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N-Series

Hydraulic-Magnetic Circuit Breaker

PRODUCT WEBPAGE

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Low Profile Datacom/Telecom Applications

The N-Series is a full-featured hydraulic-magnetic circuit breaker packaged in an innovative low profile design to meet the smaller size requirements of datacom/telecom power distribution units and rack systems. Its features include easy access line and load terminals with UL 489 compliant sliding terminal barriers, an optional current transformer capable of sensing current down to a level of 1%, and a patented flush rocker actuator with push-to-reset guard to protect against inadvertent actuation. The N-Series is available as a one or two pole configuration with ratings from 1 to 30 amps, up to 277VAC for one pole or 120/240VAC for two poles with a max IC of 22,000 amps.

1-2
Poles

1-30
Amps

120/240
VAC

22,000 Amps
Max Interrupting Capacity

Typical Applications

- Power Distribution Units
- Data Servers
- Data Storage

Design Features

CURRENT TRANSFORMER

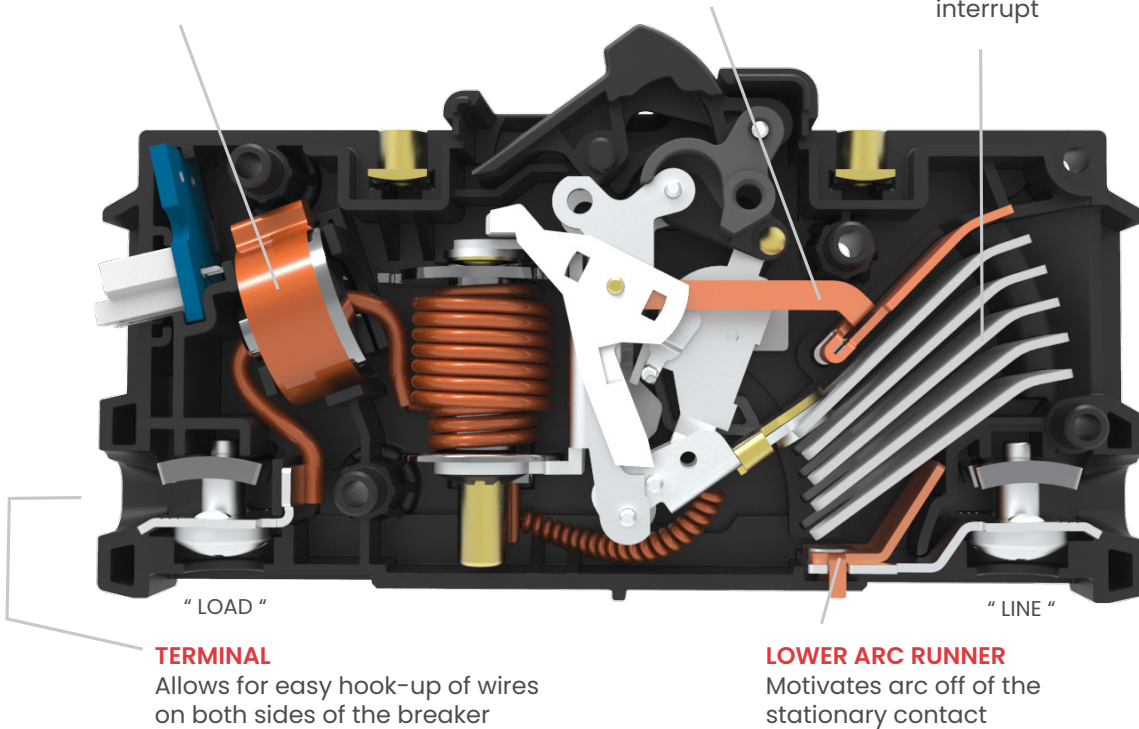
Remote current sensing via Molex® connector

