

Miniature Circuit Breakers

NOARK Ex9 Series - B1

NOARK Miniature Circuit Breakers offer these advantages: high-performance, small size, exemplary protection, easy DIN rail installation, fast wiring utilizing double terminal technology and ring tongue terminals. The integrated captive connecting screws simplify the connection process.

The NOARK B1H/B1N/B1D series is UL listed for 489 applications, as well as CSA C 22.2 No. 5. The NOARK B1E Series is UL 1077 for Supplemental Protector applications while also complying with both CSA C 22.2 No. 235 and IEC 60947-2 and UL 486 standard for connection terminals which allows the user to apply field wiring directly to the breaker. NOARK MCBs fulfill North American and global approval requirements. Our global circuit breakers are a perfect fit for OEMs building global equipment.



	Branch Circuit Breakers UL 489						Supplementary Protectors UL 1077											
	B1H		B1N		B1D		B1E											
Conformed Standard	UL 489						UL 1077											
Number of Poles	1	2	3	1	2	3	1	2	1	2	3	4	1	2	3	4		
Rated Operational Voltage (V)	480Y/277 Vac		240 Vac	240 Vac	240 Vac	125 Vdc	250 Vdc	480Y/277 Vac; 125 Vdc										
Rated Frequency (Hz)	50/60						50/60											
Rated Current (A)	0.5-32		0.5-63		0.5-63		1-63								80-125			
Instantaneous Tripping Type	B (3-5 In), C (5-10 In), D (10-20 In)						C (7-15 In), D (12-22 In)		B (3-5 In), C (5-10 In), D (10-20 In)				8-12 In					
Interrupting (kA)	120 Vac	10	-	10	-	-	-		10				-					
	120/240 Vac	-						-				-						
	240 Vac	10	10	10	10	10	-		5				5					
	277 Vac	-						-		-				-				
	480 Vac	-						-		-				-				
	480Y/277 Vac	-	10	-	-	-	-		-				-					
	60 Vdc	-		10	10	-	-		10				-					
	60/110 Vdc	-		-		-		-		-				10				
	110 Vdc	-		-		-		-		-				10				
	125 Vdc	-		-	10	-	10		-	10	-		-		-			
220 Vdc	-						-		-				-					
250 Vdc	-						-		-				10					
Inverse Time-Delay Over-Current Release Type	Thermal-Magnetic						Thermal-Magnetic											
Service Life	Electrical	10,000				6,000		6,000				1,500 (80-100A) 1,000 (125 A)						
	Mechanical	20,000				10,000		20,000				8,000 (80-100 A) 7,000 (125 A)						
Protection Degree	IP 20						IP 20											
Wire AWG (mm ²)	Single Wire	18-4 (0.75-25)						18-4 (0.75-25)				4-1/0 (21-53.5)						
	Two Wires	18-6 (0.75-16 / 14-10 (2.5-6)						18-4 (0.75-25)				4-1/0 (21-53.5)						
Operating Temperature Range	-22 °F to 167 °F (-30 °C to +75 °C)						-22 °F to 167 °F (-30 °C to +75 °C)											
Insulation Coordination	Rated Insulation Voltage (V)	500						500										
	Rated Impulse Withstand Voltage (kV)	6						6				8						
Pollution Degree	Class III						Class III											
Over Voltage Category	Class III						Class III											
Mounting	35 mm DIN rail / Flush and surface mount available on B1NQ with the use of additional mounting clips						35 mm DIN rail											
Altitude (ft (m))	Does not exceed 6,561 (2,000)						Does not exceed 6,561 (2,000)											
Atmospheric Conditions	At 68 °F (+20), the relative humidity does not exceed 90% At 104 °F (+40), the relative humidity does not exceed 50%						At 68 °F (+20), the relative humidity does not exceed 90% At 104 °F (+40), the relative humidity does not exceed 50%											

Miniature Circuit Breakers

Specifications

Temperature De-rating

When the ambient temperature slightly changes, please refer to the table below for the Temperature Compensation Coefficient

