N-Series

Hydraulic Magnetic Circuit Breaker

Product Highlights:

- 240 VAC, 277 VAC, 120/240 VAC
- UL 489 Compliant Sliding Terminal Barriers
- 22,000 Amps Max Interrupting Capacity
- 1 – 30 Amps Current Rating
- Optional Current Transformer
- EN60947-2 Certified

Typical Applications:

- Telecom/Datacom
  - Power Distribution Units
  - Data Servers
  - Data Storage

Resources:

Download 3D CAD Files

IGS › STP ›

Watch Product Video

The high-performance N-Series hydraulic-magnetic circuit breaker is ideally suited for the rigors and confined spaces of telecom and datacom power distribution units and rack systems. Its innovative, low profile design features easily accessible load and line terminals and sliding barriers for effortless installation.

The optional current transformer allows for remote outlet metering and monitoring of power usage thus facilitating load adjustments and maximizing efficiency.

A patent pending, flush-rocker actuator and push-to-reset guard offer additional protection against accidental switching.

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Innovative Designs. Powerful Solutions.

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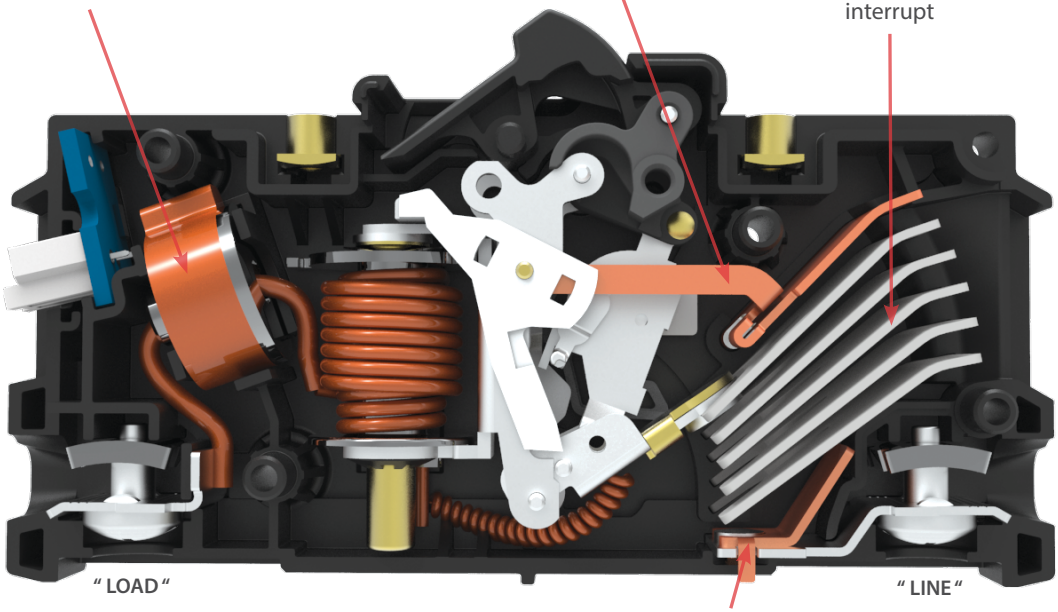
N-Series Circuit Breaker
DESIGN FEATURES

