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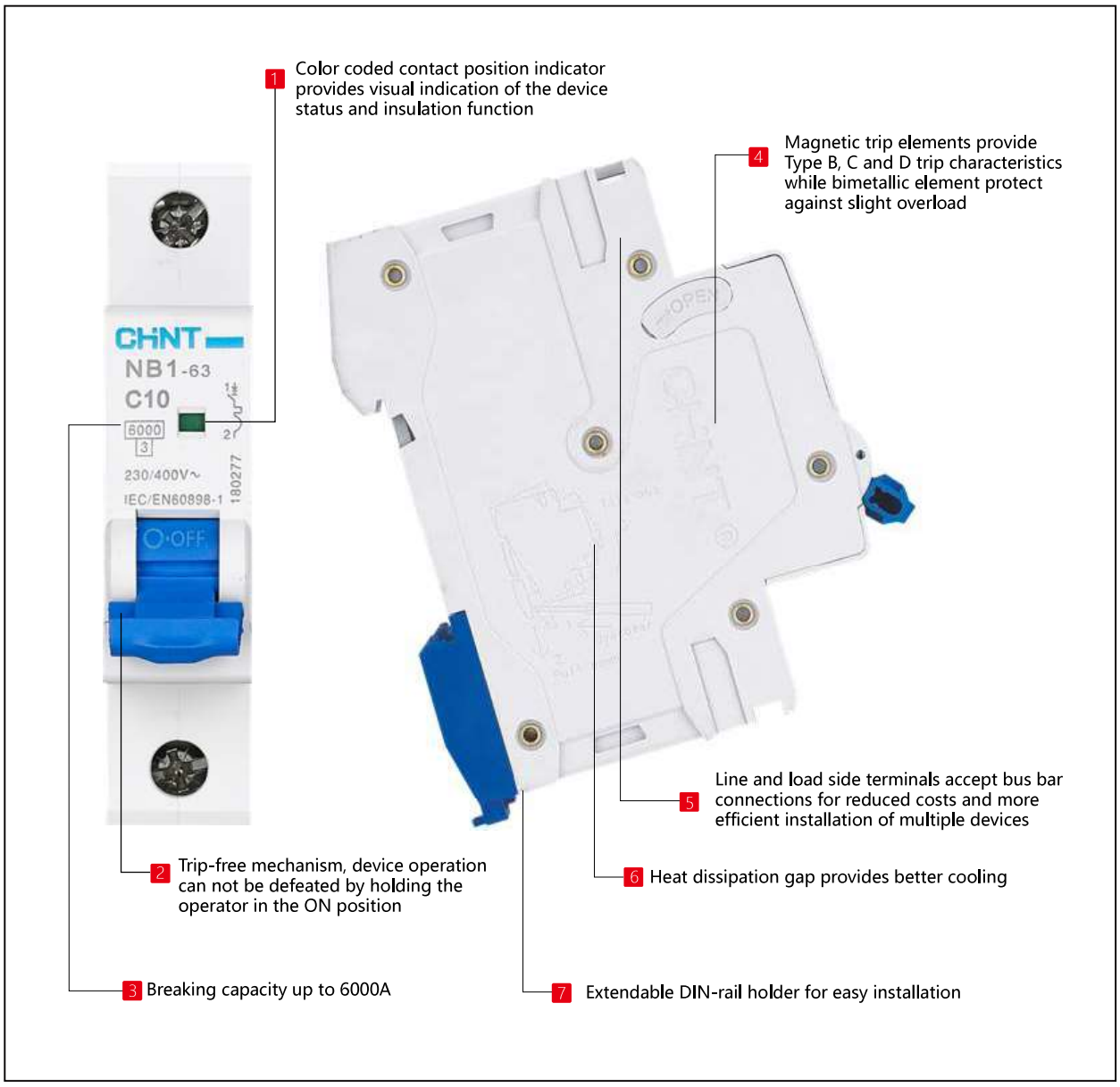
NB1 Miniature Circuit Breaker



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NB1 -63
Miniature Circuit Breaker

1. General

1.1 Function

protection of circuits against short-circuit currents, protection of circuits against overload currents, switch,isolation.
NB1 circuit-breakers are used in domestic installation, as well as in commercial and industry electrical distribution systems.

1.2 Selection

Technical data of the network at the point considered: short-circuit current at the circuit-breaker installation point, which must always be less than the breaking capacity of this device,network normal voltage.
Tripping curves:

B curve (3-5In)

protection for people and big length cables in TN and IT systems.

C curve (5-10In)

protection for resistive and inductive loads with low inrush current.

D curve(10-14In)

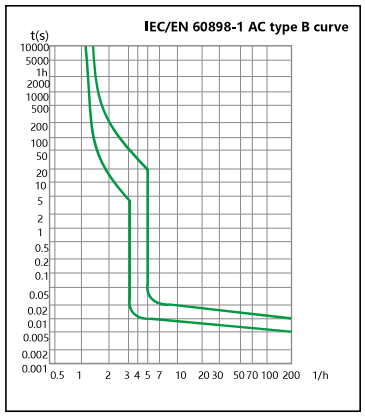
protection for circuits which supply loads with high inrush current at the circuit closing
(LV/LV transformers, breakdown lamps).