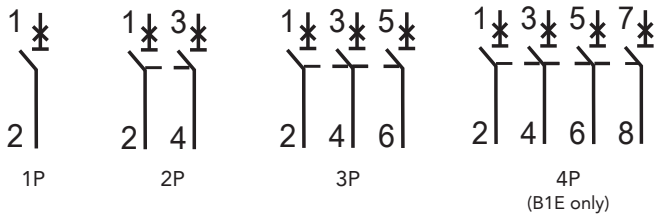
Ambient Temperature °F (°C)	-22 (-30)	-13 (-25)	-4 (-20)	5 (-15)	14 (-10)	23 (-5)	32 (0)	41 (5)	50 (10)	59 (15)	68 (20)	77 (25)	86 (30)	95 (35)	104 (40)	113 (45)	122 (50)	131 (55)	140 (60)	149 (65)	158 (70)	167 (75)							
Rated Amperes (A)	0.5	1.26	1.24	1.22	1.20	1.18	1.16	1.14	1.10	1.08	1.06	1.04	1.00										0.89	0.86	0.83	0.80	0.76	0.72	0.66
	1	1.21	1.19	1.18	1.16	1.14	1.12	1.10	1.08	1.06	1.04	1.02											0.91	0.89	0.87	0.84	0.80	0.77	0.73
	1.6	1.32	1.29	1.28	1.24	1.21	1.19	1.16	1.13	1.10	1.08	1.03											0.85	0.81	0.77	0.73	0.68	0.63	0.58
	2	1.21	1.19	1.18	1.16	1.14	1.12	1.10	1.08	1.06	1.04	1.02											0.91	0.89	0.87	0.84	0.80	0.74	0.68
	3	1.27	1.25	1.22	1.20	1.18	1.15	1.13	1.11	1.08	1.05	1.03											0.88	0.85	0.82	0.78	0.75	0.71	0.67
	4	1.25	1.23	1.21	1.19	1.17		1.12	1.10	1.07		1.03											0.89	0.86	0.83	0.80	0.77	0.73	0.68
	5	1.26	1.24	1.22	1.19	1.17	1.13	1.11	1.09	1.07	1.02	0.90											0.87	0.85	0.82	0.77	0.72	0.68	
	6	1.23	1.21	1.19	1.17	1.15	1.13	1.11	1.09	1.07	1.02	0.90											0.87	0.85	0.82	0.77	0.72	0.68	
	7	1.25	1.23	1.21	1.19	1.17	1.15	1.13	1.1	1.05	1.03	0.9											0.88	0.85	0.75	0.72	0.65		
	8	1.29	1.26	1.24	1.22	1.19	1.17	1.14	1.11	1.09	1.06	1.03											0.88	0.84	0.80	0.76	0.72	0.64	0.56
	10	1.28	1.25	1.23	1.21	1.18	1.16	1.13	1.11	1.08	1.06	1.03											0.88	0.85	0.82	0.78	0.73	0.68	0.62
	13	1.20	1.18	1.16	1.15	1.13	1.11	1.09	1.08	1.06	1.04	1.02											0.92	0.90	0.88	0.85	0.80	0.75	0.68
	15	1.28	1.25	1.23	1.21	1.18	1.16	1.13	1.11	1.08	1.06	1.03											0.88	0.85	0.82	0.78	0.72	0.65	0.58
	16	1.24	1.22	1.20	1.18	1.16	1.14	1.11	1.09	1.07	1.05	1.02											0.90	0.87	0.84	0.81	0.75	0.70	0.64
	20	1.23	1.21	1.19	1.17	1.15	1.13																				1.11	1.09	1.07
	25	1.24	1.22	1.20	1.18	1.16	1.14	1.15	1.12	1.09	1.06	1.03											0.87	0.83	0.79	0.75	0.69	0.64	0.58
	30	1.30	1.27	1.25	1.22	1.20	1.17																				1.15	1.12	1.09
	32	1.23	1.21	1.19	1.17	1.15	1.13	1.11	1.09	1.07	1.04	1.02											0.91	0.88	0.85	0.78	0.73	0.68	0.62
	35	1.31	1.29	1.26	1.23	1.21	1.18	1.15	1.12	1.09	1.06	1.03											0.86	0.82	0.78	0.74	0.69	0.64	0.58
	40																												0.56
	45	1.23	1.21	1.19	1.17	1.15	1.13	1.11	1.09	1.07	1.05	1.02											0.91	0.88	0.85	0.82	0.74	0.66	0.80
	50																										0.75	0.68	0.60
	60	1.29	1.27	1.24	1.22	1.19	1.17	1.14	1.11	1.09	1.06	1.03											0.87	0.84	0.80	0.76	0.70	0.63	0.55
	63	1.27	1.25	1.22	1.20	1.18	1.15	1.13	1.11	1.08	1.05	0.87											0.88	0.85	0.82	0.78	0.72	0.65	0.57

Miniature Circuit Breakers Product Selection Guide

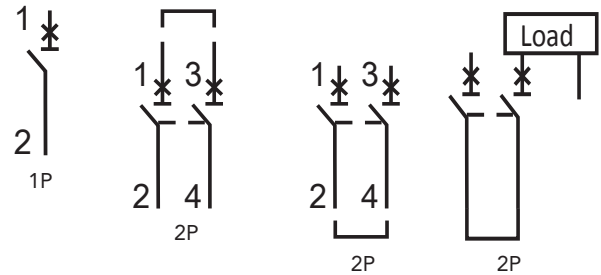
B1	N	1	C	20	R
NOARK Ex9 Series - B1	Standard	Poles	Trip Curves	Rated Current	Terminal Code
	N: 240 Vac/125 Vdc UL 489 Listed	1: 1 Pole	B: 3~5 In	B1H: 0.5~32A	Blank: Box Lugs are Standard
	H: 480Y/277 Vac; UL 489 Listed	2: 2 Pole	C: 5~10 In 7~15 In (B1D Only)	B1N: 0.5~63A	R: Ring Tongue Terminal (UL 489 only)
	D: 125 Vdc (1P)/250 Vdc (2P) UL 489 Listed	3: 3 Pole	D: 10~20 In 12~22 In (B1D Only)	B1E: 1~125A	
	E: 480Y/277 Vac; UL 1077 Recognized	4: 4 pole (UL 1077 only)	P: 8~12 In (B1E80-125A only)	B1D: 0.5~63 A	

