.@((1		
	1-pole			NC1V-1500-8	FL ()			
Relay Trip (Voltage Trip)	2-pole	_	-	NC1V-2500-8	91 (B . (P)] –	-	DC24V
· ····	3-pole			NC1V-3500-8	FN ()]		

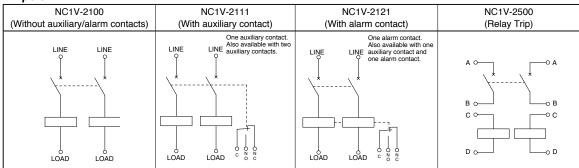
Note: Inertia delay is for AC circuit. Also, time delay curve of S (instantaneous) is not available with inertia delay.

Internal Circuit

• 1-pole

NC1V-1100	NC1V-1111	NC1V-1121	NC1V-1500
(Without auxiliary/alarm contacts)	(With auxiliary contact)	(With alarm contact)	(Relay Trip)
	LINE One auxiliary contact.	LINE One alarm contact.	× × × × × × × × × × × × × × × × × × ×

• 2-pole



Note: Those with two auxiliary contacts and with one auxiliary contact and one alarm contact have been applied for UL and CCC.

• 3-pole

NC1V-3100 (Without auxiliary/alarm contacts)	NC1V-3111 (With auxiliary contact)	NC1V-3121 (With alarm contact)	NC1V-3500 (Relay Trip)	
	One auxiliary contact. Also available with two or three auxiliary contacts.	One alarm contact. Also available with one auxiliary and one alarm contacts, and two auxiliary and one alarm contacts.		
LINE LINE LINE 	LINE LINE LINE , , , , , , , , , , , , , , , , , , ,	LINE LINE LINE	A O A A A A A A A A A A A A A A A A A A	

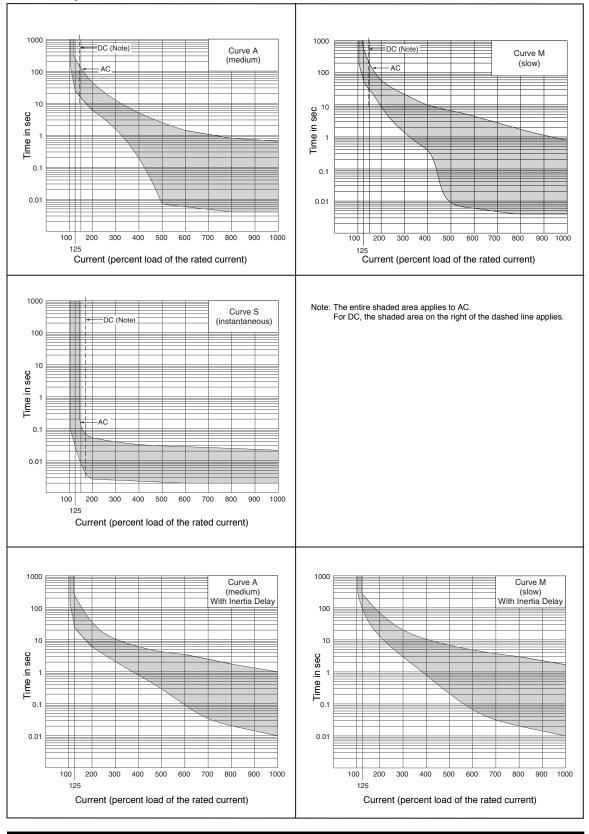
Note: Those with two or three auxiliary contacts, with one auxiliary contact and one alarm contact, and with two auxiliary contacts and one alarm contacts have been applied for UL and CCC.