CURRENT TRANSFORMER
Remote current sensing via molex connector

UPPER ARC RUNNER
Optional, for 277 VAC rated breakers

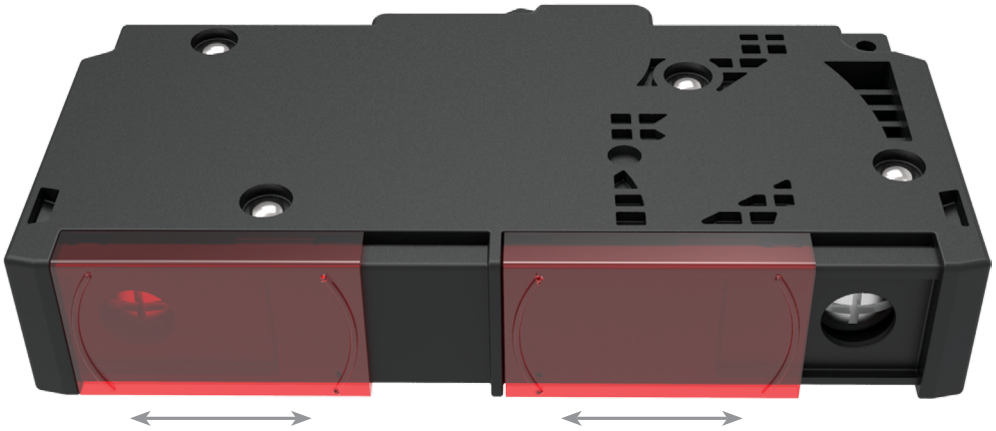
GRIDS (5x)
Arc deionizing splitter plates that increase arc voltage for quick interrupt



TERMINAL
Allows for easy hook-up of wires on both sides of the breaker

LOWER ARC RUNNER
Motivates arc off of the stationary contact

SLIDING TERMINAL BARRIERS



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Electrical Tables

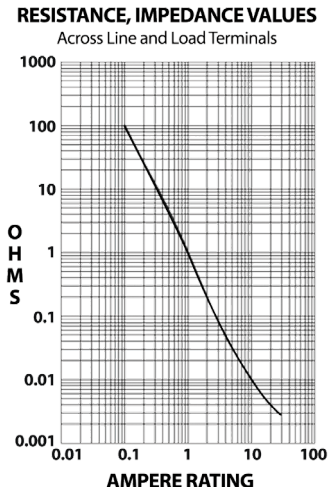
Table 1: Voltage and Current Ratings

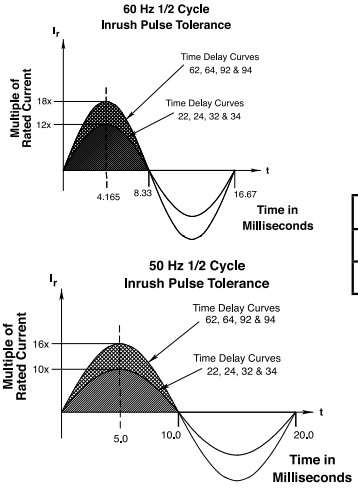
N-SERIES TABLE 1: ELECTRICAL RATINGS						
VOLTAGE	CURRENT (AMPS)	NUMBER OF POLES	INTERRUPT CAPACITY (AMPS)			
			UL 489		EN60947-2 (Ics & Icu)	
			1-20 A	21-30 A	1-20 A	21-30 A
120/240 VAC	1 - 30	2	10000	5000	5000	5000
240 VAC	1 - 20	1	22000	N/A	5000	5000
277 VAC	1 - 20	1	10000	N/A	N/A	N/A

Table 2: Time Delay

N-SERIES TABLE 2: TIME DELAY OPTIONS		
DELAY CURVE NUMBER	VOLTAGE	DESCRIPTION
21	50/60 Hz	Ultrashort
22	50/60 Hz	Short
24	50/60 Hz	Medium
26	50/60 Hz	Long
42	50/60 Hz	Hi-inrush, Short
44	50/60 Hz	Hi-inrush, Medium
46	50/60 Hz	Hi-inrush, Long

Electrical: Impedance / Resistance

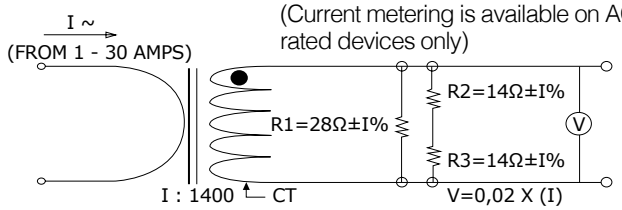




Current (amps)	Tolerance (%)
0.1 - 5.0	+/-15
5.1 - 30.0	+/-25

Electrical

Current Metering	Integrated current transformer. Measurement range: 1-30 Amps. Voltage output: 10mV per Amp according to the formula below: 2 (Amp) ≤ I ≤ 30 (Amp) V = 0.01´ I ± 2% $\left\|\frac{\left[\frac{V}{I}-\frac{V_{10}}{I_{10}}\right]}{\frac{V_{10}}{I_{10}}}\right\| \le 0.85\%$ 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±0.25°. Maximum crest factor of primary current is1.73. 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)