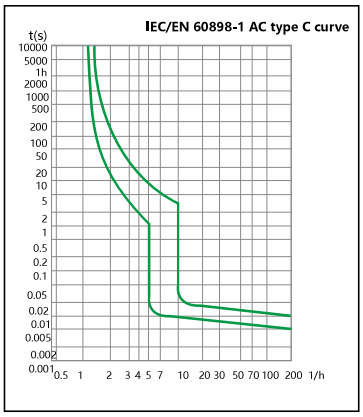
1.3 Approvals and certificates

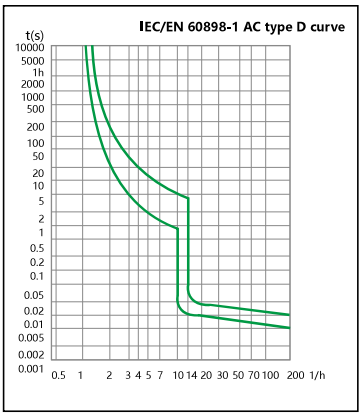
Detailed information, please refer to Certificates Table on the last page.

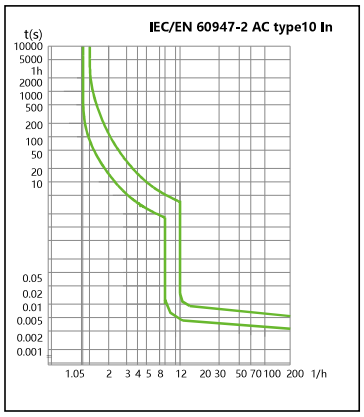
2.Technical data

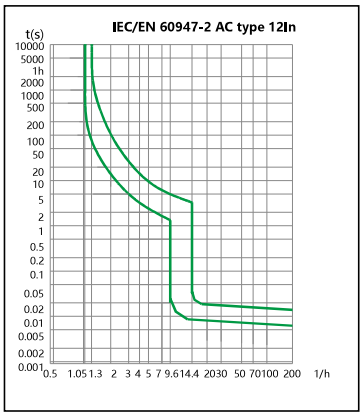
2.1 Curves

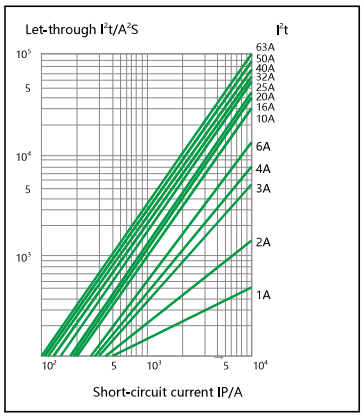












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2.2

	Standard		IEC/EN 60898-1	IEC/EN 60947-2	UL1077	
Electrical features	Rated current In	A	1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63		1, 2, 3, 4, 6, 10, 13, 16, 20, 25, 32, 40, 50, 63	
	Poles		1P, 1P+N, 2P, 3P, 3P+N, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P,
	Rated voltage Ue	V	230/400、240/415		277/480	110/125
	Insulation voltage Ui	V	500			
	Rated frequency		50/60Hz			(DC)
	Rated breaking capacity	A	6000	6000	5000	10000
	Energy limiting class		3			
	Rated impulse withstand voltage(1.2/50) Uimp	V	4000			
	Dielectric test voltage at ind. Freq. for 1 min	KV	2	1.890	2	
	Pollution degree		2			
	Power loss per pole		Rated current (A)		Max power loss per pole (W)	
			1, 2, 3, 4, 6, 10		2	
			16, 20, 25, 32		3.5	
			40, 50, 63		5	
	Thermo-magnetic release characteristic		B, C, D	10In, 12In	B, C, D	
Mechanical features	Electrical life		10, 000			
	Mechanical life		20, 000			
	Contact position indicator		Yes			
	Protection degree		IP20			
	Reference temperature for setting of thermal element	℃	30			
	Ambient temperature (with daily average ≤ 35℃)	℃	-35-+70			
	Storage temperation	℃	-35-+70			
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar			
	Terminal size top/bottom for cable	mm^2	25			
		AWG	18-4			
	Terminal size top/bottom for busbar	mm^2	10			
		AWG	18-8			
	Tightening torque	N-m	2.0			
		In-lbs.	22			
	Mounting		On DIN rail EN 60715 (35mm) by means of fast clip device			
	Connection		From top and bottom			
Combination with accessories	Auxiliary contact		Yes			
	Shunt release		Yes			
	Under voltage release		Yes			
	Alarm contant		Yes			

