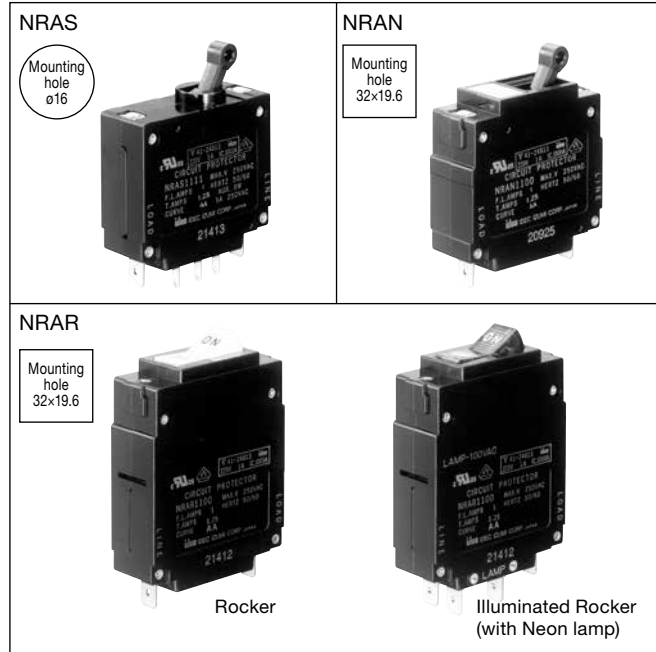


NRA series Circuit Protectors

Best Selling Circuit Protectors Wide selection of applications ranging from computers to office and factory automation

- Available with inertia delay
- Available with auxiliary contact or alarm contact
- Hydraulic-magnetic tripping system
- Safe trip-free mechanism
- Vibration-proof design
- Variety of mounting methods
- IEC (IEC 60934) compliant
- Available in tab-terminal and screw-terminal suited for crimping-terminal wiring.



Specifications

| Model | NRAS | NRAN | NRAR |
|-------------------------------------|---|-------|---------------------------------------|
| Operator Style | Lever | Lever | Rocker (Non-illuminated, Illuminated) |
| Protection Method | Hydraulic-magnetic tripping system | | |
| Internal Circuit | Series trip (current trip) Relay trip (voltage trip) Series trip (current trip) with auxiliary contacts Series trip (current trip) with alarm contacts | | |
| No. of poles | 1, 2, 3 poles | | 1 pole |
| Rated Voltage | 250V AC 50/60Hz, 65V DC | | |
| Minimum Applicable Load | 24V AC/DC, 100 mA (reference value) | | |
| Rated Current | Current trip: 0.3A, 0.5A, 0.75A, 1A, 2A, 3A, 5A, 7.5A, 10A, 15A, 20A, 25A, 30A | | |
| Trip Voltage (Voltage trip) | Rated voltage: 24V DC (operating at 90% of the rated voltage or higher, at 25°C) Voltage application duration: 1 sec maximum Trip time: 0.05 sec maximum (at the rated voltage) | | |
| Rated Interrupting Current | 250V AC 50/60Hz 1000A, 65V DC 1000A | | |
| Auxiliary Contact Alarm Contact | SPDT microswitch 250V AC 5A (resistive load), 50V DC 1A (resistive load) | | |
| Reference Temperature | +25°C | | |
| Operating Temperature | -40 to +85°C (no freezing) | | |
| Storage Temperature | -40 to +90°C (no freezing) | | |
| Operating Humidity | 45 to 85% RH (no condensation) | | |
| Storage Humidity | 45 to 85% RH (no condensation) | | |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) | | |
| Dielectric Strength | 2000V AC for 1 minute (between live part and ground, between terminals of different poles, between terminals of the same poles when main contacts are open, between main circuit and auxiliary contact) | | |
| Vibration Resistance | 100 m/s ² (10 to 100Hz) | | |
| Shock Resistance | 1000 m/s ² | | |
| Life | Over 10,000 operations (6 operations per minute) | | |
| Terminal Style | Main terminal: Tab terminal #250, M4 screw terminal Auxiliary contact/Alarm contact: Tab terminal #110 | | |
| Weight (Approx.) (NRAS series trip) | 1-pole: 60g, 2-pole: 125g, 3-pole: 190g | | |

- Do not use the NRA 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.

Indicator Ratings (Illuminated rocker unit)