Wiring Diagram

AC Connection

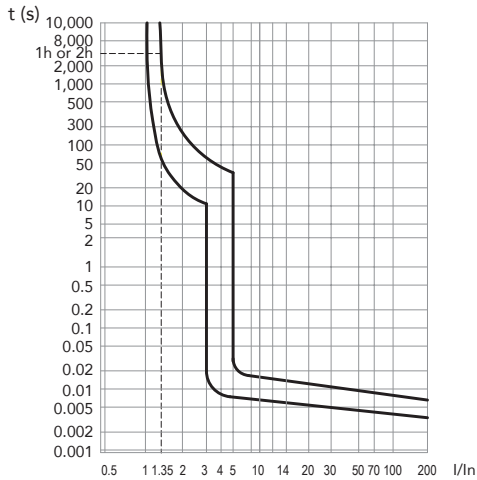


DC Connection

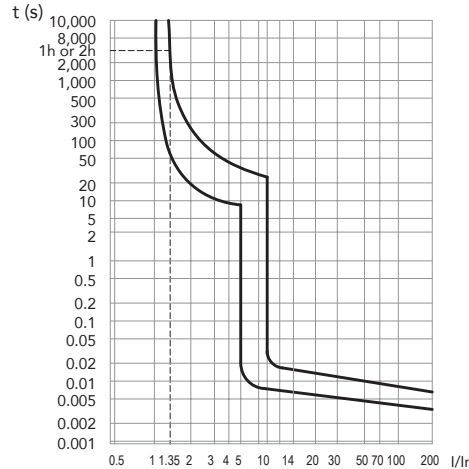


Miniature Circuit Breakers Trip Curves and Packaging Information

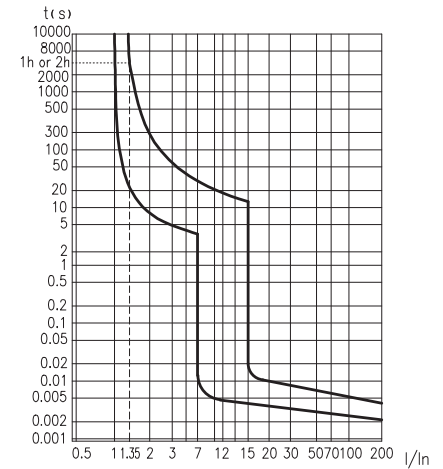
B Curve
(3~5 In)



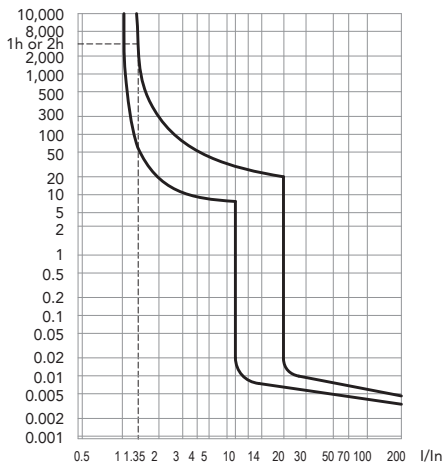
C Curve
(5~10 In)



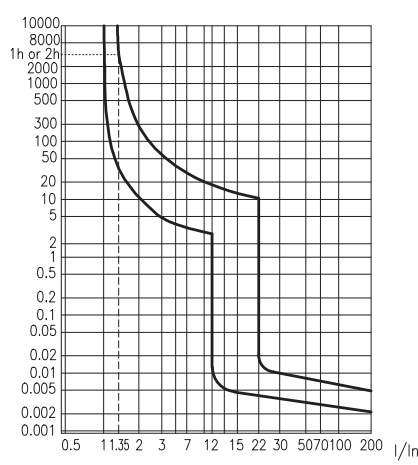
C Curve
(7~15 In, B1D only)



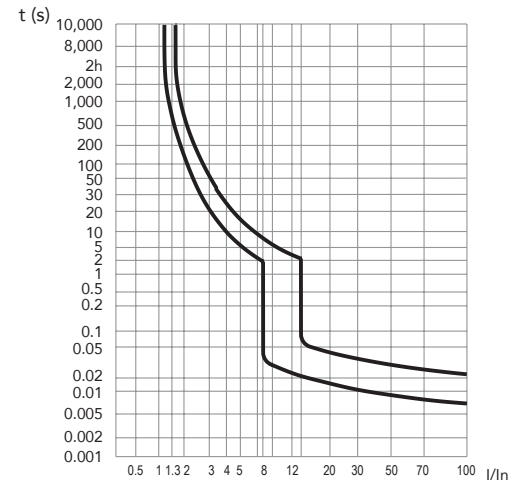
D Curve
(10~20 In)