UPPER ARC RUNNER

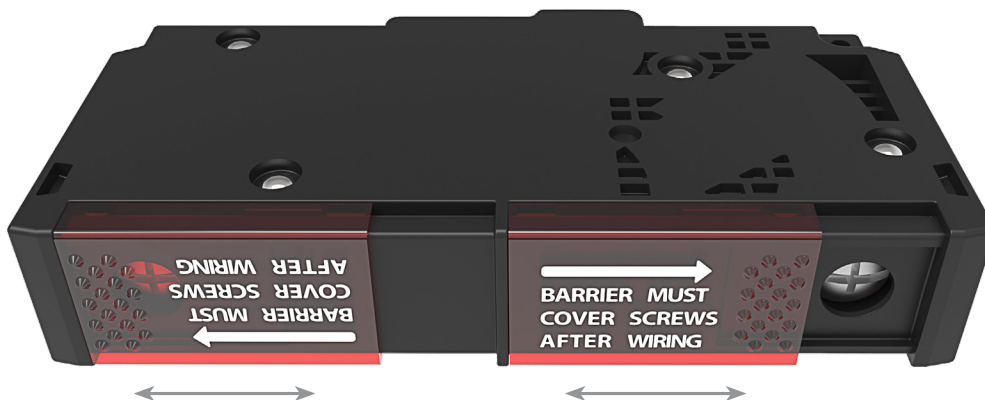
Optional, for 277 VAC rated breakers

GRIDS (5x)

Arc deionizing splitter plates that increase arc voltage for quick interrupt



SLIDING TERMINAL BARRIERS

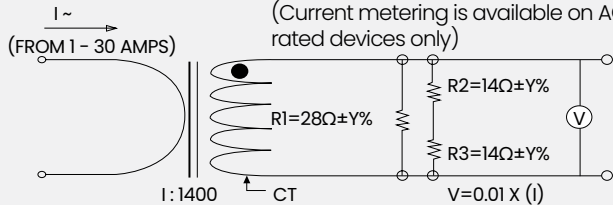


Tech Specs

Electrical

| | |
|---------------------|---|
| Dielectric Strength | UL, CSA-1960V 50/60 Hz for one minute between all electrically isolated terminals. Comply with the 8mm spacing and 3750V 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces and between main circuits of adjacent poles per Publications EN 60950 and VDE 0805 |
|---------------------|---|

| | |
|-----------------|---|
| Current Ratings | <p>Integrated current transformer. Measurement range: 1-30 Amps. Voltage output: 10mV per Amp according to the formula below: $2(\text{Amp}) \leq I \leq 30(\text{Amp})$ $V = 0.01 \times I \pm 2\%$ (with current metering codes 1 or 2) $V = 0.01 \times I \pm 1\%$ (with current metering codes 3 or 4)</p> $\left \frac{\frac{V}{I} - \frac{V_{10}}{I_{10}}}{\frac{V_{10}}{I_{10}}} \right \leq 0.85\%$ <p>Where V=CT output in volts V_{10}=CT output in volts with $I=I_{10}=10$ (A); I=primary current in amperage (50/60 Hz). Phase shift between primary current and CT output is $0.25 \pm 0.25^\circ$. Maximum crest factor of primary current is 1.73. R1 shall be integrated in the breaker. R2 and R3 are provided by end user and external to the breaker. Connection: below Load Terminal. 2-pin connector, Molex® 35362-0250. Mating Connector housing – Molex® PN35507-0200. (Current metering is available on AC rated devices only)</p> |
|-----------------|---|



Note: When current metering code is 1 or 2; Y to equal 1.0
 When current metering code is 3 or 4; Y to equal 0.1

| | |
|-----------------------|--|
| Impedance | See next page |
| Insulation Resistance | Minimum of 100 Megohms @ 500VDC |
| Overload | 50 operations @ 600% of rated current for AC rated devices |
| Interrupt Capacity | See table A |

Mechanical

| | |
|-----------------|---|
| Current Ratings | 10,000 "On-Off" operations @ 6 per minute; with rated current & voltage |
| Trip Free | Trips on overload even when actuator is forcibly held in the "On" position |
| Trip Indication | The operating actuator moves positively to the "Off" position when an overload causes the breaker to trip |