Overcurrent-Time Delay Characteristics (sec at 40°C) [vertical mounting]

Item Time Delay Curve		Percent of Rated Current								
itein	Time Delay Curve	100%	125%	150%	175%	200%	400%	600%	800%	1000%
	S (instantaneous)	NO TRIP	—	*0.005 to 0.1	0.003 to 0.06	0.0027 to 0.05	0.002 to 0.03	0.002 to 0.028	0.002 to 0.025	0.002 to 0.022
AC (50/60 Hz)/DC	A (medium)	NO TRIP	*25 to 240	16 to 140	_	6 to 32	0.4 to 4	0.0055 to 1.5	0.004 to 0.8	0.004 to 0.65
	M (slow)	NO TRIP	*60 to 600	30 to 200	—	9 to 60	0.4 to 10	0.006 to 4.5	0.004 to 1.8	0.004 to 0.8
	With Inertia Delay A (medium)	NO TRIP	25 to 240	_	_	6 to 32	0.8 to 6	0.09 to 3.5	0.02 to 1.8	0.01 to 1.0
AC (50/60 Hz)	With Inertia Delay M (slow)	NO TRIP	60 to 600	—	_	10 to 60	0.8 to 10	0.06 to 4.5	0.02 to 3	0.01 to 1.75

*: MAY TRIP on DC

Time Delay Curves at 40°C

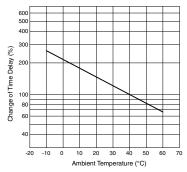


Time Delay Curve and Ambient Temperature

NC1V circuit protectors employ an electromagnetic tripping system, where the rated current (trip current) is not affected by ambient temperatures. But the time delay may vary with the oil viscosity in the oil dash pot. Lower oil viscosity at higher temperatures results in a shorter delay, whereas at lower temperatures the delay will be longer.

Temperature Correction Curve

The time delay curves on the preceding page are measured at 40°C. With reference to the following curves, time delays can be corrected according to ambient temperature.



The time delay is based on an ambient temperature of 40° C. Time delays at other temperatures are corrected according to the temperature correction curve. The time delay of the instantaneous time delay curve (S) is not affected by the ambient temperature.

When operating temperature exceeds 40°C, derate the rated current by multiplying the derating factor shown on the right.

Operating Temp.	Derating Factor
50°C	0.9
55°C	0.8
60°C	0.7

at 25°C

at 25°C

Impedance and Coil Resistance

• Series Trip (Current Trip)

Rated Current	For AC 50/60 Hz Impedance (Ω)			DC Ince (Ω)		
Guilent	Curve S	Curves A, M	Curve S	Curves A, M		
0.1A	66.0	116.0	43.0	106.0		
0.3A	6.6	11.0	4.1	10.0		
0.5A	1.92	3.65	0.86	3.40		
1A	0.50	0.93	0.25	0.90		
2A	0.16	0.27	0.11	0.25		
ЗA	0.07	0.12	0.050	0.11		
5A	0.025	0.050	0.015	0.045		
7A	0.014	0.027	0.011	0.025		
10A	0.007	0.021	0.005	0.020		
15A	0.006	0.010	0.005	0.009		
20A	0.005	0.006	0.004	0.005		
25A	0.004	0.005	0.004	0.005		
30A	0.003	0.004	0.003	0.004		

Tolerance: ±25% (up to 20A), ±50% (25A and 30A)

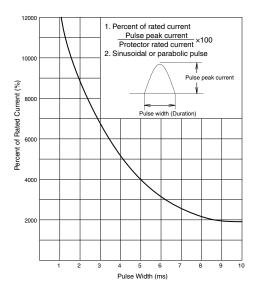
Relay Trin (Voltage Trin)