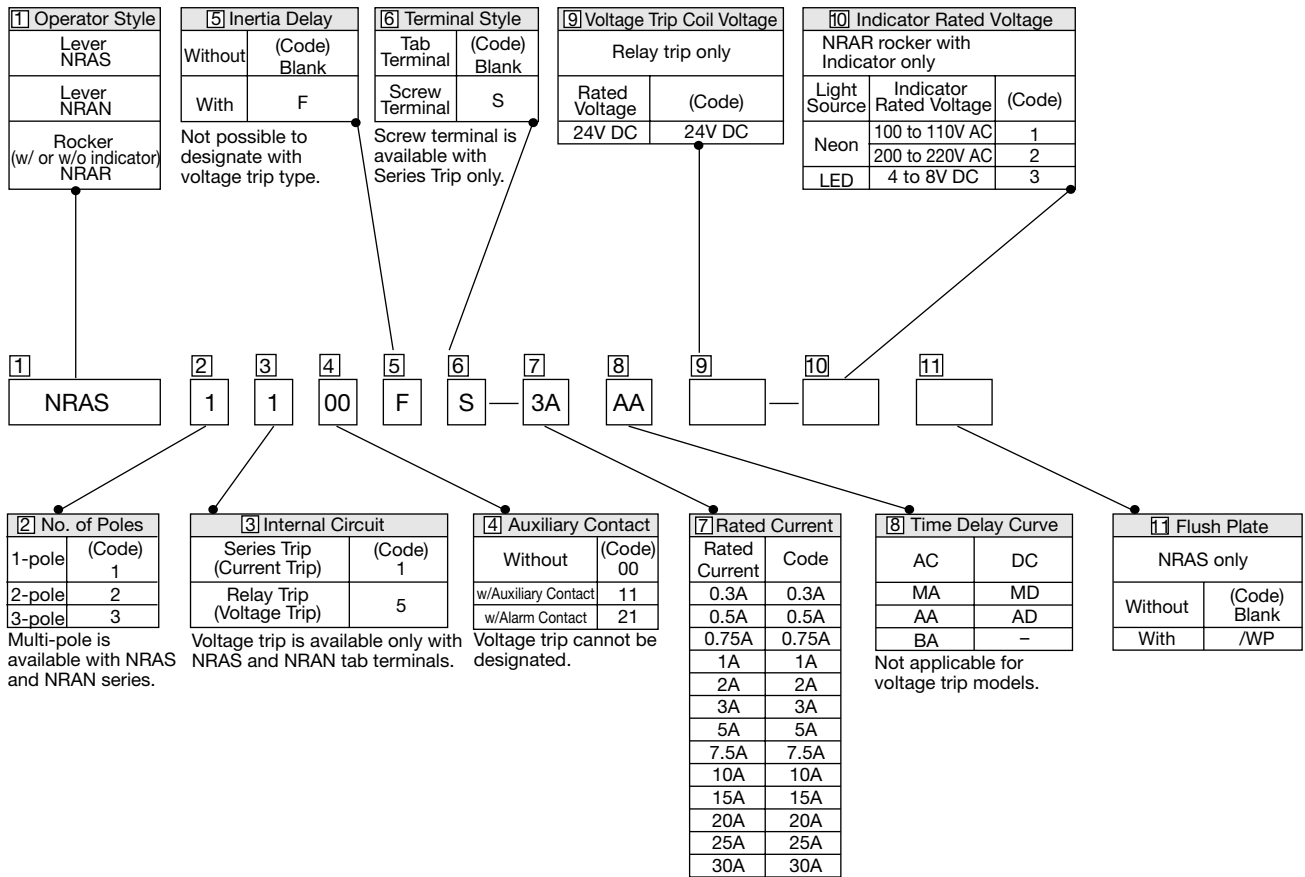
| Indicator | Rated Voltage |
|-----------|--|
| Neon | 100 to 110V AC, 50/60Hz 200 to 220V AC, 50/60Hz |
| LED | 4 to 8V DC |

Standard Color

| Housing | Black |
|--------------------------------------|---------------------------------------|
| Lever (NRAS-, NRAN) | Black with white letters, ON-OFF, I/O |
| Rocker Color, Indicator Color (NRAR) | Rocker Color |
| | Indicator Color |
| Non-illuminated | Opaque white |
| with Neon lamp | Transparent red |
| | Red |

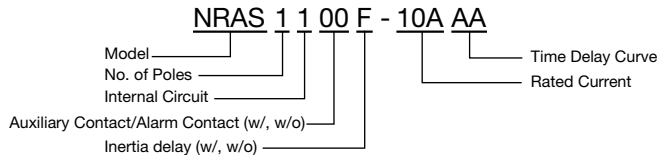
NRA Series Circuit Protectors

Part No. Development

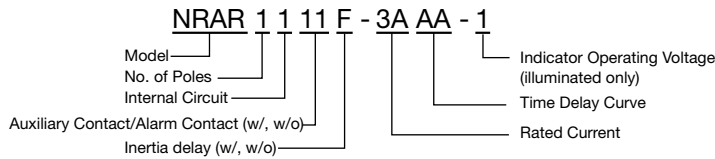


Part No. Examples

(1) Circuit protector: Lever



(2) Circuit Protector: Illuminated rocker



NRA Series Circuit Protectors

NRAS (Lever)

Specify a rated current, time delay curve, and rated voltage in place of [7] [8] [9].

Package Quantity: 1

| Internal Circuit | No. of Poles | Terminal Style | Inertia Delay | Flush Plate | Auxiliary Contact Alarm Contact | Part No. | Designation Code | | |
|--------------------------|----------------|----------------|---------------|---------------------|---------------------------------|-------------------|--|----------------------------|-------------------|
| | | | | | | | [7] Rated Current | [8] Time Delay Curve | [9] Rated Voltage |
| Series Trip Current Trip | 1 | Tab Terminal | Without | Without | Without | NRAS1100- [7] [8] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | - |
| | | | | | w/Auxiliary Contact | NRAS1111- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS1121- [7] [8] | | | |
| | | | With | Without | NRAS1100- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS1111- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS1121- [7] [8] /WP | | | | |
| | | With | Without | Without | NRAS1100F- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS1111F- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS1121F- [7] [8] | | | | |
| | | | With | Without | NRAS1100F- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS1111F- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS1121F- [7] [8] /WP | | | | |
| | Screw Terminal | Without | Without | Without | NRAS1100S- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS1111S- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS1121S- [7] [8] | | | | |
| | | | With | Without | NRAS1100S- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS1111S- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS1121S- [7] [8] /WP | | | | |
| | | With | Without | Without | NRAS1100FS- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS1111FS- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS1121FS- [7] [8] | | | | |
| | | | With | Without | NRAS1100FS- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS1111FS- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS1121FS- [7] [8] /WP | | | | |
| Series Trip Current Trip | 2 | Tab Terminal | Without | Without | Without | NRAS2100- [7] [8] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | - |
| | | | | | w/Auxiliary Contact | NRAS2111- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS2121- [7] [8] | | | |
| | | | With | Without | NRAS2100- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS2111- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS2121- [7] [8] /WP | | | | |
| | | With | Without | Without | NRAS2100F- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS2111F- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS2121F- [7] [8] | | | | |
| | | | With | Without | NRAS2100F- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS2111F- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS2121F- [7] [8] /WP | | | | |
| | Screw Terminal | Without | Without | Without | NRAS2100S- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS2111S- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS2121S- [7] [8] | | | | |
| | | | With | Without | NRAS2100S- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS2111S- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS2121S- [7] [8] /WP | | | | |
| | | With | Without | Without | NRAS2100FS- [7] [8] | | | | |
| | | | | w/Auxiliary Contact | NRAS2111FS- [7] [8] | | | | |
| | | | | w/Alarm Contact | NRAS2121FS- [7] [8] | | | | |
| | | | With | Without | NRAS2100FS- [7] [8] /WP | | | | |
| | | | | w/Auxiliary Contact | NRAS2111FS- [7] [8] /WP | | | | |
| | | | | w/Alarm Contact | NRAS2121FS- [7] [8] /WP | | | | |

NRA Series Circuit Protectors

NRAS (Lever)

Specify a rated current, time delay curve, and rated voltage in place of [7] [8] [9].