D Curve
(12~22 In, B1D only)



Curve
(8~12 In B1E 80~125A only)



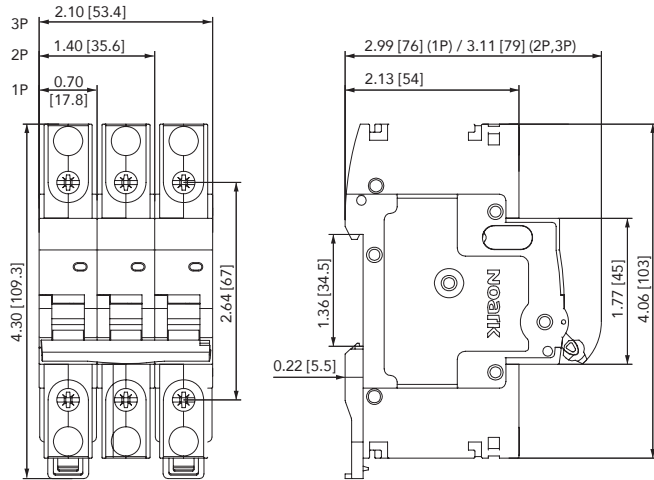
Packaging Information

UL 489				UL 1077 1-63A			UL 1077 80-125A		
Number of Poles	Unit Weight lb (g):	Pack Unit Pieces	Full Pack Pieces	Unit Weight lb (g):	Pack Unit Pieces	Full Pack Pieces	Unit Weight lb (g):	Pack Unit Pieces	Full Pack Pieces
1 pole	0.31(140)	12	108	0.29 (130)	12	144	0.35 (158)	12	108
2 pole	0.62 (281)	6	54	0.54 (245)	6	72	0.7 (318)	6	54
3 pole	0.93 (422)	4	36	0.82 (370)	4	48	1.04 (473)	4	36
4 pole	-	-	-	1.06 (480)	3	36	1.38 (627)	3	27

Miniature Circuit Breakers Dimensions

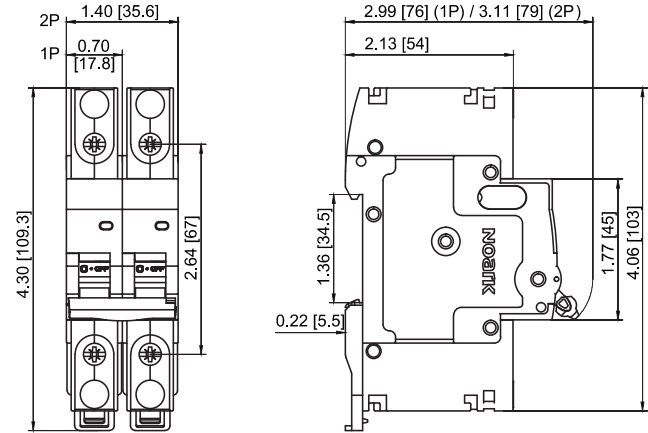
B1H/N 1P/2P/3P

Unit: in. [mm]



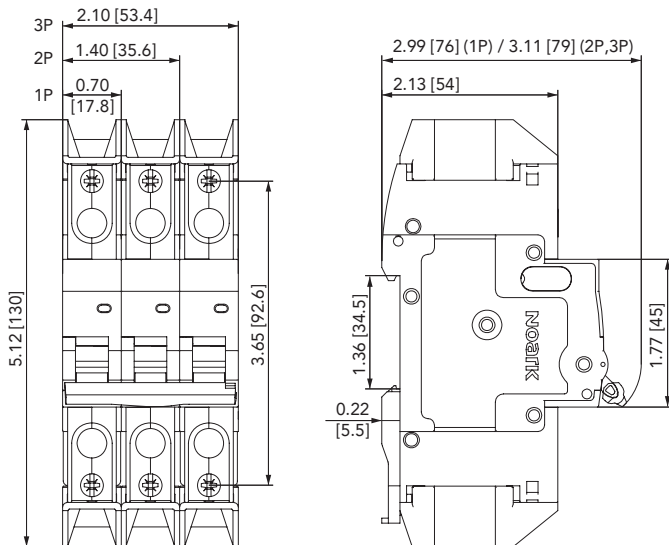
B1D 1P/2P

Unit: in. [mm]