• Relay Thp (Voltag	
Tripping Voltage	For DC Resistance (Ω)
24-48V	100.0

Tolerance: ±25%

Inertia Delay

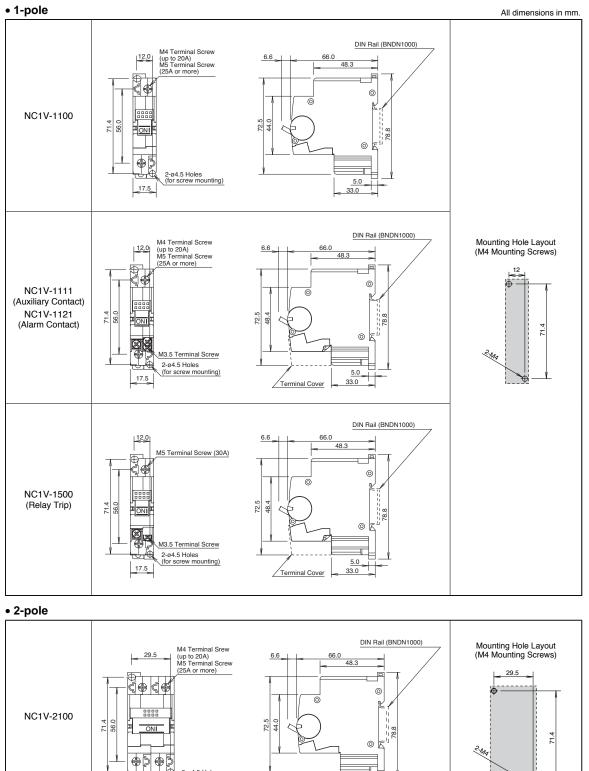
Inertia delay is designed not to trip on a non-repeating single pulse of 20 times the rated current (peak value) for a duration of 8 ms. In addition, circuit protectors equipped with inertia delay do not respond to high inrush currents caused by transformer or lamp loads, but perform the specified interruption on the subsequent overcurrents. Inertia delay is available on AC circuits, and is not available with the series trip curve S (instantaneous).



Voltage Drop Due to Coil Resistance or Impedance

The internal resistance or impedance of a circuit protector tends to be larger for a smaller rated current. Therefore, when circuit protectors of a small rated current are used, voltage drop should be taken into consideration. Internal resistance also varies with time delay curves, which should also be considered during installation.

Dimensions



9

Ф

2-ø4.5 Holes (for screw mounting)

J.C.