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
Insulation Resistance	Minimum of 100 Megohms @ 500VDC
Overload	50 operations @ 600% of rated current for AC rated devices
Interrupt Capacity	See table 1

Mechanical

Endurance	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 Temperature	-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	Withstands 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 (2 per Pole)
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
Weight	~107 grams (~3.76 ounces) per pole
Standard Color	Housing – Black. Rocker - Several (See ordering scheme for colors)

Agency Approvals

UL 489, cUL, TUV EN60947-2

*Manufacturer reserves the right to change product specification without prior notice.

N	1	1	–	B	0	–	24	–	620	–	1	2	1	–	D	G
1 Series	2 Actuator	3 Poles		4 Circuit	5 Current Metering		6 Frequency & Delay		7 Current Rating		8 Terminal	9 Actuator Color & Legend	10 Mounting		11 Rating	12 Agency Approval

1 SERIES
N N-Series Circuit Breaker

2 ACTUATOR
1 Single Color Low Profile Rocker, Vertical Legend
2 Single Color Low Profile Rocker, Horizontal Legend
3 Single Color Push To Reset Low Profile Rocker, Vertical Legend
4 Single Color Push To Reset Low Profile Rocker, Horizontal Legend

3 POLES
1 One **2** Two

4 CIRCUIT
B Series Trip (current)

5 CURRENT METERING
0 Without Current Transformer
1 Integrated Current Transformer, 1 per unit (1)
2 Integrated Current Transformer, 1 per pole

6 FREQUENCY & DELAY
21 50/60 Hz Ultra Short
22 50/60 Hz Short
24 50/60 Hz Medium
26 50/60 Hz Long
42 50/60 Hz Short, HI-Inrush
44 50/60 Hz Medium, Hi-Inrush
46 50/60 Hz Long, Hi-Inrush

7 CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
410	1.00	**440**	4.00	**490**	9.00	**615**	15.00
512	1.25	**445**	4.50	**495**	9.50	**616**	16.00
415	1.50	**450**	5.00	**610**	10.00	**617**	17.00
517	1.75	**455**	5.50	**710**	10.50	**618**	18.00
420	2.00	**460**	6.00	**611**	11.00	**620**	20.00
522	2.25	**465**	6.50	**711**	11.50	**622**	22.00
425	2.50	**470**	7.00	**612**	12.00	**624**	24.00
527	2.75	**475**	7.50	**712**	12.50	**625**	25.00
430	3.00	**480**	8.00	**613**	13.00	**630**	30.00
435	3.50	**485**	8.50	**614**	14.00		

8 TERMINAL
1 Screw 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
1 6-32 x .195 inches Threaded Inserts
2 ISO M3 x 5 mm Threaded Inserts