Package Quantity: 1

| Internal Circuit | No. of Poles | Terminal Style | Inertia Delay | Flush Plate | Auxiliary Contact Alarm Contact | Part No. | Designation Code | | |
|--------------------------|--------------|----------------|---------------|-------------|---------------------------------|---------------------|--|----------------------------|-------------------|
| | | | | | | | [7] Rated Current | [8] Time Delay Curve | [9] Rated Voltage |
| Series Trip Current Trip | 3 | Tab Terminal | Without | Without | Without | NRAS3100- [7] [8] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | - |
| | | | | | w/Auxiliary Contact | NRAS3111- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS3121- [7] [8] | | | |
| | | | With | Without | Without | NRAS3100F- [7] [8] | | | |
| | | | | | w/Auxiliary Contact | NRAS3111F- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS3121F- [7] [8] | | | |
| | | Screw Terminal | Without | Without | Without | NRAS3100S- [7] [8] | | | |
| | | | | | w/Auxiliary Contact | NRAS3111S- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS3121S- [7] [8] | | | |
| | | | With | Without | Without | NRAS3100FS- [7] [8] | | | |
| | | | | | w/Auxiliary Contact | NRAS3111FS- [7] [8] | | | |
| | | | | | w/Alarm Contact | NRAS3121FS- [7] [8] | | | |
| Relay Trip Voltage Trip | 1 | Tab Terminal | Without | Without | Without | NRAS1500- [9] | - | - | 24V DC |
| | 2 | | | | Without | NRAS2500- [9] | | | |
| | 3 | | | | Without | NRAS3500- [9] | | | |

NRA Series Circuit Protectors

NRAN (Lever)

Specify a rated current, time delay curve, and rated voltage in place of [7] [8] [9].

Package Quantity: 1

| Internal Circuit | No. of Poles | Terminal Style | Inertia Delay | Auxiliary Contact Alarm Contact | Part No. | Designation Code | | |
|--------------------------|----------------|----------------|---------------------|---------------------------------|-------------------|--|----------------------------|-------------------|
| | | | | | | [7] Rated Current | [8] Time Delay Curve | [9] Rated Voltage |
| Series Trip Current Trip | 1 | Tab Terminal | Without | Without | NRAN1100- [7] [8] | | | |
| | | | | w/Auxiliary Contact | NRAN1111- [7] [8] | | | |
| | | | | w/Alarm Contact | NRAN1121- [7] [8] | | | |
| | | With | Without | NRAN1100F- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN1111F- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN1121F- [7] [8] | | | | |
| | Screw Terminal | Without | Without | NRAN1100S- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN1111S- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN1121S- [7] [8] | | | | |
| | | With | Without | NRAN1100FS- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN1111FS- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN1121FS- [7] [8] | | | | |
| Series Trip Current Trip | 2 | Tab Terminal | Without | Without | NRAN2100- [7] [8] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | - |
| | | | | w/Auxiliary Contact | NRAN2111- [7] [8] | | | |
| | | | | w/Alarm Contact | NRAN2121- [7] [8] | | | |
| | | With | Without | NRAN2100F- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN2111F- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN2121F- [7] [8] | | | | |
| | Screw terminal | Without | Without | NRAN2100S- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN2111S- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN2121S- [7] [8] | | | | |
| | | With | Without | NRAN2100FS- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN2111FS- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN2121FS- [7] [8] | | | | |
| Series Trip Current Trip | 3 | Tab terminal | Without | Without | NRAN3100- [7] [8] | | | |
| | | | | w/Auxiliary Contact | NRAN3111- [7] [8] | | | |
| | | | | w/Alarm Contact | NRAN3121- [7] [8] | | | |
| | | With | Without | NRAN3100F- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN3111F- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN3121F- [7] [8] | | | | |
| | Screw Terminal | Without | Without | NRAN3100S- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN3111S- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN3121S- [7] [8] | | | | |
| | | With | Without | NRAN3100FS- [7] [8] | | | | |
| | | | w/Auxiliary Contact | NRAN3111FS- [7] [8] | | | | |
| | | | w/Alarm Contact | NRAN3121FS- [7] [8] | | | | |
| Relay Trip Voltage Trip | 1 | Tab Terminal | Without | Without | NRAN1500- [9] | - | - | 24V DC |
| | 2 | | | Without | NRAN2500- [9] | | | |
| | 3 | | | Without | NRAN3500- [9] | | | |

NRA Series Circuit Protectors

NRAR (Rocker)

Specify a rated current, time delay curve, and indicator rated voltage in place of [7] [8] [10].

Package Quantity: 1

| Illuminated | Internal Circuit | No. of Poles | Terminal Style | Inertia Delay | Auxiliary Contact Alarm Contact | Part No. | Designation Code | | | | | |
|---------------------|--------------------------|---------------------|-----------------|--------------------------|---------------------------------|----------------------------|--|----------------------------|--|--|----------------------------|---|
| | | | | | | | [7] Rated Current | [8] Time Delay Curve | [10] Indicator Rated Voltage | | | |
| Illuminated | Series Trip Current Trip | 1 | Tab Terminal | Without | Without | NRAR1000- [7] [8] - [10] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | 1: Neon 100 to 110V AC 2: Neon 200 to 220V AC 3: LED 4 to 8V DC | | | |
| | | | | | w/Auxiliary Contact | NRAR1111- [7] [8] - [10] | | | | | | |
| | | | | | w/Alarm Contact | NRAR1121- [7] [8] - [10] | | | | | | |
| | | | | With | Without | NRAR1100F- [7] [8] - [10] | | | | | | |
| | | | | | w/Auxiliary Contact | NRAR1111F- [7] [8] - [10] | | | | | | |
| | | | | | w/Alarm Contact | NRAR1121F- [7] [8] - [10] | | | | | | |
| | | | Screw Terminal | Without | Without | NRAR1100S- [7] [8] - [10] | | | | | | |
| | | | | | w/Auxiliary Contact | NRAR1111S- [7] [8] - [10] | | | | | | |
| | | | | | w/Alarm Contact | NRAR1121S- [7] [8] - [10] | | | | | | |
| | | | | With | Without | NRAR1100FS- [7] [8] - [10] | | | | | | |
| | | | | | w/Auxiliary Contact | NRAR1111FS- [7] [8] - [10] | | | | | | |
| | | | | | w/Alarm Contact | NRAR1121FS- [7] [8] - [10] | | | | | | |
| | | | Non-illuminated | Series Trip Current Trip | 1 | Tab Terminal | Without | Without | NRAR1100- [7] [8] | 0.3A 0.5A 0.75A 1A 2A 3A 5A 7.5A 10A 15A 20A 25A 30A | AA BA MA AD MD | - |
| | | | | | | | | w/Auxiliary Contact | NRAR1111- [7] [8] | | | |
| | | | | | | | | w/Alarm Contact | NRAR1121- [7] [8] | | | |
| | | | | | | | With | Without | NRAR1100F- [7] [8] | | | |
| w/Auxiliary Contact | NRAR1111F- [7] [8] | | | | | | | | | | | |
| w/Alarm Contact | NRAR1121F- [7] [8] | | | | | | | | | | | |
| Screw Terminal | Without | Without | | | | NRAR1100S- [7] [8] | | | | | | |
| | | w/Auxiliary Contact | | | | NRAR1111S- [7] [8] | | | | | | |
| | | w/Alarm Contact | | | | NRAR1121S- [7] [8] | | | | | | |
| | With | Without | | | | NRAR1100FS- [7] [8] | | | | | | |
| | | w/Auxiliary Contact | | | | NRAR1111FS- [7] [8] | | | | | | |
| | | w/Alarm Contact | | | | NRAR1121FS- [7] [8] | | | | | | |