35.0

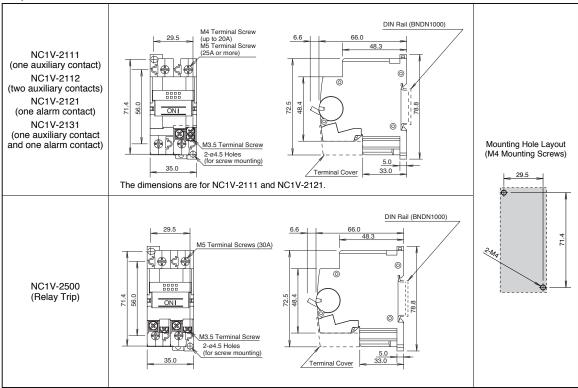
Ŧ

33.0

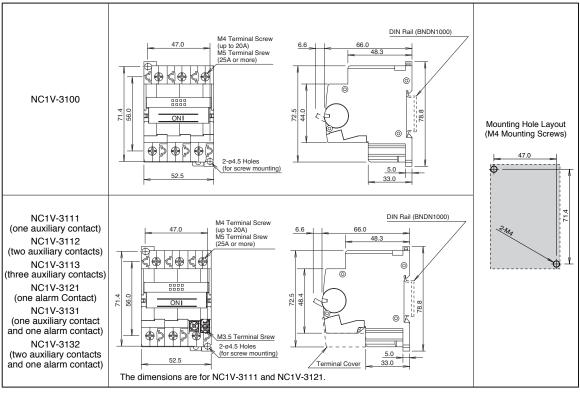
N

NC1V Circuit Protectors

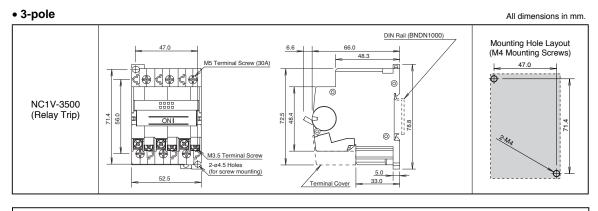




• 3-pole



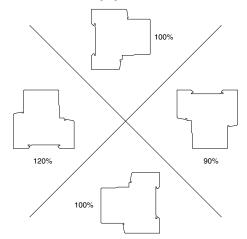
IDEC



Instructions

• Installation Angle

Tripping method is hydraulic magnetic. Minimum operating current varies with installation angle. Operating currents are influenced by the weight of movable iron core. With reference to the following figures, correct the rated current.



Minimum operating current is calculated from the following formula:

(Minimum operating current) = (Rated current) \times (Correction factor by installation angle) \times (Reference minimum tripping current rate)

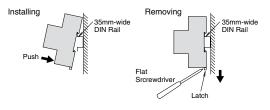
• DIN Rails

[Installation on DIN Rail]

- 1. Fasten the DIN rail securely.
- 2. With the latch facing downward, install the NC1V circuit protector on the DIN rail as shown below.

[Removal from DIN Rail]

Using a flat screwdriver, pull the latch on the circuit protector to remove from the DIN rail.



• Applicable Wire and Crimp Terminal

Applicable the and entip terminal					
Terminal	Terminal Screw	Connectable Wire Size (mm ²)	Applicable Crimping Terminal	Tightening Torque (N·m)	
	Spring-up, fingersafe,	0.25 to 1.65	R1.25-4		
s uit	slotted Phillips screw with square washer	1.04 to 2.63	R2-4	1 to 1.4	
Dirc	(up to 20A)	2.63 to 6.64	R5.5-4		
Main Circuit Terminals	Spring-up fingersafe	0.25 to 1.65	R1.25-5		
ΒĻ	terminal	1.04 to 2.63	R2-5	1.8 to 2.2	
	(25A and 30A)	2.63 to 6.64	R5.5-5		
Auxiliary Contact Auxiliary Contact Alatem Contact Alatem contact Terminals I Terminals I Terminals		0.25 to 1.65	R1.25-3.5	0.7 to 0.9	
Auxiliary Alarm (Voltag Term	with square washer	1.04 to 2.63	R2-3.5	0.7 10 0.9	
	For wiring the main circuit terminal, use the applicable crimp terminals and				

• For wiring the main circuit terminal, use the applicable crimp terminals and tighten to the recommended torque.

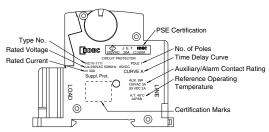
 When using the NC1V circuit protector as CSA-certified product, use with CSAcertified crimp terminal.

When using the NC1V circuit protector as UL-listed product, use with UL-listed crimp terminal.

Panel Mounting Screw (not supplied)

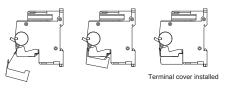
-			
	Srew Type	Tightening Torque	Shape
	M4	0.8 to 1.0 N·m	Spring Washer

Product Markings (Example: NC1V-1111-30AA)



Installation of Auxiliary/Alarm Terminal Cover

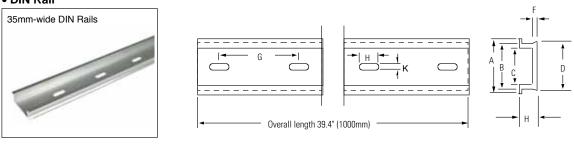
After wiring the terminals, install the terminal cover by aligning with the circuit protector as shown below.