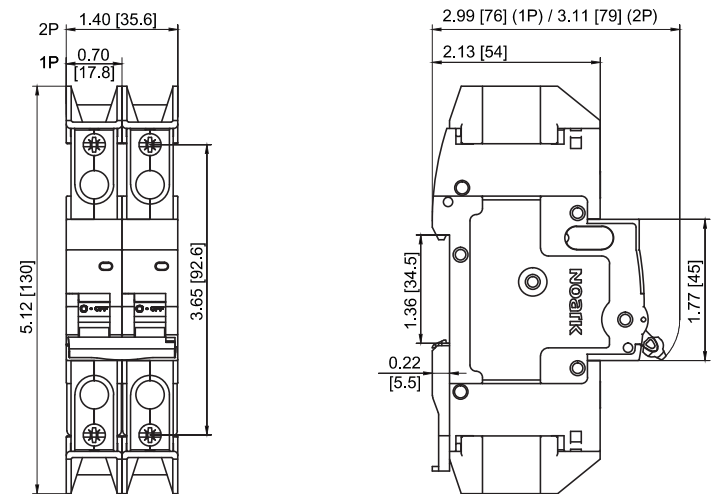
B1H/N with Ring Tongue Terminal 1P/2P/3P

Unit: in. [mm]



B1D with Ring Tongue Terminal 1P/2P

Unit: in. [mm]

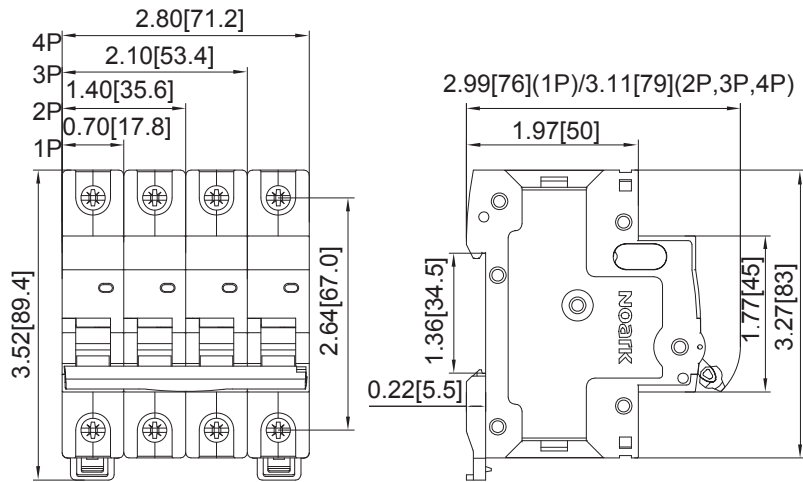


Miniature Circuit Breakers Dimensions

B1E - 1~63 A

1P/2P/3P/4P

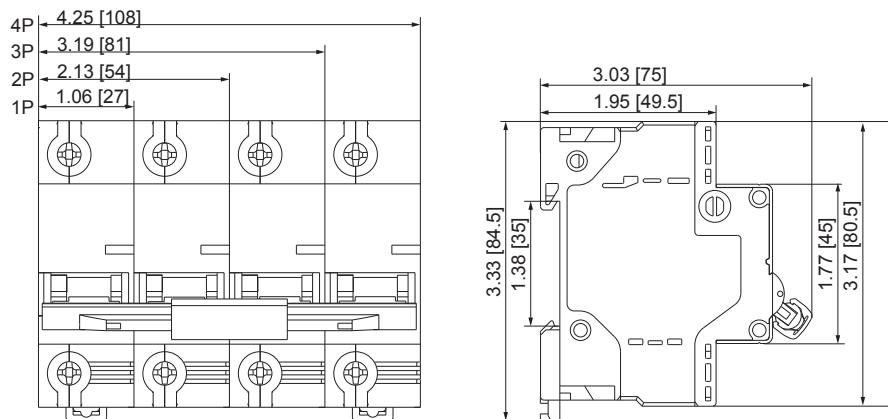
Unit: in. [mm]



B1E - 80~125 A

1P/2P/3P/4P

Unit: in [mm]



Miniature Circuit Breakers Accessory Specifications

		UL 489						
		B1H/B1N/B1D						
UL File Number	E355392							
Auxiliary Contact and Alarm Contact (Signal Contact)								
Rated Current	Voltage	480 Vac	277 Vac	240 Vac	250 Vdc	125 Vdc	48 Vdc	24 Vdc
(Available for Each Contact Incorporated in Any Accessory)	NO/NC	3A	3A	6A	0.5A	1A	2A	6A
Auxiliary Contacts	1NO+1NC							
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire							
Tightening Torque	9 lb. in (1.0 Nm)							
Reference Stripping Length	0.3 in (7 mm)							
Shunt Trip								
Rated Control Voltage	110-415 Vac / 110-130 Vdc; 48-60 Vac/dc; 12-24 Vac/dc							
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire							
Tightening Torque	9 lb. in (1.0 Nm)							
Reference Stripping Length	0.3 in (7 mm)							
Auxiliary Contacts	1NO+1NC/ No Auxiliary Contact							
Under-Voltage Release								
Rated Control Voltage	24 Vac; 48 Vac/dc							
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire							
Tightening Torque	9 lb. in (1.0 Nm)							
Reference Stripping Length	0.3 in (7 mm)							
Auxiliary Contacts	1NO/1NC/ No Auxiliary Contact							
Ring Tongue Terminal								
Max Rated Current	40A							
	Ring or fork shaped lug							
Max Width of Wire	12.2 mm							
Max Cable	6 AWG							