NRA Series Circuit Protectors

Internal Circuits

NRAS and NRAN

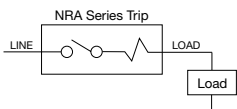
| Series Trip (Current Trip) | Series Trip (Current Trip) With Auxiliary Contact | Series Trip (Current Trip) With Alarm Contact | Relay Trip (Voltage Trip) | |
|----------------------------|---|---|---------------------------|--|
| | | | | |

NRAR • Dashed lines show the illuminated rocker type.

| Series Trip (Current Trip) | Series Trip (Current Trip) With Auxiliary Contact | Series Trip (Current Trip) With Alarm Contact | - | |
|----------------------------|---|---|---|--|
| | | | - | |

- Indicator terminals on the illuminated rocker type
Indicator terminals are available only on the series trip type without auxiliary and alarm contacts.
Auxiliary and alarm contacts are provided with color-coded lead wires as shown in the table at right.

• Wiring Example



| Indicator | | Lead Wire | |
|------------------|-------------|-----------|-------|
| | | A | B |
| Neon (for AC) | 100 to 110V | White | White |
| | 200 to 220V | Black | Black |
| LED (for DC) | Positive | Black | - |
| | Negative | - | White |

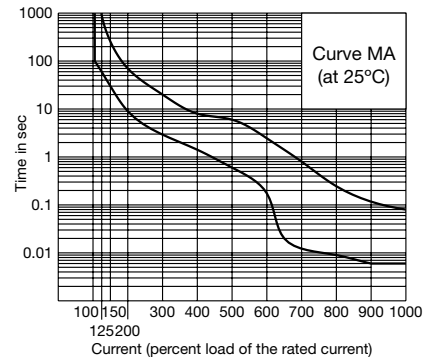
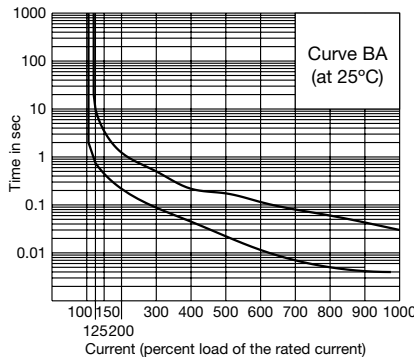
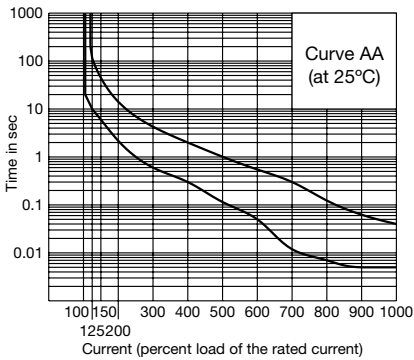
Overcurrent - Time Delay Characteristics (sec at 25°C)

| For | Time Delay Curve | Percent of Rated Current | | | | | | | |
|---------------|------------------|--------------------------|---------|----------|----------|------------|------------|------------|------------|
| | | 100% | 125% | 150% | 200% | 400% | 600% | 800% | 1000% |
| AC 50/60Hz | AA | No Trip | 10-120 | 6-45 | 2.2-15 | 0.3-2 | 0.05-0.55 | 0.007-0.13 | 0.005-0.04 |
| | BA | No Trip | 0.75-10 | 0.45-3.5 | 0.22-1.3 | 0.045-0.22 | 0.012-0.12 | 0.005-0.06 | 0.004-0.03 |
| | MA | No Trip | 60-900 | 30-260 | 9-70 | 1.5-8 | 0.18-2.5 | 0.009-0.25 | 0.006-0.08 |
| DC | AD | No Trip | 10-130 | 6-55 | 2.6-20 | 0.5-3.5 | 0.12-1.4 | 0.008-0.1 | 0.005-0.05 |
| | MD | No Trip | 35-400 | 20-200 | 7-60 | 1.3-8 | 0.2-3 | 0.01-0.25 | 0.006-0.08 |

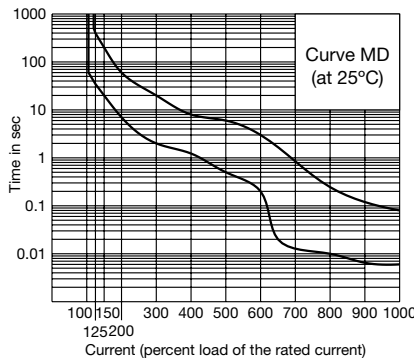
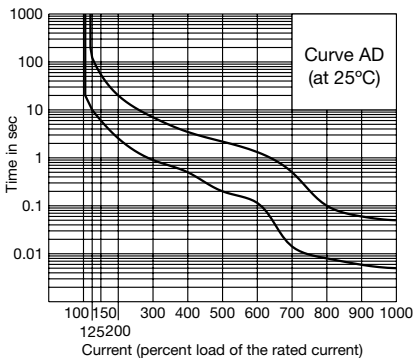
Note: Circuit protectors with inertia delay may have a slightly longer time delay at 600% or higher.