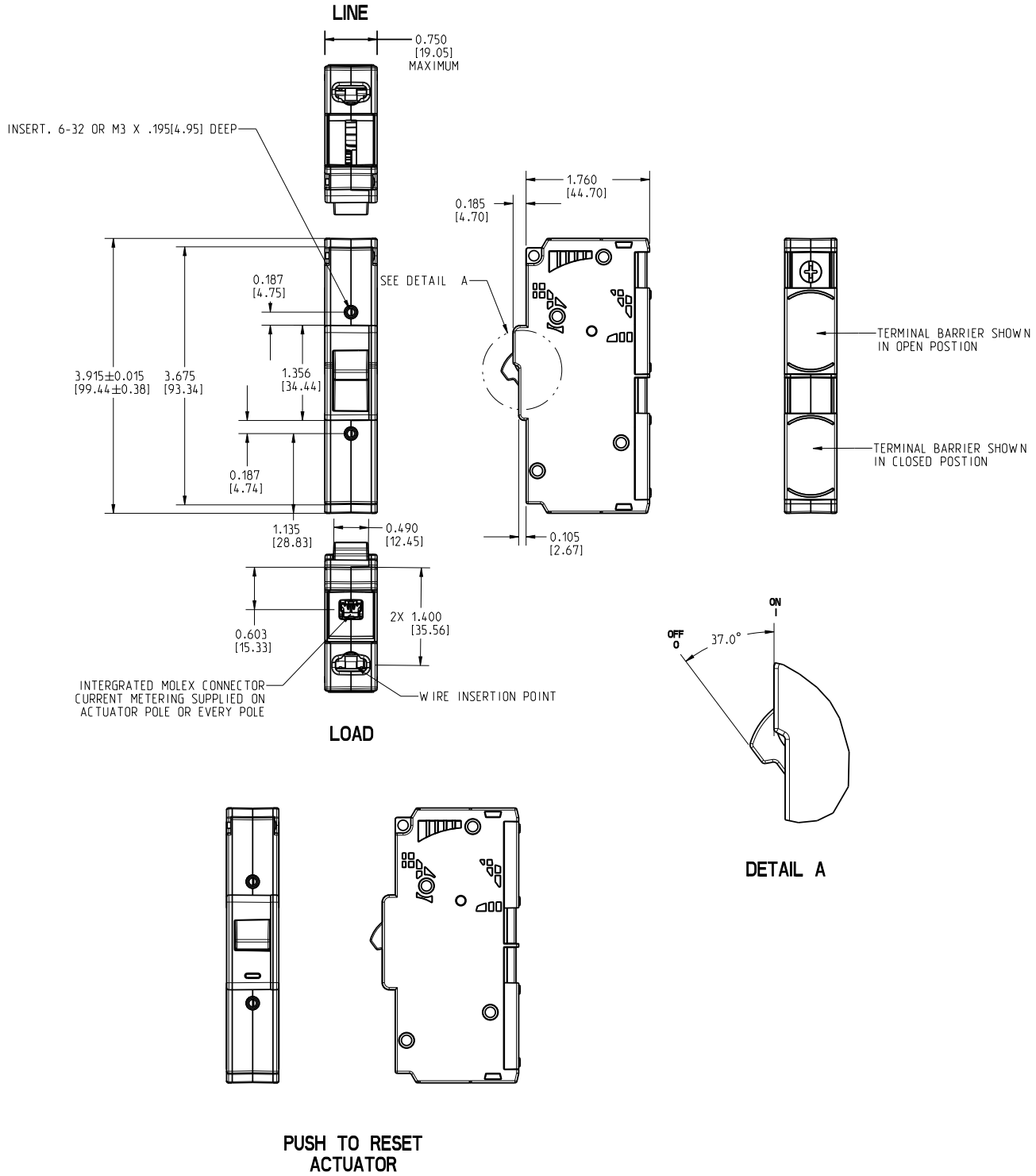
11 APPLICATION RATING
C 120/240 VAC (2 Pole only)
D 240 VAC (2)
F 277 VAC (3)

12 AGENCY APPROVAL
A Without Approvals
G UL 489 Listed
U TUV Certified, IEC 60947-2 (4)
3 UL 489 Listed, TUV Certified (5)

Notes:
1 On multi pole units one current transformer is supplied on the actuator pole
2 Available up to 20 amps
3 Voltage rating F only available as a 1 pole device at 20 amps maximum
4 TUV approval requires I-O or Dual (I-O, ON-OFF) markings on rocker
5 Approval Code “3” requires Dual (I-O, ON-OFF) markings on rocker

Form & Fit

Figure 1. N-Series 1-Pole Construction



Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±.020 [.51] unless otherwise specified.