IDEC

Accessories

• DIN Rail



Length	Part No.	Material
1000mm	BNDN1000	Aluminum

• End Clip

OB S	Part No.	Applicable Rail	Material	Package Quantity
The second se	BNL6	BNDN1000	Galvanized Trivalent Chromate Treatment	10
9mm wide 🐂				

Auxiliary/Alarm Terminal Cover



Type No. Material Package Qua		Package Quantity
NC1V-AUX-CV	Nylon (PA66)	1

• Miscellaneous Accessories (available 2009)

Type No.	Description	
NC9Z-MA11	Panel Cut-Out Mounting bracket for 1-pole mode	
NC9Z-MA21	Panel Cut-Out Mounting bracket for 2-pole model	
NC9Z-MA31	Panel Cut-Out Mounting bracket for 3-pole model	
NC9Z-TA1	Fast-On Tab terminal Adapter	
NC9Z-PW1	Marking Plate	
NC9Z-LK1	Lock-Out Bracket	

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

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www.idec.com	IDEC CORPORATION (USA) 1175 Elko Drive, Sunnyvale, CA 94089-2209, USA Tel: +1-408-744-9055 / (800) 826-1DEC (4322) Fax: +1-408-744-9055 / (800) 826-1DEC (4322) Fax: +1-408-744-9055 / (800) 826-1DEC (4322) Fax: +1-408-744-9055 / (800) 826-1DEC 3155 Pepper Mill Court, Unit 4, Mississauga, Ontario, L5L 4X7, Canada Tel: +1-905-890-8561, Toll Free: (888) 317-4332 Fax: +1-905-890-8562 E-mail: :sales@ca.idec.com IDEC AUSTRALIA PTY, LTD. 2/3 Macro Court, Rowville, Victoria 3178, Australia, Tel: +61-3-9763-3244, Toll Free: 1800-68-4332 Fax: +61-3-9763-3255 E-mail: :sales@au.idec.com IDEC ELECTRONICS LIMITED Unit 2, Beechwood, Chineham Business Park, Basingstoke, Hampshire RG24 8WA, UK Tel: +44-1256-32100, Fax: +44-1256-327755 E-mail: sales@uk.idec.com	IDEC ELEKTROTECHNIK GmbH Wendenstrasse 331, 20537 Hamburg, Germany Tel: +49-40-25 30 54 - 0, Fax: +49-40-25 30 54 - 24 E-mail: service@idec.de IDEC (SHANGHAI) CORPORATION Room 608-609, 6F, Gangtai Plaza, No. 700, Yan'an East Road, Shanghai 200001, PRC Tel: +86-21-5353-1000, Fax: +86-21-5353-1263 E-mail: idec'en.idec.com IDEC (BELJING) CORPORATION Room 211B, Tower B, The Grand Pacific Building, 8A Guanghua Road, Chaoyang District, Beijing 100026, PRC Tel: +861-06581-6311, Fax: +86-10-6581-5119 IDEC (SHENZHEN) CORPORATION Unit AB-382, Tian Xiang Building, Tan'an Cyber Park, Fu Tan District, Sherzhen, Guang Dog 518040, PRC Tel: +861-05581-6311, Fax: +86-10-6581-5119 IDEC (SHENZHEN) CORPORATION Unit AB-382, Tian Xiang Building, Tan'an Cyber Park, Fu Tan District, Sherzhen, Guang Dog 518040, PRC Tel: +86-755-8356-2977, Fax: +86-755-8356-2944	IDEC IZUMI (H.K.) CO., LTD. Units 11-15, Level 27, Tower 1, Millennium City 1, 388 Kwun Tong Road, Kwun Tong, Kowloon, Hong Kong Tei: +852-2803-8989, Fax: +852-2565-0171 E-mail: info@hk.idec.com IDEC TAIWAN CORPORATION 8F-1, No. 79, Hsin Tai Wu Road, Sec. 1, Hsi-Chih, Taipei County, Taiwan Tei: +886-2-2698-3929, Fax: +886-2-2698-3931 E-mail: service@wi.idec.com IDEC IZUMI ASIA PTE. LTD. No. 31, Tannery Lane #05-01, HB Contre 2, Singapore 347788 Tei: +65-6746-1155, Fax: +65-6844-5995 E-mail: info@sg.idec.com

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