Environmental

| | |
|---------------------|---|
| Environmental | MIL-PRF-55629 and MIL-STD-202G |
| Operating Temp. | -40°C to +85°C |
| Vibration | Withstands 0.06" excursion from 10-55 Hz and 10Gs 55-500 Hz at rated current per MIL-PRF-55629 and MIL-STD-202G, Method 204D, Test Condition A. Instantaneous and ultra-short curves tested at 90% of rated current |
| Shock | MWithstands 50 Gs, 6 ms saw tooth while carrying rated current per MIL-PRF-55629 and MIL-STD-202G, Method 213B, test condition "I". Instantaneous and ultra short curves tested at 90% of rated current |
| Thermal Shock | MIL-PRF-55629 and MIL-STD-202G, Method 107G, Condition A (5-cycles at -55°C to +25°C to +85°C to +25°C |
| Moisture Resistance | MIL-PRF-55629 and MIL-STD-202G, Method 106G, i.e., Ten 24-hour cycles at +25°C to +65°C, 80-98% RH |
| Salt Spray | Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96hrs) |

Physical

| | |
|---------------------------|---|
| Number of Poles | 1 - 2 poles |
| Termination | Wire ready and touch proof wire clamp (See Figure 1). Accepts up to (2) #10 AWG wires per terminal. Designed for use with solid, stranded and flexible stranded wires, with or without ferrule or pin terminals. Also accepts straight fork and flanged fork terminals. |
| Termination Torque | 15-20 in-lbs (Line & Load terminals) |
| Termination Barrier | Integral sliding barrier to comply with spacing requirements (See figure 1) |
| Mounting | Threaded Insert: #6-32 UNC-2B, or M3X0.5-6H B ISO |
| Insert Termination Torque | 7-9 in-lbs |
| Actuator | Rocker, with or without guard (See figures 1, 2, and 4) |
| Internal Circuit Config. | Series Trip |
| Materials | Housing – Glass Filled Polyester Rocker – Nylon Line/Load Terminals – Copper Alloy; Bright Acid Tin Plated |
| Weights | ~107 grams (~3.76 ounces) per pole |
| Standard Color | Housing – Black Rocker – Several (See ordering scheme for colors) |

Tech Specs

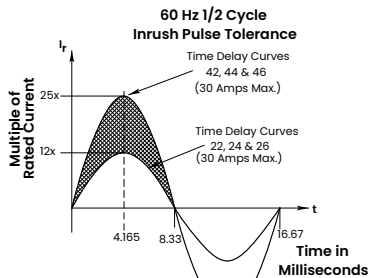
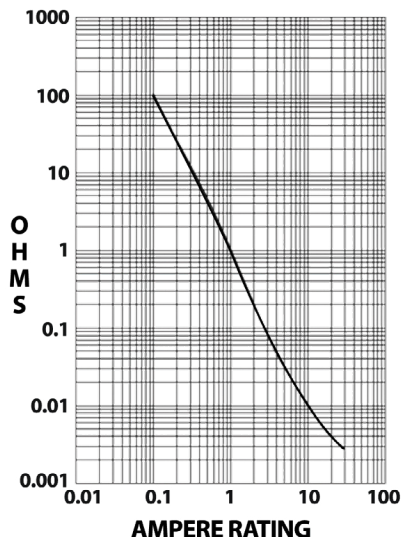
Electrical Tables

Table A: Voltage and Current Ratings

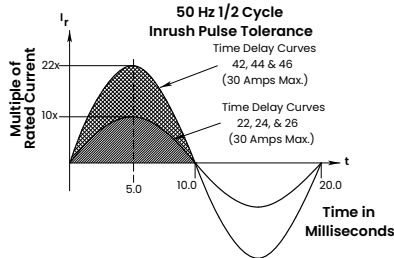
| Electrical Ratings | | | | | | | | |
|--------------------|----------------|-----------------|---------------------------|---------|-----------|------|---------|------|
| Voltage | Current (Amps) | Number of Poles | Interrupt Capacity (Amps) | | | | | |
| | | | UL 489 | | EN60947-2 | | | |
| | | | 1-20 A | 21-30 A | 1-20 A | | 21-30 A | |
| | | | | | Icu | Ics | Icu | Ics |
| 120/240 VAC | 1 - 30 | 2 | 22000 | 5000 | 10000 | 5000 | 10000 | 5000 |
| 240 VAC | 1 - 20 | 1 | 10000 | N/A | 10000 | 5000 | 5000 | 5000 |
| 277 VAC | 1 - 20 | 1 | 10000 | N/A | N/A | | N/A | |