2.3 Selectivity

	In (A)	Power supply side: RT36-00 (fuse)								
		20	25	36	50	63	80	100	125	160
		Is (kA)								
Load side: NB1-63, Curve B, C	≤ 2	1.2	4	> 12	> 12	> 12	> 12	> 12	> 12	> 12
	3	0.7	1.2	3.8	5.3	6	6	6	6	6
	4	0.6	0.9	2.5	3.8	6	6	6	6	6
	6	0.5	0.8	1.9	2.5	4.5	5	6	6	6
	10		0.7	1.4	2.2	3.2	3.6	6	6	6
	16			1.2	1.8	2.6	3	5.6	6	6
	20				1.5	2.2	2.5	4.6	6	6
	25				1.3	2	2.2	4.1	5.5	6
	32					1.7	1.9	3.8	4.5	6
	40						1.7	3	4	5
	50						1.5	2.6	3.5	4.5
	63							2.4	3.3	4.5

	In (A)	Power supply side: NM8-100S/H/R								
		16	20	25	32	40	50	63	80	100
		Is (kA)								
Load side: NB1-63, Curve B, C	≤ 10	0.19	0.19	0.3	0.4	0.5	0.5	0.5	0.63	0.8
	16			0.3	0.4	0.5	0.5	0.5	0.63	0.8
	20					0.5	0.5	0.5	0.63	0.8
	25						0.5	0.5	0.63	0.8
	32							0.5	0.63	0.8
	40								0.63	0.8
	50									0.8
	63									

2.4 Backup protection

	In (A)	Power supply side: RT16 series						
		40	50	63	80	100	125	160
		Is (kA)						
Load side: NB1-63, Curve B, C	1~6	40	40	40	40	40	40	40
	8~10	40	40	40	40	40	40	40
	13	40	40	40	40	35	35	35
	16	40	40	40	40	30	30	30
	20	40	40	40	40	30	30	30
	25	40	40	40	40	30	30	30
	32	40	40	40	40	30	30	30
	40	40	40	40	40	30	30	30
	50	30	30	30	30	30	30	30
	63	20	20	20	20	15	15	15

	In (A)	Power supply side: NM8					
		NM8-125S	NM8-125H	NM8-125R	NM8-250S	NM8-250H	NM8-250R
		Is (kA)					
Load side: NB1-63, Curve B, C	1~6	15	18	18	15	15	15
	10~20	12	15	15	12	12	12
	32~40	12	15	15	12	12	12
	50~60	12	15	15	12	12	12

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2.5 Temperature derating

The maximum permissible current in a circuit breaker depends on the ambient temperature where the circuit breaker is placed. Ambient temperature is the temperature inside the enclosure or switchboard in which the circuit breakers are installed.

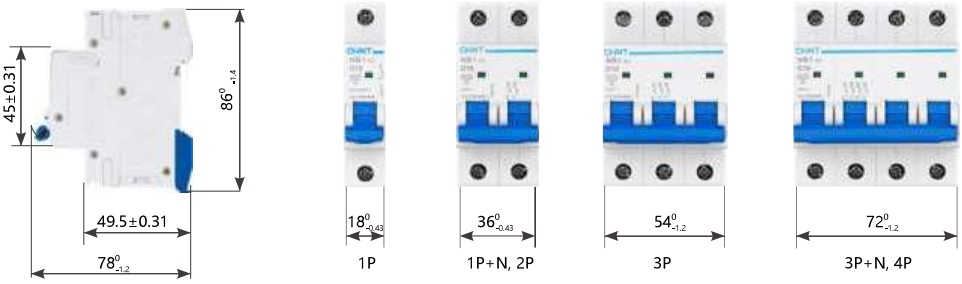
The reference temperature is 30℃

Ambient temperature(℃) / Rated current(A)	-35	-30	-20	-10	0	10	20	30	40	50	60	70
1	1.3	1.26	1.23	1.19	1.15	1.11	1.05	1	0.96	0.93	0.88	0.83
2	2.6	2.52	2.46	2.38	2.28	2.2	2.08	2	1.92	1.86	1.76	1.66
3	3.9	3.78	3.69	3.57	3.42	3.3	3.12	3	2.88	2.79	2.64	2.49
4	5.2	5.04	4.92	4.76	4.56	4.4	4.16	4	3.84	3.76	3.52	3.32
6	7.80	7.56	7.38	7.14	6.84	6.6	6.24	6	5.76	5.64	5.28	4.98
10	13.20	12.7	12.5	12	11.5	11.1	10.6	10	9.6	9.3	8.9	8.40
16	21.12	20.48	20	19.2	18.4	17.76	16.96	16	15.36	14.88	14.24	10.92
20	26.40	25.6	25	24	23	22.2	21.2	20	19.2	18.6	17.8	16.80
25	33	32	31.25	30	28.75	27.75	26.5	25	24	23.25	22.25	21
32	42.56	41.28	40	38.72	37.12	35.52	33.92	32	30.72	29.76	28.16	26.88
40	53.20	51.2	50	48	46.4	44.8	42.4	40	38.4	37.2	35.6	33.60
50	67	65.5	63	60.5	58	56	53	50	48	46.5	44	41.50
63	83.79	81.9	80.01	76.86	73.71	70.56	66.78	63	60.48	58.9	55.44	52.29

When several simultaneously operating circuit breakers are mounted side by side in a small enclosure, the temperature rise inside the enclosure causes a reduction in current rating.

