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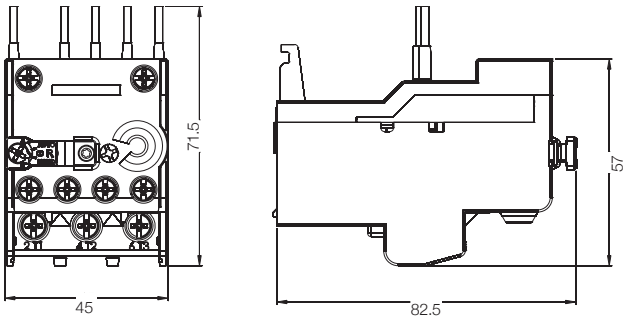
BN Overloads

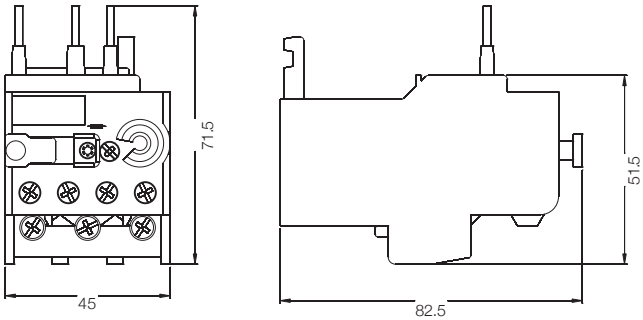
Dimensions

Dimensions (mm)