Electrical: Impedance / Resistance

RESISTANCE, IMPEDANCE VALUES
Across Line and Load Terminals



| CURRENT (AMPS) | TOLERANCE (%) |
|----------------|---------------|
| 0.10 - 5.0 | +/- 15 |
| 5.1 - 30.0 | +/- 25 |



Agency Approvals

UL489, cUL, TUV EN60947-2

Ordering Scheme

| | | | | | | | | | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|----|---|-----|---|---|---|----|---|----|----|
| Sample Part Number | N | 1 | 1 | - | B | 0 | - | 24 | - | 620 | - | 1 | 2 | 1 | - | D | G |
| Selection | 1 | 2 | 3 | | 4 | 5 | | 6 | | 7 | | 8 | 9 | 10 | | 11 | 12 |

1. SERIES

N N-Series Circuit Breaker

2. ACTUATOR

1Single Color Low Profile Rocker, Vertical Legend

2Single Color Low Profile Rocker, Horizontal Legend

3Single Color Push To Reset Low Profile Rocker, Vertical Legend

4Single Color Push To Reset Low Profile Rocker, Horizontal Legend

3. POLES

1One

2Two

4. CIRCUIT

B Series Trip (Current)

5. CURRENT METERING

0Without Current Transformer

1¹Integrated Current Transformer, +/- 2%, 1 per unit

2Integrated Current Transformer, +/- 2%, 1 per pole

3^{2,6}Integrated Current Transformer, +/- 1%, 1 per unit

4⁶Integrated Current Transformer, +/- 1%, 1 per pole

6. FREQUENCY & TIME DELAY

2150/60 Hz Ultra Short

4250/60 Hz Short, High-inrush

2250/60 Hz Short

4450/60 Hz Medium, High-inrush

2450/60 Hz Medium

4650/60 Hz Long, High-inrush

2650/60 Hz Long

7. CURRENT RATING (AMPERES)

| CODE | AMPERES | | | |
|------|---------|-----|------|------------------|
| 410 | 1.00 | 440 | 4.00 | 4909.0061515.00 |
| 512 | 1.25 | 445 | 4.50 | 4959.5061616.00 |
| 415 | 1.50 | 450 | 5.00 | 61010.0061717.00 |
| 517 | 1.75 | 455 | 5.50 | 71010.5061818.00 |
| 420 | 2.00 | 460 | 6.00 | 61111.0062020.00 |
| 522 | 2.25 | 465 | 6.50 | 71111.5062222.00 |
| 425 | 2.50 | 470 | 7.00 | 61212.0062424.00 |
| 527 | 2.75 | 475 | 7.50 | 71212.5062525.00 |
| 430 | 3.00 | 480 | 8.00 | 61313.0063030.00 |
| 435 | 3.50 | 485 | 8.50 | 61414.00 |

8. TERMINAL

1Screw Terminal

9. ACTUATOR COLOR & LEGEND

| | | | | |
|----------------|-----|--------|------|--------------|
| Actuator Color | I-O | ON-OFF | Dual | Legend Color |
| White | A | B | 1 | Black |
| Black | C | D | 2 | White |
| Red | F | G | 3 | White |
| Green | H | J | 4 | White |
| Blue | K | L | 5 | White |
| Yellow | M | N | 6 | Black |
| Gray | P | Q | 7 | Black |
| Orange | R | S | 8 | Black |

10. MOUNTING

16-32 x .195 inches Threaded Inserts

2ISO M3 x 5 mm Threaded Inserts

11. APPLICATION RATING

C120/240 VAC (2 Pole only)

D²240 VAC

F³277 VAC

12. AGENCY APPROVAL

AWithout Approvals

GUL 489 Listed

U⁴TUV Certified, IEC 60947-2

3⁵UL 489 Listed, TUV Certified

Notes:

1On multi pole units one current transformer is supplied on the actuator pole

2Available up to 20 amps

3Voltage rating F only available as a 1 pole device at 20 amps maximum

4TUV approval requires dual (I-O, ON-OFF) markings

5Approval Code "3" requires Dual (I-O, ON-OFF) markings on rocker.