You must then assign the rating (already derated if necessary according to ambient temperatuer) a downrating factor of 0.8.

3. Overall and mounting dimensions (mm)



NB1-63H
Miniature Circuit Breaker

1. General

1.1 Function

protection of circuits against short-circuit currents,
protection of circuits against overload currents,
switch,isolation.
NB1-63H circuit-breakers are used in domestic installation, as well as in commercial and industry electrical distribution systems.

1.2 Selection

Technical data of the network at the point considered: short-circuit current at the circuit-breaker installation point, which must always be less than the breaking capacity of this device,network normal voltage.
Tripping curves:

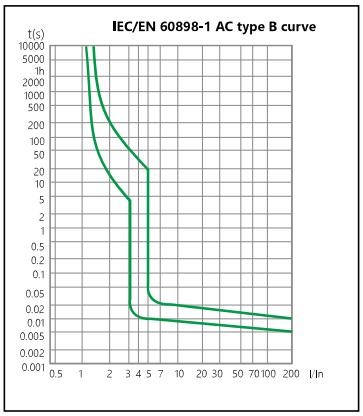
B curve (3-5In)
protection for people and big length cables in TN and IT systems.

C curve (5-10In)
protection for resistive and inductive loads with low inrush current.

D curve(10-14In)
protection for circuits which supply loads with high inrush current at the circuit closing
(LV/LV transformers, breakdown lamps).

2.Technical data

2.1 curves



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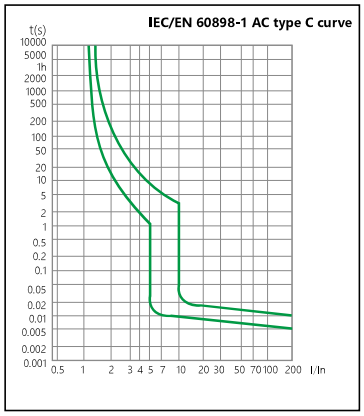

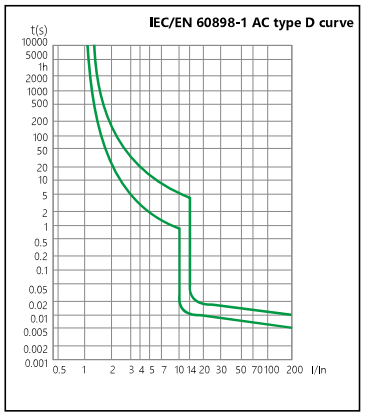

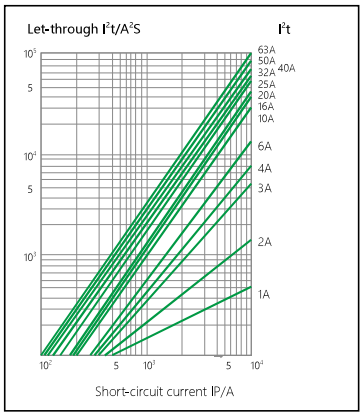

2.2

			IEC/EN 60898-1	
Electrical features	Rated current In	A	1, 2, 3, 4, 6, 10, 16,20, 25, 32, 40, 50, 63	
	Poles		1P, 1P+N, 2P, 3P, 3P+N, 4P	
	Rated voltage Ue	V	230/400~240/415	
	Insulation voltage Ui	V	500	
	Rated frequency		50/60Hz	
	Rated breaking capacity	A	10000	
	Energy limiting class		3	
	Rated impulse withstand voltage(1.2/50) Uimp	V	6000	
	Dielectric test voltage at ind. Freq. for 1 min	KV	2	
	Pollution degree		2	
	Power loss per pole		Rated current (A)	Max power loss per pole (W)
			1, 2, 3, 4, 5, 6, 10	3
			13, 16, 20, 25, 32	6
			40, 50, 63	13
	Thermo-magnetic release characteristic		B, C, D	
Mechanical features	Electrical life		10, 000	
	Mechanical life		20, 000	
	Contact position indicator		Yes	
	Protection degree		IP20	
	Reference temperature for setting of thermal element	℃	30	
	Ambient temperature (with daily average ≤ 35℃)	℃	-35~+70	
	Storage temperation	℃	-35~+70	
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar	
	Terminal size top/bottom for cable	mm^2	25	
		AWG	18-4	
	Terminal size top/bottom for busbar	mm^2	10	
		AWG	18-8	
	Tightening torque	N·m	2.0	
		In-lbs.	22	
	Mounting		On DIN rail EN 60715 (35mm) by means of fast clip device	
	Connection		From top and bottom	
Combination with accessories	Auxiliary contact		Yes	
	Shunt release		Yes	
	Under voltage release		Yes	
	Alarm contant		Yes	