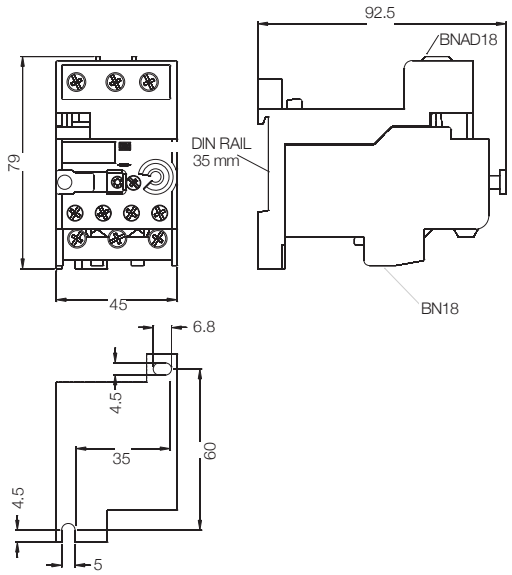
BN09 / BN10



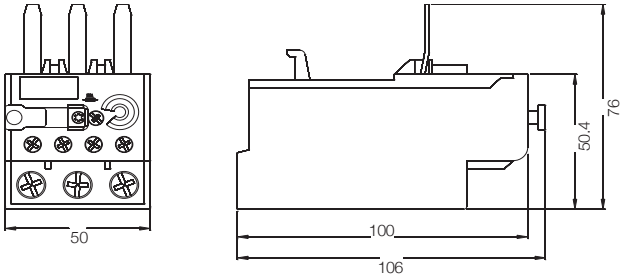
BN18



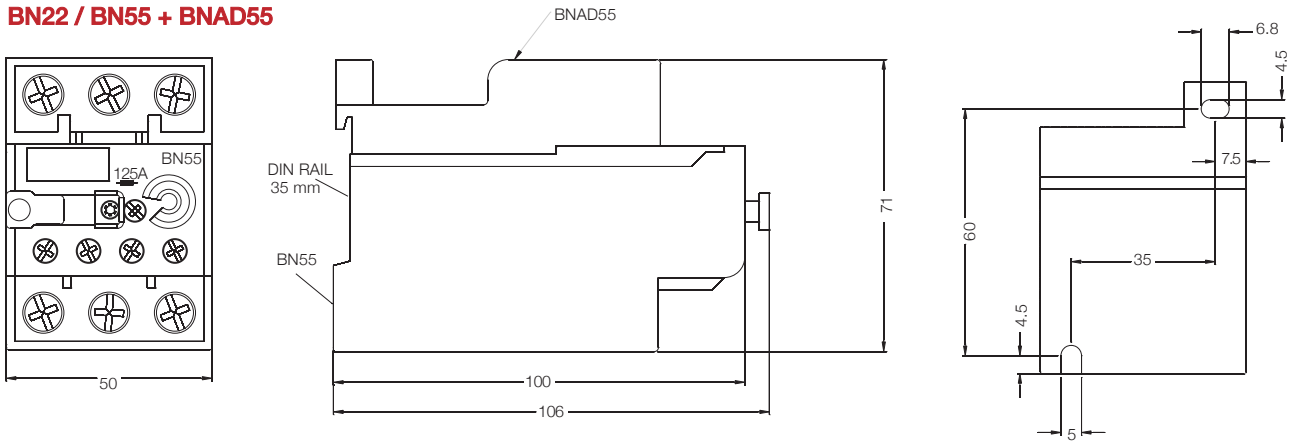
BN18 + BNAD18



BN22 / BN55



BN22 / BN55 + BNAD55



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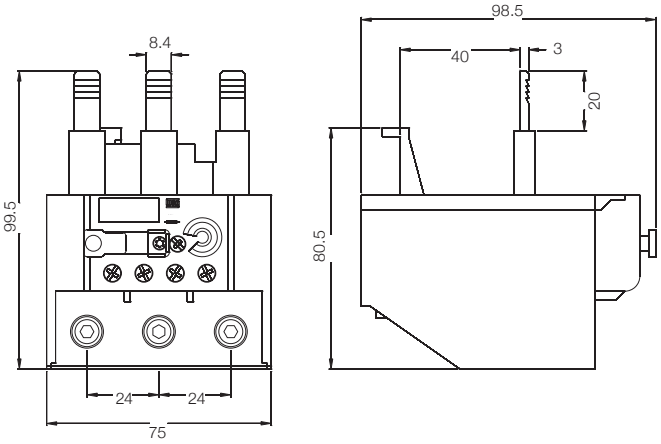
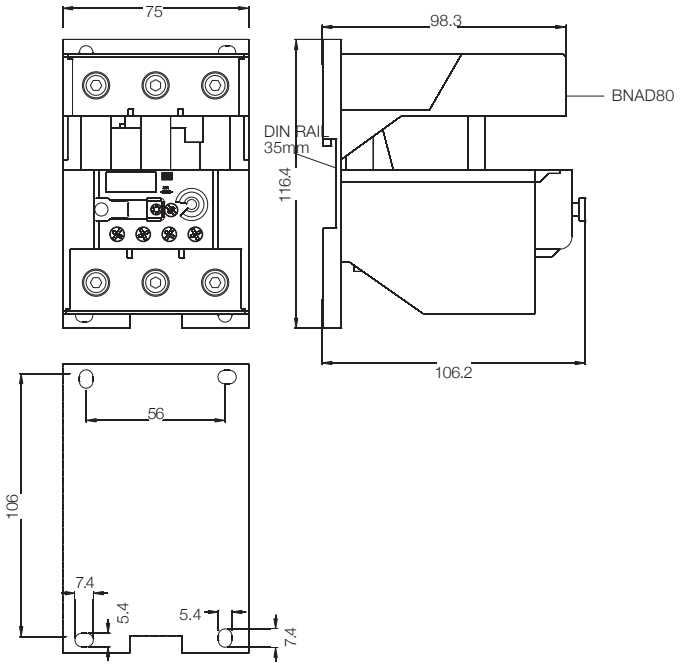
BN Overloads