Form & Fit

Figure 2. N-Series 2-Pole Construction

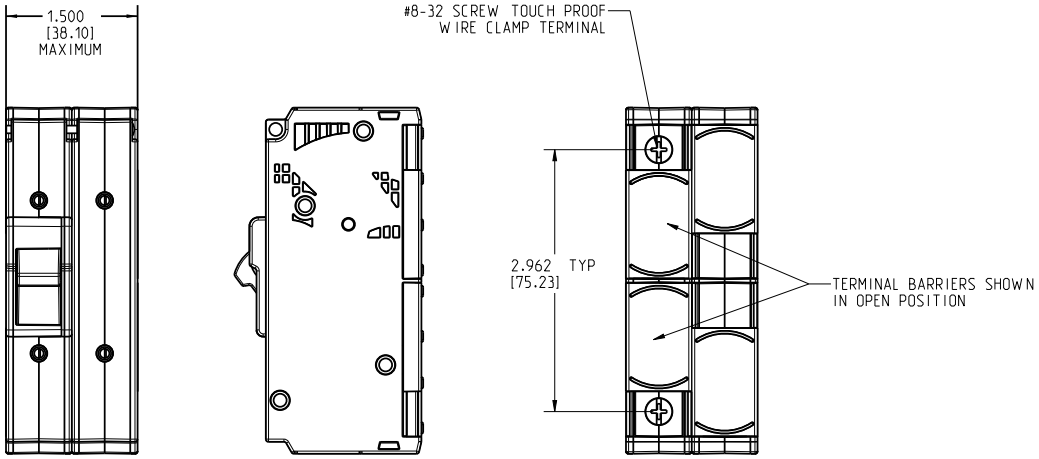
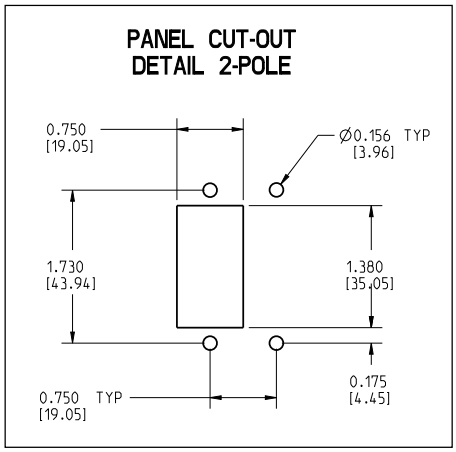


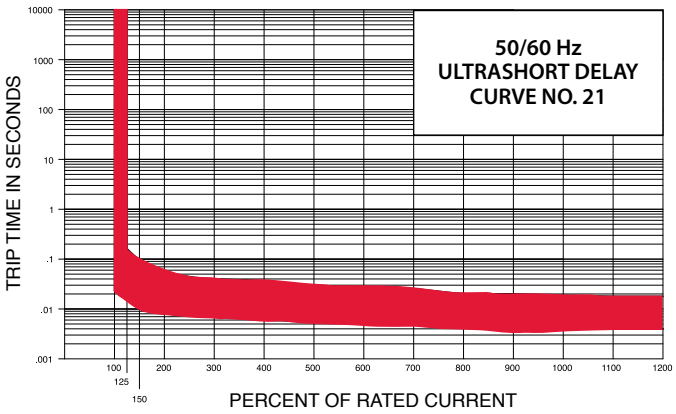
Figure 3. N-Series Panel Cut-Out



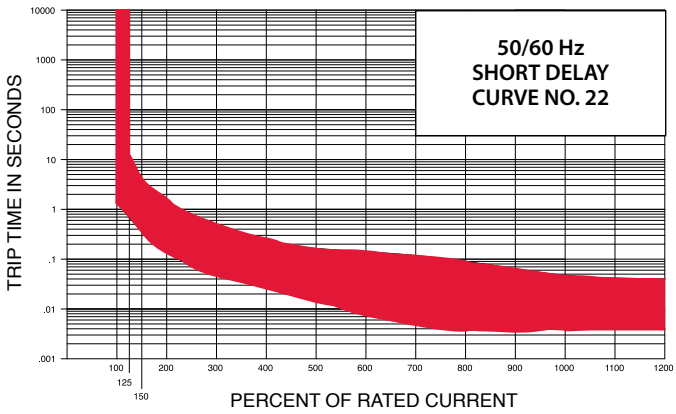
Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±.020 [.51] unless otherwise specified.