Time Delay Curves

For AC



For DC



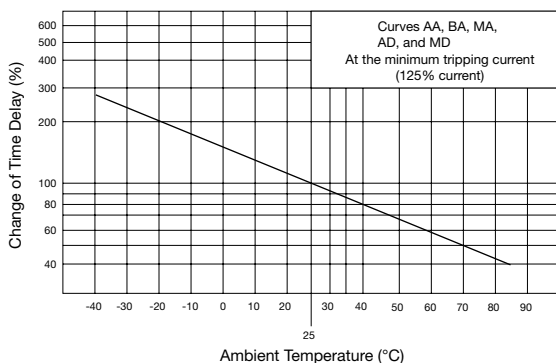
Time Delay Curve and Ambient Temperature

Since the NRA series circuit protectors employ an electromagnetic tripping system, the rated current (trip current) is not affected by the ambient temperatures, but the time delay varies with the oil viscosity in the oil dash pot. Lower oil viscosity at higher temperatures results in shorter delay, whereas at lower temperatures the delay will be prolonged.

The above time delay curves are at 25°C. With reference to these curves, time delays can be corrected.

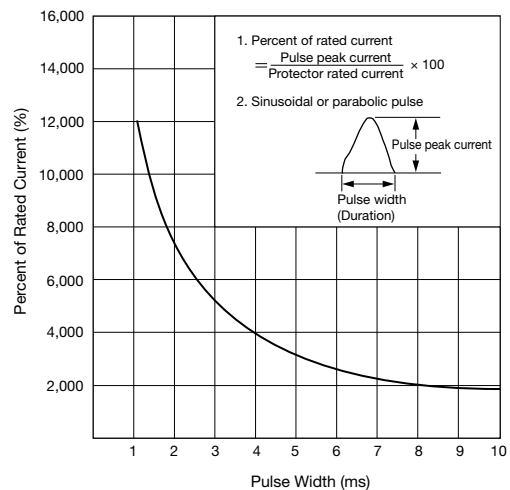
Temperature Correction Curve

The above time delay curves are at 25°C. With reference to the following figure, time delays can be corrected.



Circuit Protector with Inertia Delay

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.



Note: Inertia delay is designed not to trip on a pulse of 20 times the rated current (peak value) for a duration of 8 ms. See the above curve.

All dimensions in mm.

NRA Series Circuit Protectors

Impedance and Coil Resistance

Series Trip (Current Trip) (at 25°C)

| Rated Current | Current Trip | |
|---------------|------------------------------|-----------------------|
| | For AC 50/60Hz Impedance (Ω) | For DC Resistance (Ω) |
| | Curves AA, BA, and MA | Curves AD and MD |
| 0.3A | 9.82 | 9.67 |
| 0.5A | 3.36 | 3.24 |
| 0.75A | 1.49 | 1.45 |
| 1A | 0.92 | 0.90 |
| 2A | 0.21 | 0.21 |
| 3A | 0.092 | 0.09 |
| 5A | 0.036 | 0.036 |
| 7.5A | 0.018 | 0.017 |
| 10A | 0.012 | 0.0012 |
| 15A | 0.0068 | 0.0066 |
| 20A | 0.0048 | 0.0048 |
| 25A | 0.0043 | 0.0043 |
| 30A | 0.0041 | 0.0036 |

Note: Tolerance: ±25% (up to 5A), ±50% (7.5A or higher)

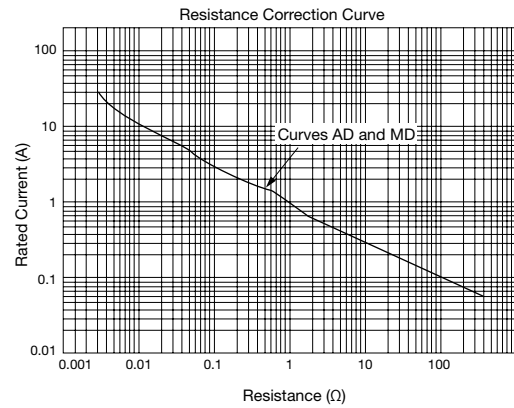
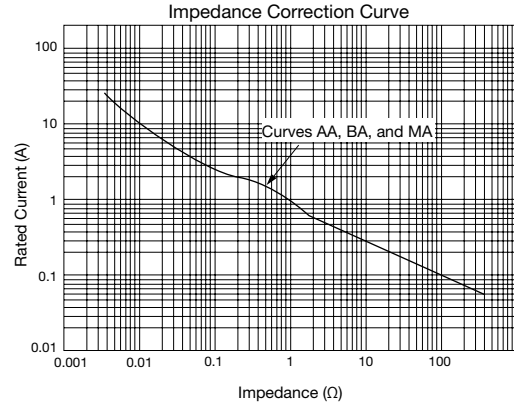
Relay Trip (Voltage Trip) (at 25°C)

| Rated Voltage | For DC Resistance (Ω) |
|---------------|-----------------------|
| 24V DC | 163 |

Note: Tolerance: ±25%

Voltage Drop due to Coil Resistance or Impedance

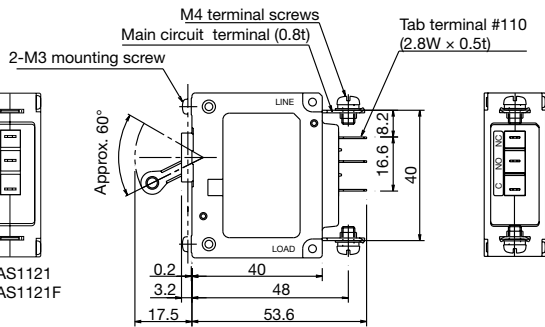
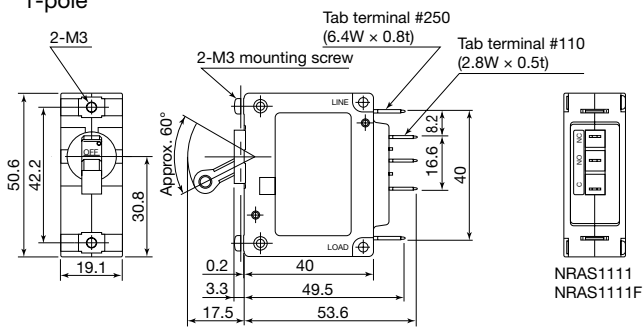
The internal resistance or impedance of a circuit protector tends to be larger for a smaller rated current. Therefore, when circuit protectors of a small rated current are used for a power-supply switch, voltage drop should be taken into consideration. Internal resistance also varies with time delay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