Miniature Circuit Breakers

Accessory Specifications

UL 1077

B1E

UL File Number	E355391				
Auxiliary Contact and Alarm Contact (Signal Contact)					
Rated Current	Voltage	250 Vdc	125 Vdc	48 Vdc	24 Vdc
(Available for Each Contact Incorporated in Any Accessory)	NO/NC	0.5A	1A	2A	6A
Auxiliary Contacts	1NO+1NC				
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire				
Tightening Torque	9 lb. in (1.0 Nm)				
Reference Stripping Length	0.3 in (7 mm)				
Shunt Trip					
Rated Control Voltage	110-415 Vac / 110-130 Vdc; 48-60 Vac/dc; 12-24 Vac/dc				
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire				
Tightening Torque	9 lb. in (1.0 Nm)				
Reference Stripping Length	0.3 in (7 mm)				
Auxiliary Contacts	1NO+1NC/ no aux contacts				
Under-Voltage Release					
Rated Control Voltage	24 Vac; 48 Vac/dc				
Wiring	18-14 AWG (0.5-4 mm ²); 140/167°F (60/75°C) Cu wire				
Tightening Torque	9 lb. in (1.0 Nm)				
Reference Stripping Length	0.3 in (7 mm)				
Auxiliary Contacts	1NO/1NC/No Auxiliary Contact				

Miniature Circuit Breakers Accessory Product Selection Guide

AL31

Description

AL31: Alarm Switch (Signal Contact)

AX31: Auxiliary Contact

11

Auxiliary Contact

10: 1NO (Option for UVT)

N

Device Category

N: UL 489

U: UL 1077

SHT31

Description

UVT31: Under-Voltage Trip

SHT31: Shunt Trip

11

Auxiliary Contact

01: 1NC (Option for UVT)

10: 1NO (Option for UVT)

11: 1NO+1NC
(Standard for AL/AX/SHT)

Blank: No Auxiliary Contact

N

Device Category

N: UL 489

U: UL 1077

A

Rated Voltage

A: 110~415 Vac,
110~130 Vdc
240 Vac

B: 48 Vac/dc

C: 12~24 Vac/dc

ERH31

Description

ERH31: Extend Rotary Handle

* Not UL listed

* Used with 2/3/4 pole

L

Position

L: 10 in (254 mm)
shaft, with Door
Interlock

S: 6 in (152.4 mm)
shaft, without
Door Interlock

1

Color

1: Grey/Green

2: Red/Yellow

RTT31

Description

RTT31: Ring Tongue Terminal
(UL 489)

LK31: Padlock (UL 489)

N



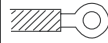

Device Category

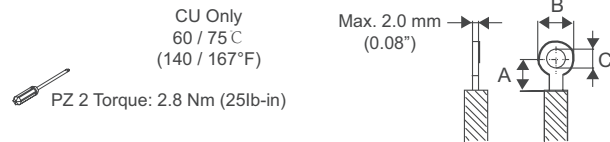
N: UL 489

Miniature Circuit Breakers Optional Terminals



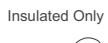
Ring Tongue Terminal

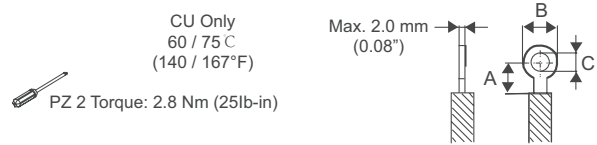
UL 489 only

Only  LISTED or  Ring Cable Lugs	Rated Voltage 480Y/277 Vac	Insulated Only 	A Max. 11.0 mm (0.43")	B Max. 12.2 mm (0.48")	C Suitable for M5 (0.20")
	Rated Voltage 240/240 Vac	Insulated Only 	A Max. 14.0 mm (0.55")	B Max. 12.2 mm (0.48")	C Suitable for M5 (0.20")



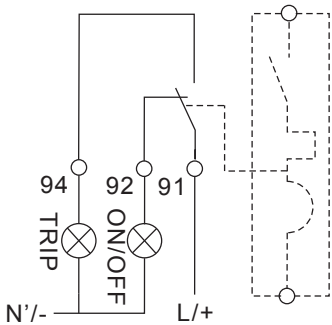
B1D only

Only  LISTED or  Ring Cable Lugs	Insulated Only 	A Max. 14.0 mm (0.55")	B Max. 12.2 mm (0.48")	C Suitable for M5 (0.20")
		CU Only 60 / 75 C (140 / 167°F)		