Time Delay Curves

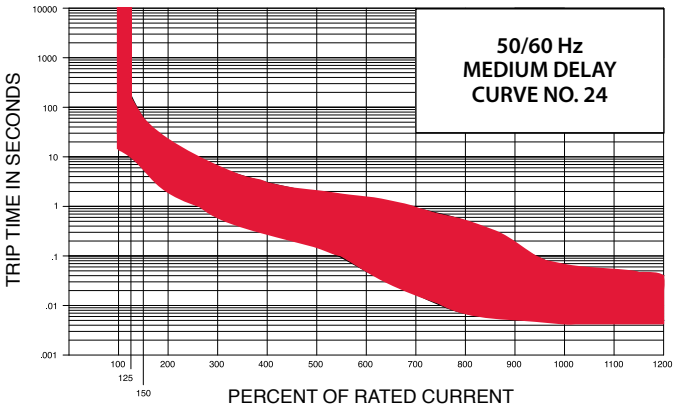
Ultrashort - AC 21



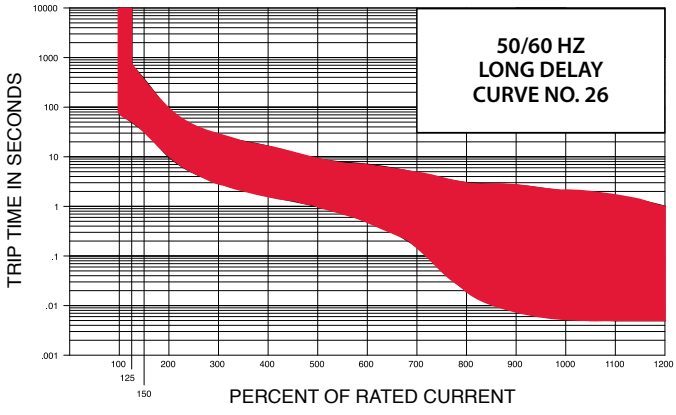
Short - AC 22



Meduim - AC 24

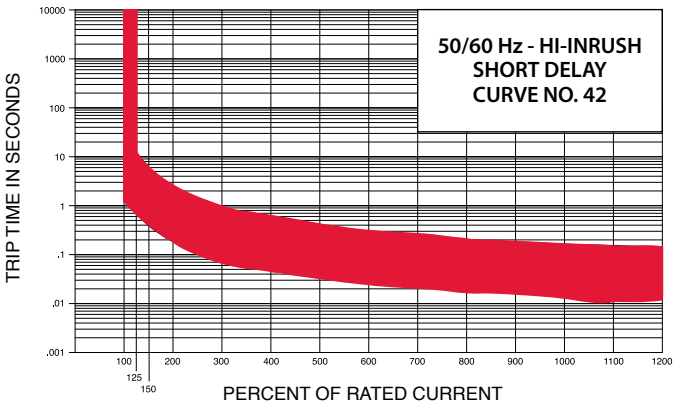


Long - AC 26

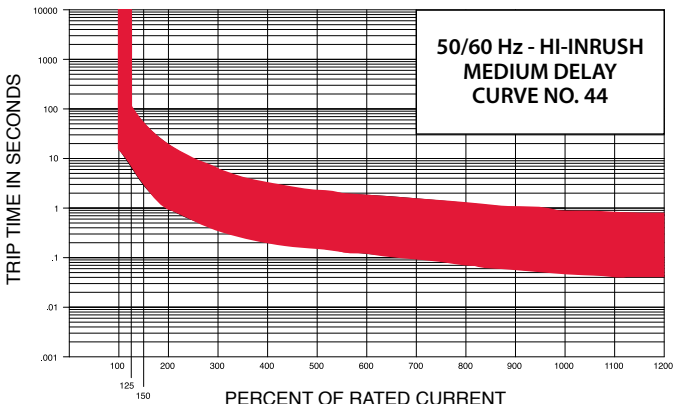


Time Delay Curves