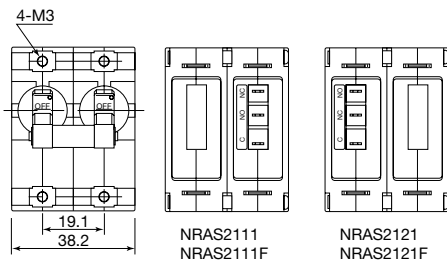
Dimensions

NRAS (Lever)

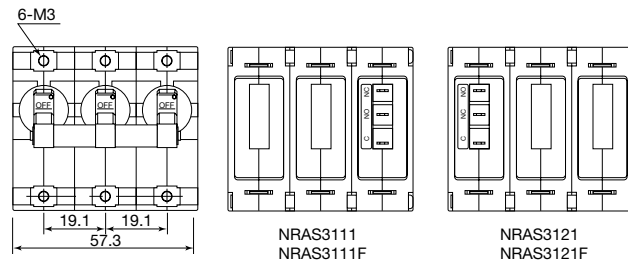
1-pole



2-pole



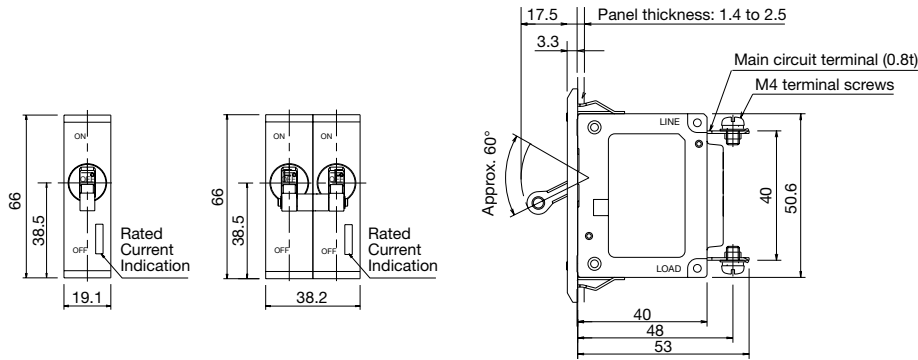
3-pole



All dimensions in mm.

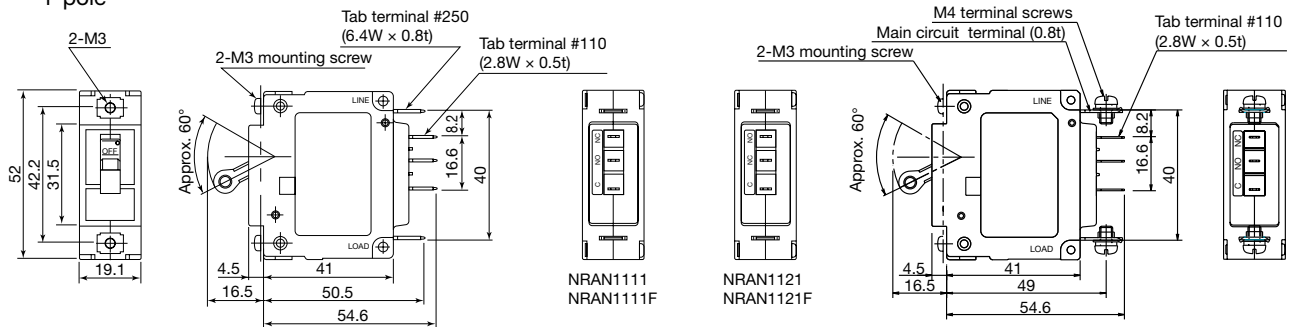
NRA Series Circuit Protectors

NRAS (Lever with Flush Plate)

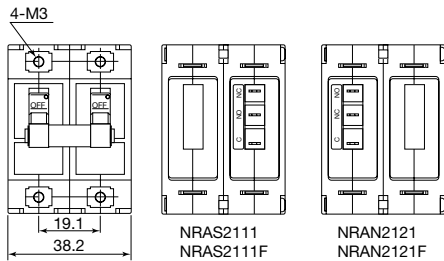


NRAN (Lever)

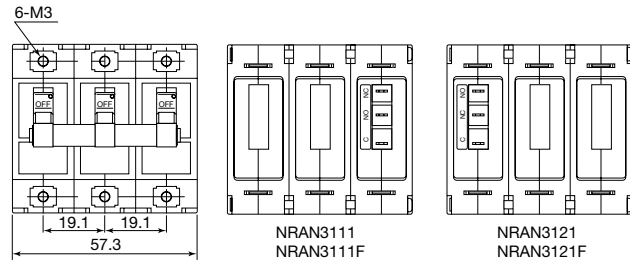
1-pole



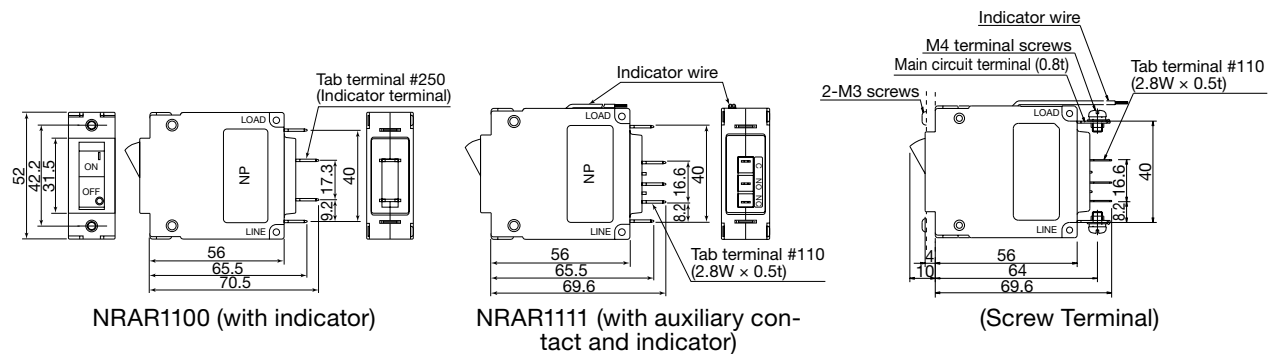
2-pole



3-pole



NRAR (Rocker)



All dimensions in mm.