2.3 Selectivity

	In (A)	Power supply side: RT36-00 (fuse)								
		20	25	36	50	63	80	100	125	160
		Is (kA)								
Load side: NB1-63H Curve B, C	≤ 2	1.2	4	> 12	> 12	> 12	> 12	> 12	> 12	> 12
	3	0.7	1.2	3.8	5.3	6	6	6	6	6
	4	0.6	0.9	2.5	3.8	6	6	6	6	6
	6	0.5	0.8	1.9	2.5	4.5	5	6	6	6
	10		0.7	1.4	2.2	3.2	3.6	6	6	6
	16			1.2	1.8	2.6	3	5.6	6	6
	20				1.5	2.2	2.5	4.6	6	6
	25				1.3	2	2.2	4.1	5.5	6
	32					1.7	1.9	3.8	4.5	6
	40						1.7	3	4	5
	50						1.5	2.6	3.5	4.5
	63							2.4	3.3	4.5

	In (A)	Power supply side: NM8-100S/H/R								
		16	20	25	32	40	50	63	80	100
		Is (kA)								
Load side: NB1-63H Curve B, C	≤ 10	0.19	0.19	0.3	0.4	0.5	0.5	0.5	0.63	0.8
	16			0.3	0.4	0.5	0.5	0.5	0.63	0.8
	20					0.5	0.5	0.5	0.63	0.8
	25						0.5	0.5	0.63	0.8
	32							0.5	0.63	0.8
	40								0.63	0.8
	50									0.8
	63									

2.4 Backup protection

	In (A)	Power supply side: RT16 series						
		40	50	63	80	100	125	160
		Is (kA)						
Load side: NB1-63H Curve B, C	1~6	40	40	40	40	40	40	40
	8~10	40	40	40	40	40	40	40
	13	40	40	40	40	35	35	35
	16	40	40	40	40	30	30	30
	20	40	40	40	40	30	30	30
	25	40	40	40	40	30	30	30
	32	40	40	40	40	30	30	30
	40	40	40	40	40	30	30	30
	50	30	30	30	30	30	30	30
	63	20	20	20	20	15	15	15

	In (A)						
		NM8-125S	NM8-125H	NM8-125R	NM8-250S	NM8-250H	NM8-250R
		Is (kA)					
Load side: NB1-63H Curve B, C	1~6	15	18	18	15	15	15
	10~20	12	15	15	12	12	12
	32~40	12	15	15	12	12	12
	50~60	12	15	15	12	12	12

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2.5 Temperature derating

The maximum permissible current in a circuit breaker depends on the ambient temperature where the circuit breaker is placed. Ambient temperature is the temperature inside the enclosure or switchboard in which the circuit breakers are installed.

The reference temperature is 30℃

Ambient temperature(℃) → / Rated current(A) ↓	-35	-30	-20	-10	0	10	20	30	40	50	60	70
1	1.3	1.26	1.23	1.19	1.15	1.11	1.05	1	0.96	0.93	0.88	0.83
2	2.6	2.52	2.46	2.38	2.28	2.2	2.08	2	1.92	1.86	1.76	1.66
3	3.9	3.78	3.69	3.57	3.42	3.3	3.12	3	2.88	2.79	2.64	2.49
4	5.2	5.04	4.92	4.76	4.56	4.4	4.16	4	3.84	3.76	3.52	3.32
6	7.80	7.56	7.38	7.14	6.84	6.6	6.24	6	5.76	5.64	5.28	4.98
10	13.20	12.7	12.5	12	11.5	11.1	10.6	10	9.6	9.3	8.9	8.40
16	21.12	20.48	20	19.2	18.4	17.76	16.96	16	15.36	14.88	14.24	10.92
20	26.40	25.6	25	24	23	22.2	21.2	20	15.36	18.6	17.8	16.80
25	33	32	31.25	30	28.75	27.75	26.5	25	24	23.25	22.25	21
32	42.56	41.28	40	38.72	37.12	35.52	33.92	32	30.72	29.76	28.16	26.88
40	53.20	51.2	50	48	46.4	44.8	42.4	40	38.4	37.2	35.6	33.60
50	67	65.5	63	60.5	58	56	53	50	48	46.5	44	41.50
63	83.79	81.9	80.01	76.86	73.71	70.56	66.78	63	60.48	58.9	55.44	52.29

When several simultaneously operating circuit breakers are mounted side by side in a small enclosure,
the temperature rise inside the enclosure causes a reduction in current rating.
You must then assign the rating (already derated if necessary according to ambient temperatuer) a downrating factor of 0.8.

3. Overall and mounting dimensions (mm)

NB1-63DC
DC Circuit Breaker

1. General

1.1 Certificates: CCC,CE,CB,TUV;
1.2 Standard: IEC/EN 60947-2 ,RoHS;
1.3 Rated voltage up to 1000V, Rated current up to 63A;
1.4 Protection of circuits against overload currents;
1.5 Protection of circuits against short-circuit currents;
1.6 NB1-63 DC circuit-breakers are used in communication systems and PV DC systems.