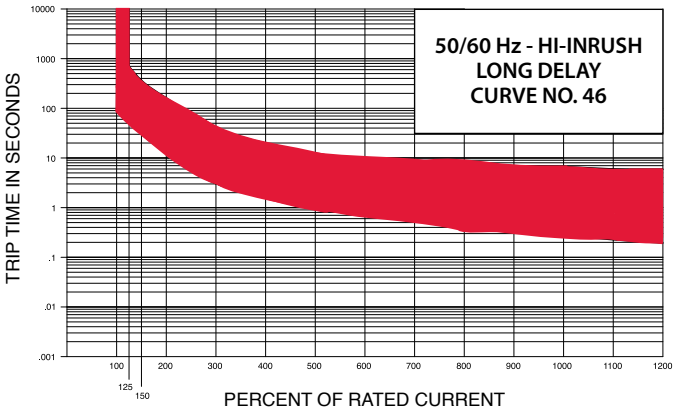
Hi-Inrush Short - AC 42



Hi-Inrush Medium - AC 44



Hi-Inrush Long - AC 46



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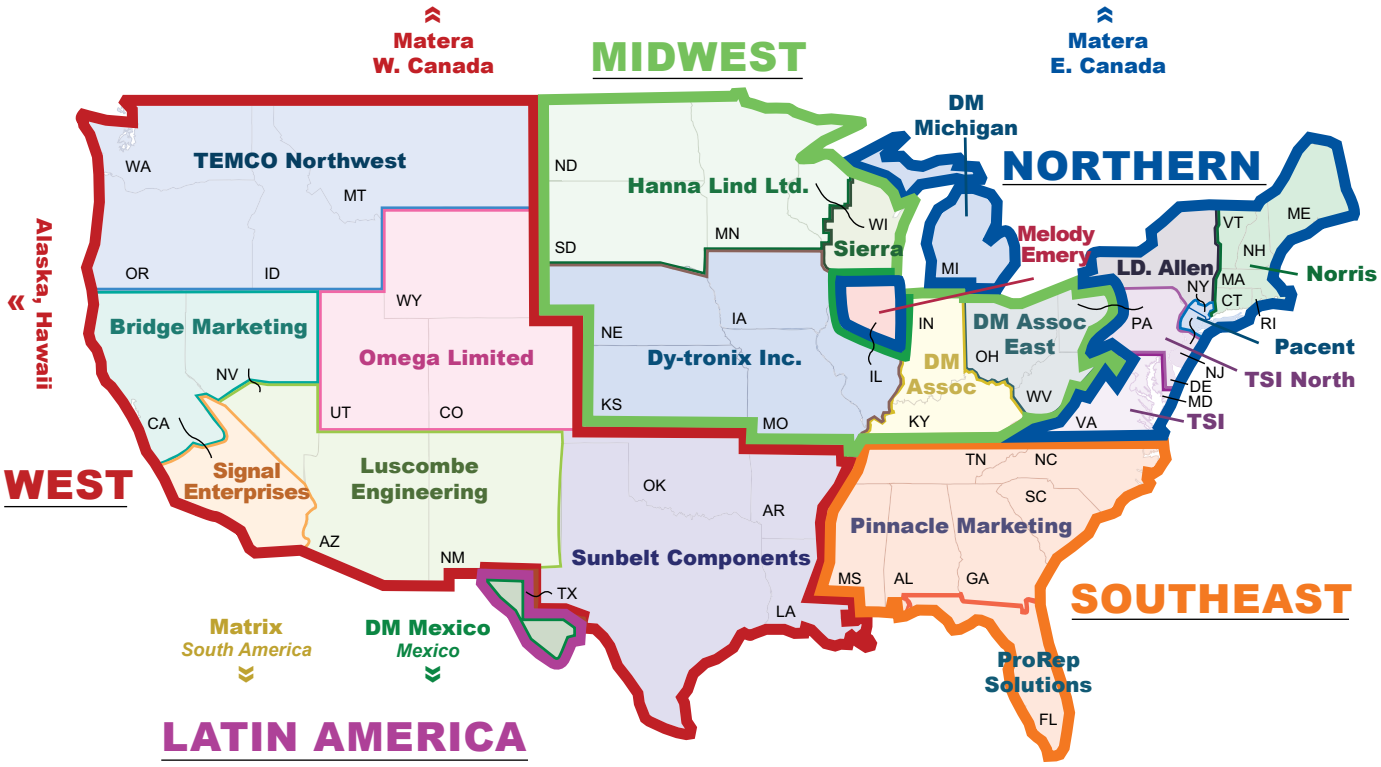

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