NRA Series Circuit Protectors

Mounting Hole Layout

| Model | NRAS | NRAS with Flush Plate | NRAN and NRAR |
|---------------|---|---|---|
| Panel Cut-out | <p>Note: See "Accessories" for the mounting hole when the plug-in base is used.</p> | <p>Note: Flush plate is installed on the circuit protector before shipment and cannot be removed.</p> | <p>Note: "Accessories" for the mounting holes when the flush plate or plug-in base is used.</p> |

- M3 screw mounting
- Tightening torque: 0.5 to 0.8 N·m

Panel Mounting Screw Length

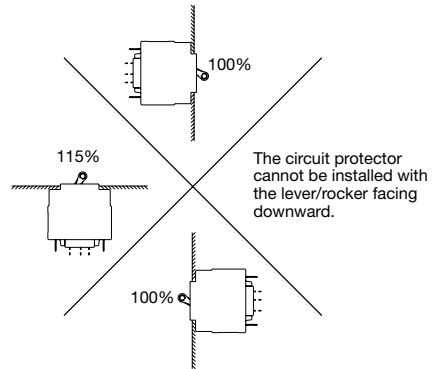
Select the screw length with reference to the following table.

| Panel thickness (mm) | 0.8 | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 | 2.0 | 2.3 | 2.6 | 3.2 |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Without washer | (4) | (4) | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 |
| With plain washer (0.5 mm thick) | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | (7) |
| With spring washer (0.7 mm thick) | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 7 |
| With plain washer (0.5 mm thick) and spring washer (0.7 mm thick) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | (7) | (7) | 8 |

Note: Avoid using screws in the parenthesized lengths whenever possible.

Installation Angle

Overcurrent tripping method is hydraulic magnetic. Minimum operating current varies with installation angle because operating currents are influenced by the weight of movable iron core. With reference to the following figure, correct the minimum operating current.



Instructions

One-pole type circuit protectors cannot be combined to make 2- or 3-pole units due to their characteristics. Order multi-pole types from IDEC.

Recommended Soldering Conditions

Solder the main terminal at a temperature of 390°C within 10 seconds using a 60W soldering iron.

Solder the auxiliary/alarm terminal at a temperature of 350°C within 3 seconds using a 60W soldering iron. (Sn-Ag-Cu lead-free solder is recommended.)

When soldering, do not touch the circuit protector housing, auxiliary and alarm contacts with the soldering iron, and do not bend the terminals or pull the wires.

Check your actual soldering conditions before soldering.

Main Circuit Terminal: Screw terminal

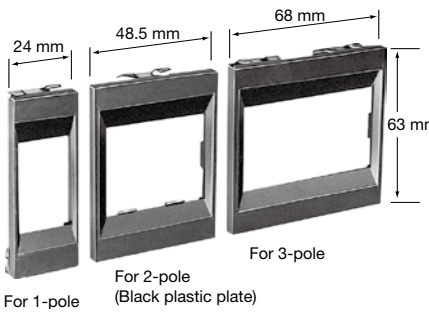
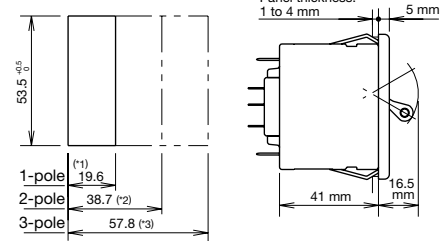

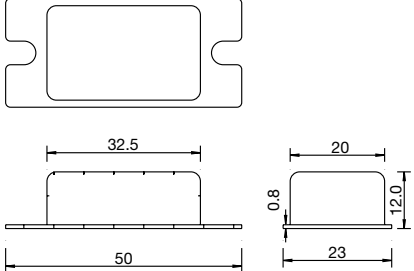
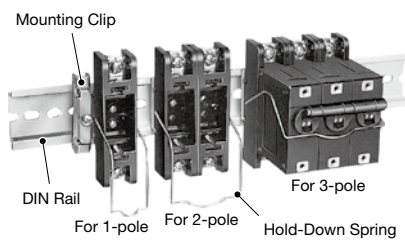
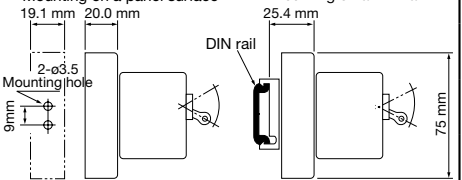
| | |
|------------------------------|-----------------------------|
| Applicable wire size | 1.25 to 5.5 mm ² |
| Applicable crimping terminal | R1.25-4 to R5.5-4 |
| No. of crimping terminal | 1 |
| Tightening torque | 1.0 to 1.2 N·m |

Thrust force (screw pressing load) in screw tightening should be 29N or less. The screw driver may slip out depending on the shape and conditions. In this case, hold the terminal with a tool and tighten the screw by applying a thrust force of about 50N without deforming the terminal.