2. Features

2.1 Excellent breaking capacity
2.2 Double connection function of lead wire and bus bar
2.3 Stored energy operation, fast closing, long service life
2.4 Convenient installation, disassembly
2.5 Contact on-off indication, higher security
2.6 Green environmental protection and energy saving

3. Type designation

N B 1 - 63 DC

- DC — Direct Current
- 63 — Frame size rated current
- 1 — Designed sequence number
- B — MCB
- N — Company code

4. Operating conditions

4.1 Ambient temperature:-35℃ ~+70℃ (Refer to 5.3)
4.2 The atmosphere condition: ≤ 95%
4.3 Pollution degree: Ⅱ
4.4 Altitude: ≤ 2000m(if exceed 2000m,Refer to 5.4)

5. Technical data

5.1 Classification

5.1.1 Rate Current In:
1A,2A,3A,4A,6A,10A,13A,16A,20A,25A,32A,40A,50A,63A

5.1.2 Number of poles: 1P,2P,4P

5.1.3 Tripping curves: C Type,(7~10)In

5.2 Parameters

5.2.1 Rated breaking capacity Icu

A

Rated current In (A)	Number of poles	Rated voltage Ue (V)	Rated breaking capacity Icu (A)
1~63	1	250	6000
	2	500	6000
	4	1000	6000

5.2.2 Electrical and mechancial life

a. Electrical life: > 1500 cycles

b. Mechancial life: > 20,000 cycles

5.2.3 Rated impulse withstand voltage Uimp:4KV

5.2.4 (28-32)℃ ambient temperature over-current protection features.

Test	Test current	Initial state	Time limit for tripping or not tripping	Expected result	Remarks
a	1.05In	Cold state	t ≤ 1h	Not tripping	
b	1.30In	Right after test number a	t ≤ 1h	Tripping	The current is rising within 5s
c	7In	Cold state	t ≤ 0.2s	Not tripping	
d	10In	Cold state	t < 0.2s	Tripping	

Note: The terminology" Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

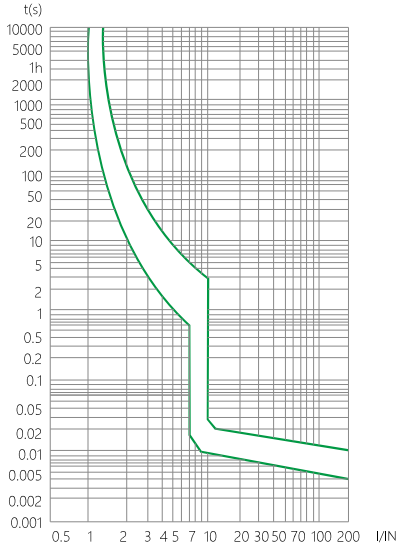
5.3 Temperature derating

Rated current (A)	Temperature compensation coefficient under various operational temperature.											
	-35℃	-30℃	-20℃	-10℃	0℃	10℃	20℃	30℃	40℃	50℃	60℃	70℃
1	1.3	1.26	1.23	1.19	1.15	1.11	1.05	1	0.96	0.93	0.88	0.83
2	2.6	2.52	2.46	2.38	2.28	2.2	2.08	2	1.92	1.86	1.76	1.66
3	3.9	3.78	3.69	3.57	3.42	3.3	3.12	3	2.88	2.79	2.64	2.49
4	5.2	5.04	4.92	4.76	4.56	4.4	4.16	4	3.84	3.76	3.52	3.32
6	7.8	7.56	7.38	7.14	6.84	6.6	6.24	6	5.76	5.64	5.28	4.98
10	13.2	12.7	12.5	12	11.5	11.1	10.6	10	9.6	9.3	8.9	8.4
13	17.16	16.51	16.25	15.6	14.95	14.43	13.78	13	12.48	12.09	11.57	10.92
16	21.12	20.48	20	19.2	18.4	17.76	16.96	16	15.36	14.88	14.24	13.44
20	26.4	25.6	25	24	23	22.2	21.2	20	19.2	18.6	17.8	16.8
25	33	32	31.25	30	28.75	27.75	26.5	25	24	23.25	22.25	21
32	42.56	41.28	40	38.72	37.12	35.52	33.93	32	30.72	29.76	28.16	26.88
40	53.2	51.2	50	48	46.4	44.8	42.4	40	38.4	37.2	35.6	33.6
50	67	65.5	63	60.5	58	56	53	50	48	46.5	44	41.5
63	83.79	81.9	80.01	76.86	73.71	70.56	66.78	63	60.48	58.9	55.44	52.29

5.4 Altitude derating

Tripping type	Rated current In (A)	Current correction factor			For example
		≤ 2000	2000~3000m	≥ 3000m	
C	1,2,3,4,6,10, 13,16,20,32, 40,50,63	1	0.9	0.8	Rated current of 10A products rated current derating 2500m:0.9×10=9A