6+/-1% tolerance only available when used with +/-0.1% tolerance external burden resistor.

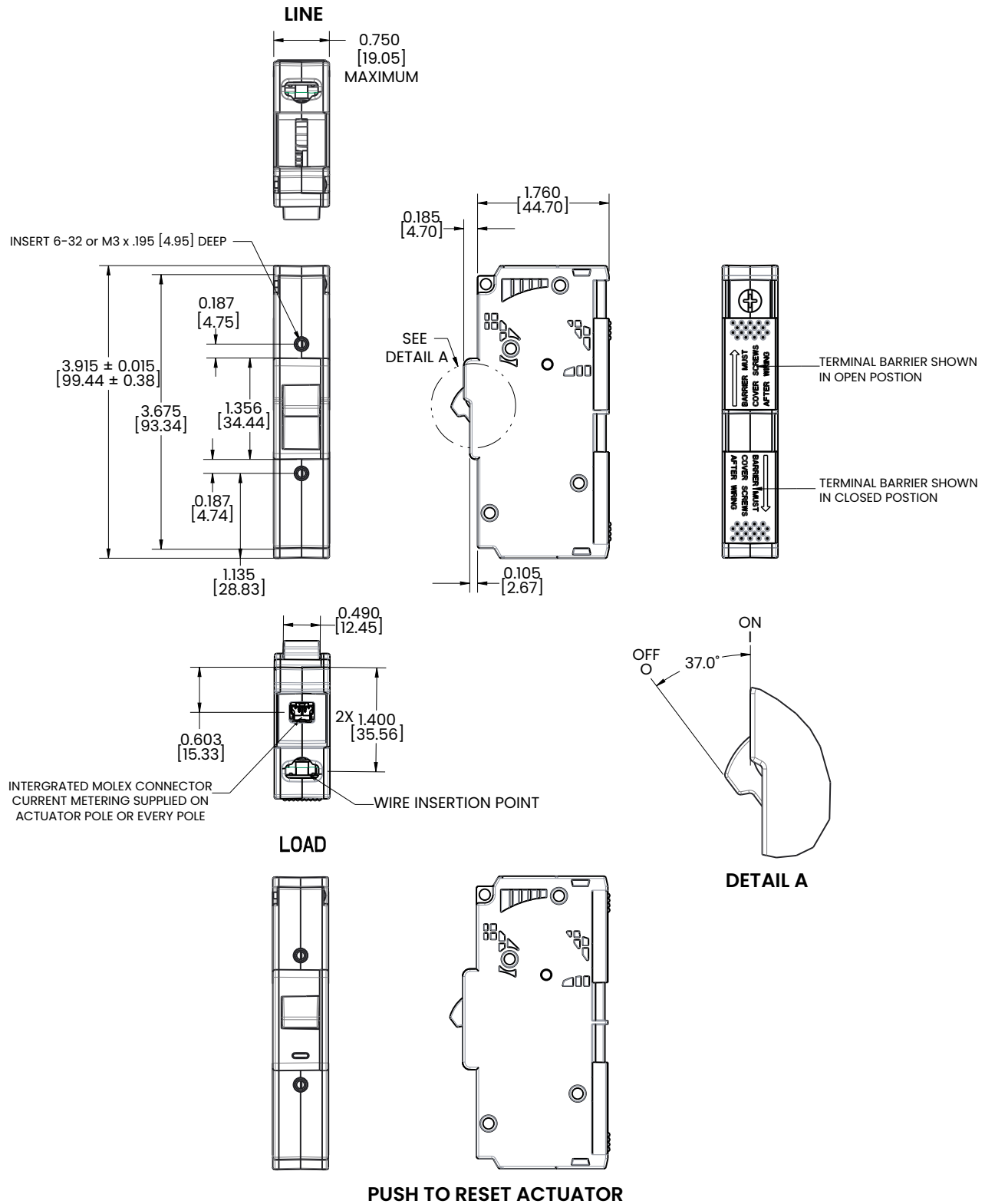
Configure Complete Part Number >

Browse Standard Parts >

Dimensional Specs

inches [millimeters]