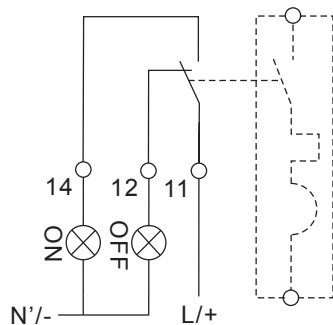


Accessory Connection Diagrams

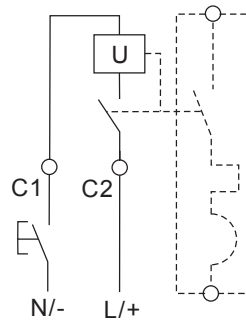
AL3111



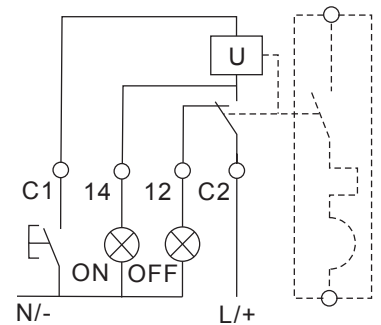
AX3111



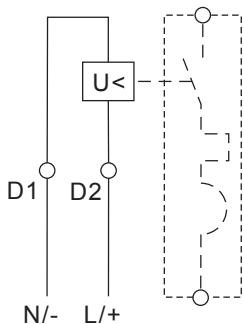
SHT31



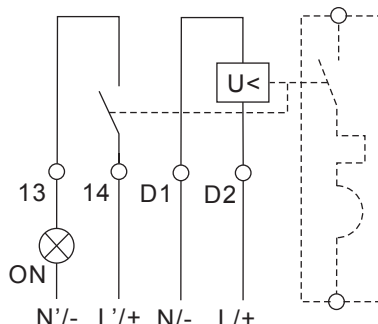
SHT3111



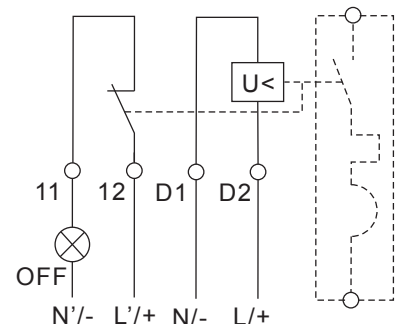
UVT31



UVT3110



UVT3101

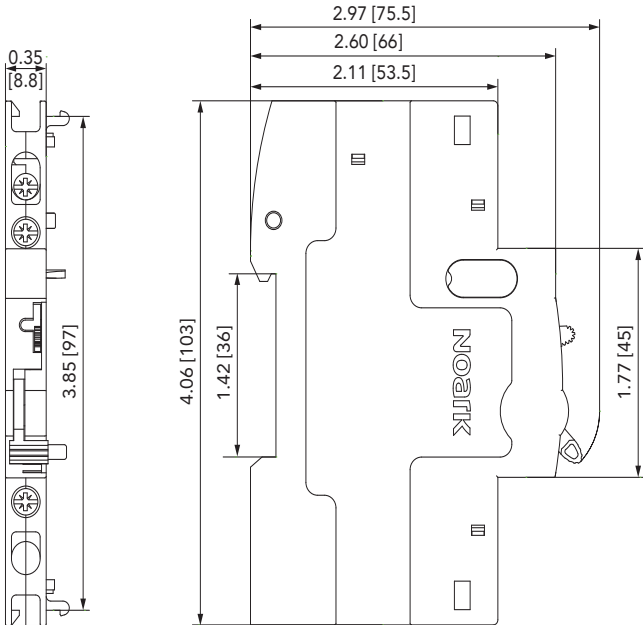


Miniature Circuit Breakers Accessory Dimensions

AL31N/AX31N

Alarm Switch/Auxiliary Contact

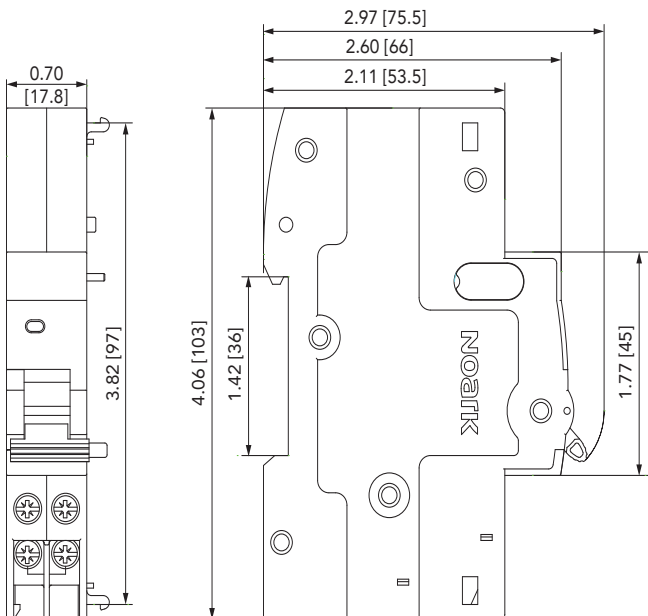
Unit: in [mm]