5.5 Curves shown in Figure 1



5.6 Wiring: Apply to 25 mm² wire connection terminals

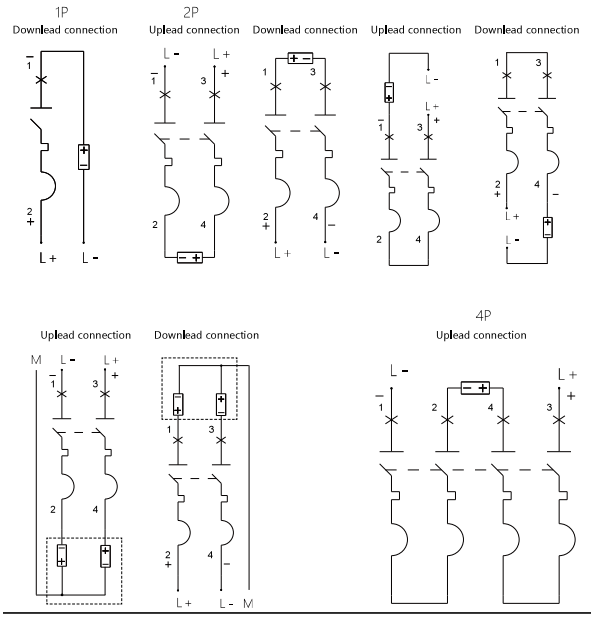
Tightening torque 2N·m

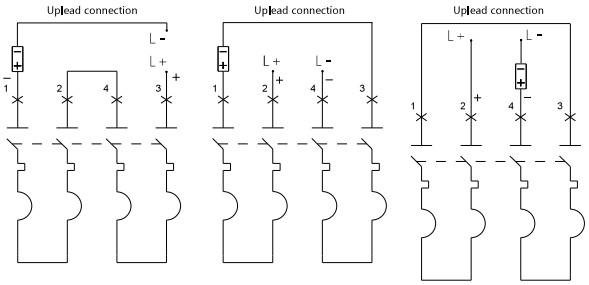
Rated current In (A)	Copper wire nominal cross sectional area(mm²)
1~6	1
10	1.5
13,16,20	2.5
25	4
32	6
40,50	10
63	16

5.7 Each pole power consumption of the circuit breaker

Rated current In (A)	Each pole maximum power consumption(W)
1~10	2
13~32	3.5
40~63	5

5.8 DC application wiring diagram shown in Figure 2





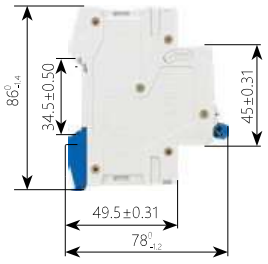
Wiring diagram description:

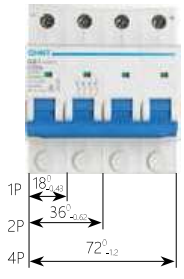
1.L+:Positive pole of power supply,L-:Negative pole of power supply;

2.+:Positive pole of circuit breaker,-:Negative pole of circuit breaker;

3. —⊞— :Load;

4.The DC power supply is usually 'L-' grounded.The neutral pole 'M' of the positive and negative power supply system is grounded.





NB1-63G Miniature Circuit Breaker

A

NB1-63G Miniature Circuit Breaker

1. General

1.1 Function

protection of circuits against short-circuit currents, protection of circuits against overload currents, switch,isolation.
NB1-63G circuit-breakers are used in domestic installation, as well as in commercial and industry electrical distribution systems.

1.2 Selection

Technical data of the network at the point considered: short-circuit current at the circuit-breaker installation point, which must always be less than the breaking capacity of this device,network normal voltage.
Tripping curves:

B curve (3-5In)

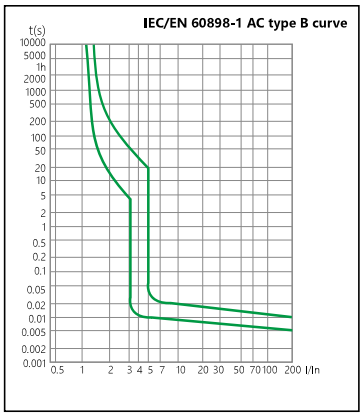
protection for people and big length cables in TN and IT systems.

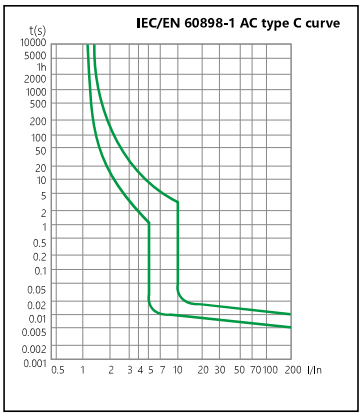
C curve (5-10In)

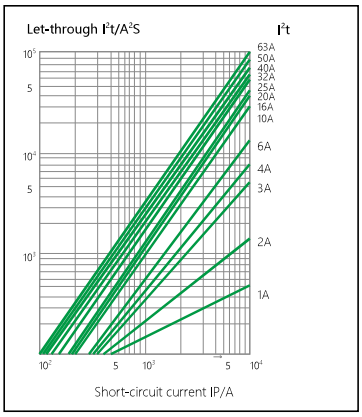
protection for resistive and inductive loads with low inrush current.