Figure 1. N-Series 1-Pole Construction



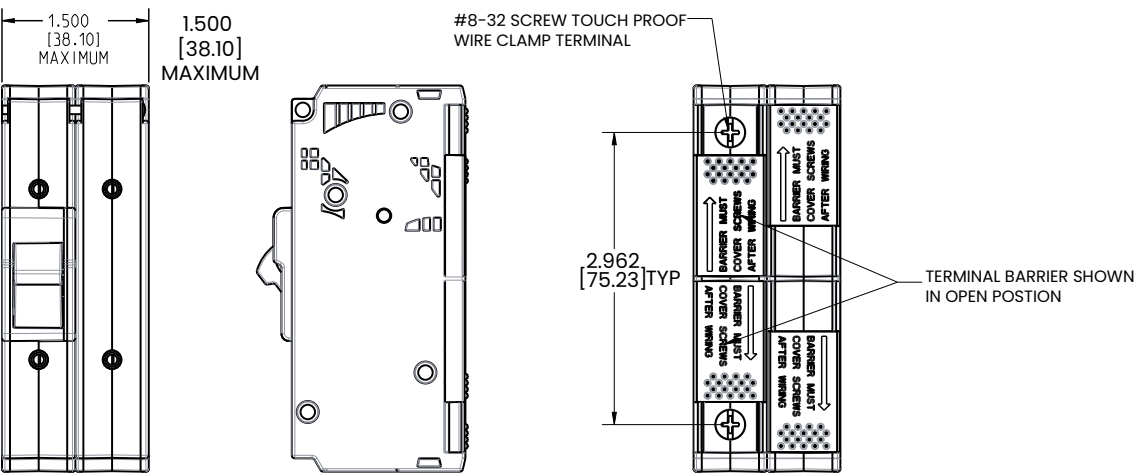
Notes:

1 Tolerance ±.020 [.51] unless otherwise specified.

Dimensional Specs

inches [millimeters]

Figure 2. N-Series 2-Pole Construction



N-Series 3-Pole Construction

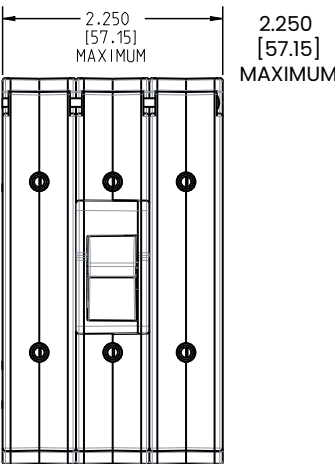
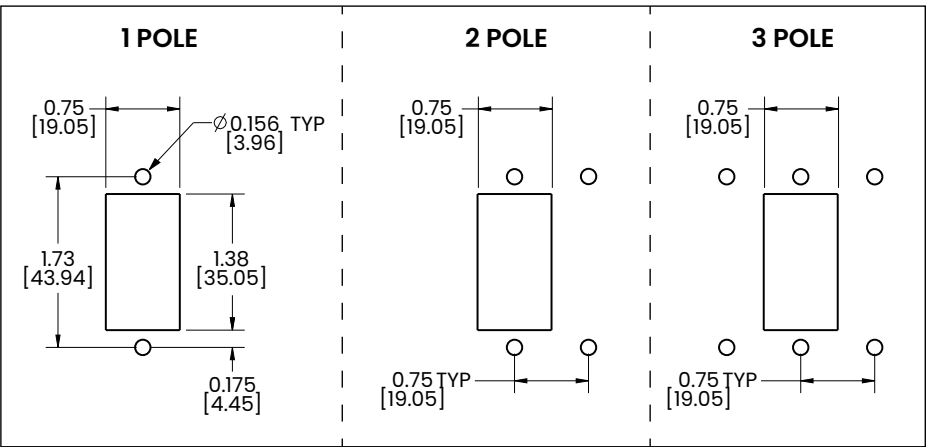


Figure 3. Panel Cutout Details



Notes:
1 Tolerance ± 0.020 [51] unless otherwise specified.

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