Dimensions

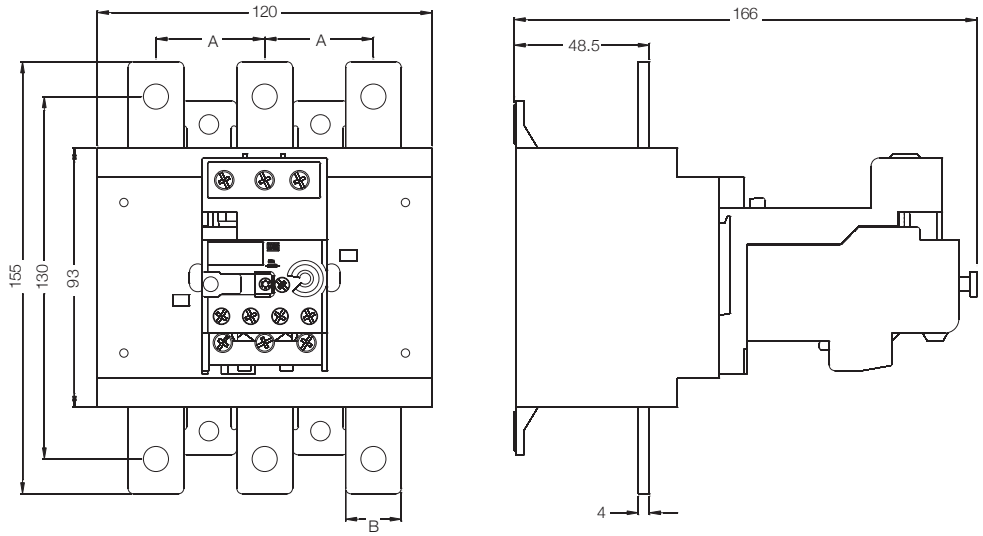
BN80

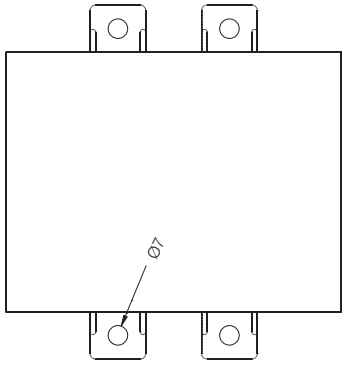


BN80+ BNAD80



BN220





Current ranges	A	B
100...150 A	39	20
140...215 A		
200...310 A	45	25
275...420 A		

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BN Overloads

Technical Data

General Data and Main Contacts

Reference code			BN09 / BN10	BN18	BN22 / BN55	BN80	BN220
Standards			IEC 60947 / UL 508 / CSA 22.2 #14				
Setting current		(A)	0.28...17	0.28...32	25...80	75...112	100...420
Tripping class			10				
Temperature compensation			Continuous				
Rated insulation voltage U_i (pollution degree 3)	IEC 60947	(V)	690				1,000
	UL/CSA	(V)	600				
Rated impulse withstand voltage U_{imp}		(kV)	6				8
Rated operational frequency		(Hz)	0...400				
Degree of protection Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)			IP 20 Finger and back-of-hand proof				
Ambient temperature Operating temperature Storage temperature			-25 °C to +60 °C -40 °C to +70 °C				
Climating proof IEC 60 068-2-3 IEC 60 068-2-30			Damp heat. constant Damp heat. constant				
Current heat loss Lower value of setting range Higher value of setting range		(W) (W)	0.9 1.4	0.9 1.7	1.5 4.7	2.3 4.7	1 1.9

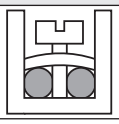
Auxiliary Contacts

Models			BN09 / BN10	BN18	BN22 / BN55	BN80	BN220
Standards			IEC 60947 / UL 508 / CSA 22.2 #14				
Rated insulation voltage Ui (pollution degree 3)	IEC	(V)	690				
	UL, CSA	(V)	600				
Rated operational voltage Ue	IEC	(V)	690				
	UL, CSA	(V)	600				
Rated thermal current Ith (Θ ≤55 °C)		(A)	6				
Rated operational current Ie							
AC-14 / AC-15 (IEC 60947-5-1)	24 V	(A)	4				
	60 V	(A)	3.5				
	125 V	(A)	3				
	230 V	(A)	2				
	400 V	(A)	1.5				
	500 V	(A)	0.5				
	690 V	(A)	0.3				
UL, CSA			C600				
DC-13 / DC-14 (IEC 60947-5-1)	24 V	(A)	1				
	60 V	(A)	0.5				
	110 V	(A)	0.25				
	220 V	(A)	0.1				
UL, CSA			R300				
Short-circuit protection with fuse (gL/gG)		(A)	6				
Minimum voltage / admissible current (IEC 60947-5-4)			17 V / 5 mA				

Terminal Capacity and Tightening Torque - Main Contacts

Reference			BN09 / BN10	BN18	BN22 / BN55	BN80	BN220	
Current setting		(A)	0.28...17	0.28...32	25...80	75...112	100...215	200...420
Cable size (75 °C / Cu cable)								
Flexible cable	1 cable	(mm^2)	1,5...10		6,0...35	25...35	35...120	95...150
	2 cables	(mm^2)			-	-		
Cable with terminal or rigid cable	1 cable	(mm^2)	1,5...6,0		6,0...35	25...35	35...120	95...150
	2 cables	(mm^2)			-	-		
Busbar		(mm^2)	-				Max 2x (25x5)	
Tightening torque		(N.m)	2,3		4,0	6,0	16,0	26,0
UL cable size (75 °C - Cu cable)		AWG	16...8		10...3	6...1/0	3–300 kcmil	3/0 – 600 kcmil
Tightening torque (UL)		(lb.in)	20		35	53	141	230

Terminal Capacity and Tightening Torque - Auxiliary Contacts

Models		BN09 / BN10	BN18	BN22 / BN55	BN80	BN220
Type of screws		M3.5 x 10 Philips				
Cable size (75 °C / Cu cable)						
Cable with or without terminal	(mm^2)		2 x 1...2.5			
AWG-wire			16...12			
Tightening torque	(N.m / lb.in)		1.5 / 13			

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Technical Data

Site Altitude Compensation

The site altitude and hence the air density play a role with respect to the cooling conditions and dielectric withstand voltage. A site altitude of up to 2000 m is considered as normal in accordance with IEC 60947. For higher altitudes, the current settings on the thermal overload relay should be higher than the motor rated current. On the other hand, the operational voltage must be reduced.

For site altitudes higher than 2,000 m, the values for the current and voltage shown in the table below should be applied:

Altitude above sea level (m)	Adjustment factor on the current setting	Maximum operational voltage Ue (V)
2,000	1.00 x I_n	690
3,000	1.05 x I_n	550
4,000	1.08 x I_n	480
5,000	1.12 x I_n	420

Characteristic Tripping Curve

Thermal overload relays are designed to mimic the heat actually generated in the motor. As the motor temperature increases, so does the temperature of the overload relay thermal unit.

The motor and relay heating curves have a strong relationship. No matter how high the current drawn by the motor, the thermal overload relay provides protection and yet, does not trip unnecessarily.

Thus, the characteristic tripping curves indicate how the tripping time, starting from the cold state, varies with the current for multiples of the full-load current for three-pole symmetrical loads.