SHT31N/UVT31N

Shunt Trip/ Under-Voltage Trip

Unit: in [mm]

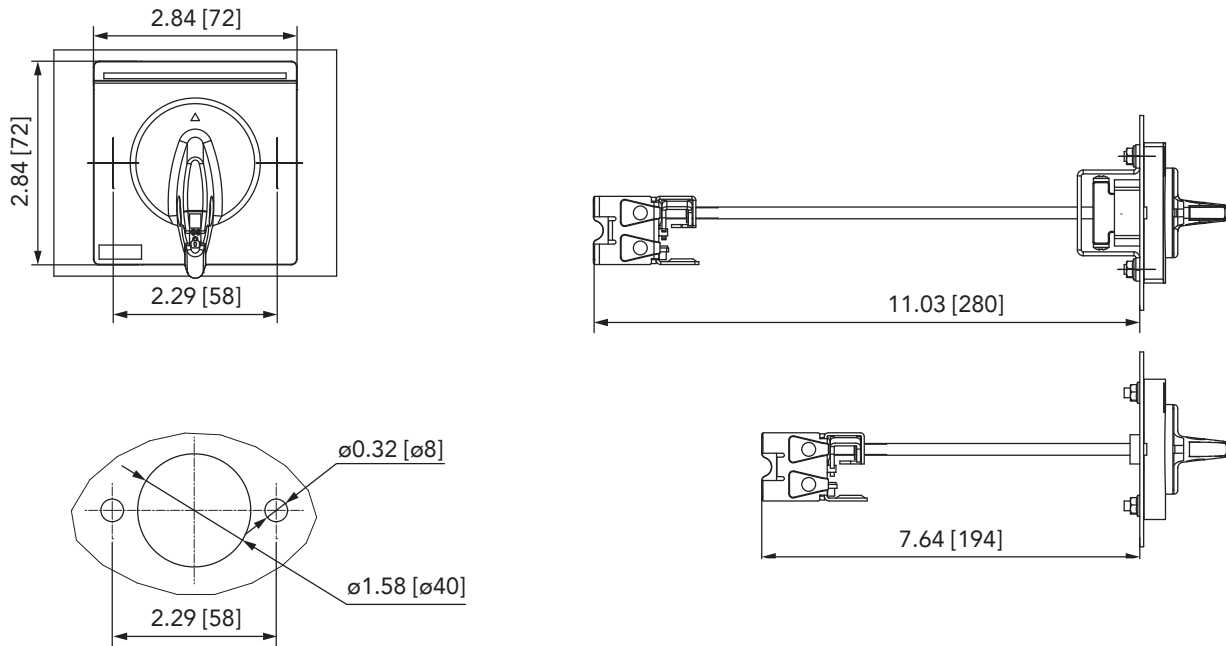


Miniature Circuit Breakers Accessory Dimensions

ERH31N

Extended Rotary Handle

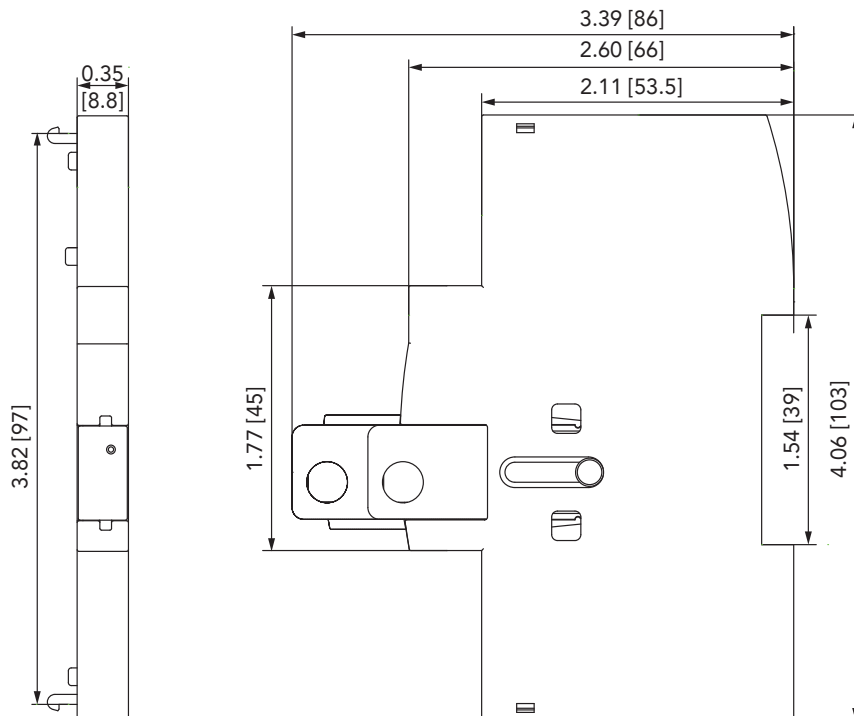
Unit: in [mm]



LK31N

Padlock

Unit: in [mm]




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