NRA Series Circuit Protectors

Accessories

Package Quantity: 1

| Shape | Specifications | Part No. | For Use on | Description / Dimensions | |
|---|----------------|------------|--------------|--|--|
| Flush Plate  <p>For 1-pole For 2-pole (Black plastic plate) For 3-pole</p> | For 1-pole | NR31 | NRAN NRAR | Mounting Hole Layout  | |
| | For 2-pole | NR32 | NRAN | | |
| | For 3-pole | NR33 | | | |
| Dustproof Cover  <p>(Silicon rubber)</p> | For 1-pole | NRA-C1 | NRAR |  | |
| Plug-in Base (250V AC/DC · 20A max.)  | Surface Mount | For 1-pole | NUS1 | NRAS NRAN | Surface mount can mount directly on a panel surface with two M3 screws. DIN rail mount can snap onto a DIN rail. <ul style="list-style-type: none"> Applicable only for series trip units. (Not applicable for units with auxiliary and alarm contact or with indicator.) Terminal screw M4, 20A max., with hold-down spring |
| | | For 2-pole | NUS2 | | |
| | | For 3-pole | NUS3 | | |
| | DIN Rail Mount | For 1-pole | NR21 | NRAS NRAN | Tightening torque: 1.0 to 1.3 N·m Mounting on a panel surface: 19.1 mm, 20.0 mm Mounting on a DIN rail: 25.4 mm  |
| | | For 2-pole | NR22 | | |
| | | For 3-pole | NR23 | | |
| | | For 1-pole | NR211 | NRAR | |
| | | | | | |

| Shape | Color | Part No. | Ordering No. | Package Quantity | For Use on | Description |
|---|--------|----------|--------------|------------------|------------|---|
| Color Cap  | Blue | NR5S | NR5SPN05 | 5 | NRAS | Color caps fit onto NRAS circuit protectors for color-coding circuits and improved appearance of the panel. Available in four colors: Blue (7.5B4/8 approx.) Red (7.5R5/14 approx.) White (N9.5 approx.) Yellow (2.5Y9/4 approx.) |
| | Red | NR5R | NR5RPN05 | | | |
| | White | NR5H | NR5HPN05 | | | |
| | Yellow | NR5Y | NR5YPN05 | | | |

Ordering Terms and Conditions

Thank you for using IDEC Products.

By purchasing products listed in our catalogs, datasheets, and the like (hereinafter referred to as "Catalogs") you agree to be bound by these terms and conditions. Please read and agree to the terms and conditions before placing your order.

1. Notes on contents of Catalogs

- (1) Rated values, performance values, and specification values of IDEC products listed in this Catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.
Also, durability varies depending on the usage environment and usage conditions.
- (2) Reference data and reference values listed in Catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.
- (3) The specifications / appearance and accessories of IDEC products listed in Catalogs are subject to change or termination of sales without notice, for improvement or other reasons.
- (4) The content of Catalogs is subject to change without notice.

2. Note on applications

- (1) If using IDEC products in combination with other products, confirm the applicable laws / regulations and standards.
Also, confirm that IDEC products are compatible with your systems, machines, devices, and the like by using under the actual conditions. IDEC shall bear no liability whatsoever regarding the compatibility with IDEC products.
- (2) The usage examples and application examples listed in Catalogs are for reference purposes only. Therefore, when introducing a product, confirm the performance and safety of the instruments, devices, and the like before use. Furthermore, regarding these examples, IDEC does not grant license to use IDEC products to you, and IDEC offers no warranties regarding the ownership of intellectual property rights or non-infringement upon the intellectual property rights of third parties.
- (3) When using IDEC products, be cautious when implementing the following.
 - i. Use of IDEC products with sufficient allowance for rating and performance
 - ii. Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that an IDEC product fails
 - iii. Wiring and installation that ensures the IDEC product used in your system, machine, device, or the like can perform and function according to its specifications
- (4) Continuing to use an IDEC product even after the performance has deteriorated can result in abnormal heat, smoke, fires, and the like due to insulation deterioration or the like. Perform periodic maintenance for IDEC products and the systems, machines, devices, and the like in which they are used.
- (5) IDEC products are developed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use an IDEC product for these applications, unless otherwise agreed upon between you and IDEC, IDEC shall provide no guarantees whatsoever regarding IDEC products.
 - i. Use in applications that require a high degree of safety, including nuclear power control equipment, transportation equipment (railroads / airplanes / ships / vehicles / vehicle instruments, etc.), equipment for use in outer space, elevating equipment, medical instruments, safety devices, or any other equipment, instruments, or the like that could endanger life or human health
 - ii. Use in applications that require a high degree of reliability, such as provision systems for gas / waterworks / electricity, etc., systems that operate continuously for 24 hours, and settlement systems
 - iii. Use in applications where the product may be handled or used deviating from the specifications or conditions / environment listed in the Catalogs, such as equipment used outdoors or applications in environments subject to chemical pollution or electromagnetic interference
If you would like to use IDEC products in the above applications, be sure to consult with an IDEC sales representative.

3. Inspections

We ask that you implement inspections for IDEC products you purchase without delay, as well as thoroughly keep in mind management/maintenance regarding handling of the product before and during the inspection.

4. Warranty

- (1) Warranty period
The warranty period for IDEC products shall be one (1) year after purchase or delivery to the specified location. However, this shall not apply in cases where there is a different specification in the Catalogs or there is another agreement in place between you and IDEC.
- (2) Warranty scope
Should a failure occur in an IDEC product during the above warranty period for reasons attributable to IDEC, then IDEC shall replace or repair that product, free of charge, at the purchase location / delivery location of the product, or an IDEC service base. However, failures caused by the following reasons shall be deemed outside the scope of this warranty.
 - i. The product was handled or used deviating from the conditions / environment listed in the Catalogs
 - ii. The failure was caused by reasons other than an IDEC product
 - iii. Modification or repair was performed by a party other than IDEC
 - iv. The failure was caused by a software program of a party other than IDEC
 - v. The product was used outside of its original purpose
 - vi. Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and Catalogs
 - vii. The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from IDEC
 - viii. The failure was due to other causes not attributable to IDEC (including cases of force majeure such as natural disasters and other disasters)Furthermore, the warranty described here refers to a warranty on the IDEC product as a unit, and damages induced by the failure of an IDEC product are excluded from this warranty.

5. Limitation of liability

The warranty listed in this Agreement is the full and complete warranty for IDEC products, and IDEC shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to an IDEC product.

6. Service scope

The prices of IDEC products do not include the cost of services, such as dispatching technicians. Therefore, separate fees are required in the following cases.

- (1) Instructions for installation / adjustment and accompaniment at test operation (including creating application software and testing operation, etc.)
- (2) Maintenance inspections, adjustments, and repairs
- (3) Technical instructions and technical training
- (4) Product tests or inspections specified by you

The above content assumes transactions and usage within your region. Please consult with an IDEC sales representative regarding transactions and usage outside of your region. Also, IDEC provides no guarantees whatsoever regarding IDEC products sold outside your region.

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