2.Technical data

2.1 Curves







2.2

	Standard		IEC/EN 60898-1	
Electrical features	Rated current In	A	6, 10, 13, 16, 20, 25, 32, 40, 50, 63	
	Poles		1P, 2P, 3P, 4P	
	Rated voltage Ue	V	230/400	
	Insulation voltage Ui	V	500	
	Rated frequency		50/60Hz	
	Rated breaking capacity	A	6000	
	Energy limiting class		3	
	Rated impulse withstand voltage(1.2/50) Uimp	V	4000	
	Dielectric test voltage at ind. Freq. for 1 min	KV	2	
	Pollution degree		2	
	Power loss per pole		Rated current (A)	Max power loss per pole (W)
			6, 10	2.5
			16, 20, 25, 32	5
			40, 50, 63	10
	Thermo-magnetic release characteristic		B, C	
Mechanical features	Electrical life		4, 000	
	Mechanical life		20, 000	
	Contact position indicator		Yes	
	Protection degree		IP20	
	Reference temperature for setting of thermal element	℃	30	
	Ambient temperature (with daily average ≤ 35℃)	℃	-35 ~ + 70	
	Storage temperation	℃	-35 ~ + 70	
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar	
	Terminal size top/bottom for cable	mm^2	25	
		AWG	18-4	
	Terminal size top/bottom for busbar	mm^2	10	
		AWG	18-8	
	Tightening torque	N·m	2.0	
		In-lbs.	22	
	Mounting		On DIN rail EN 60715 (35mm) by means of fast clip device	
	Connection		From top and bottom	
Combination with accessories	Auxiliary contact		Yes	
	Shunt release		Yes	
	Under voltage release		Yes	
	Alarm contant		Yes	

A

2.3 Selectivity

	In (A)	Power supply side: RT36-00 (fuse)								
		20	25	36	50	63	80	100	125	160
		Is (kA)								
Load side: NB1-63G	6	0.5	0.8	1.9	2.5	4.5	5	6	6	6
	10		0.7	1.4	2.2	3.2	3.6	6	6	6
	16			1.2	1.8	2.6	3	5.6	6	6
	20				1.5	2.2	2.5	4.6	6	6
	25				1.3	2	2.2	4.1	5.5	6
	32					1.7	1.9	3.8	4.5	6
	40						1.7	3	4	5
	50						1.5	2.6	3.5	4.5
	63							2.4	3.3	4.5

	In (A)	Power supply side: NM8-100S/H/R								
		16	20	25	32	40	50	63	80	100
		Is (kA)								
Load side: NB1-63G	≤ 10	0.19	0.19	0.3	0.4	0.5	0.5	0.5	0.63	0.8
	16			0.3	0.4	0.5	0.5	0.5	0.63	0.8
	20					0.5	0.5	0.5	0.63	0.8
	25						0.5	0.5	0.63	0.8
	32							0.5	0.63	0.8
	40								0.63	0.8
	50									0.8
	63									

2.4 Backup protection

	In (A)	Power supply side: RT16 series						
		40	50	63	80	100	125	160
		Is (kA)						
Load side: NB1-63G	6	40	40	40	40	40	40	40
	10	40	40	40	40	40	40	40
	13	40	40	40	40	35	35	35
	16	40	40	40	40	30	30	30
	20	40	40	40	40	30	30	30
	25	40	40	40	40	30	30	30
	32	40	40	40	40	30	30	30
	40	40	40	40	40	30	30	30
	50	30	30	30	30	30	30	30
	63	20	20	20	20	15	15	15

	In (A)	Power supply side: NM8					
		NM8-125S	NM8-125H	NM8-125R	NM8-250S	NM8-250H	NM8-250R
		Is (kA)					
Load side: NB1-63G	6	15	18	18	15	15	15
	10~20	12	15	15	12	12	12
	32~40	12	15	15	12	12	12
	50~60	12	15	15	12	12	12

2.5 Temperature derating

The maximum permissible current in a circuit breaker depends on the ambient temperature where the circuit breaker is placed. Ambient temperature is the temperature inside the enclosure or switchboard in which the circuit breakers are installed.

The reference temperature is 30℃

Ambient temperature(℃) → / Rated current(A) ↓	-35	-30	-20	-10	0	10	20	30	40	50	60	70
6	7.80	7.56	7.38	7.14	6.84	6.6	6.24	6	5.76	5.64	5.28	4.98
10	13.20	12.7	12.5	12	11.5	11.1	10.6	10	9.6	9.3	8.9	8.40
16	21.12	20.48	20	19.2	18.4	17.76	16.96	16	15.36	14.88	14.24	10.92
20	26.40	25.6	25	24	23	22.2	21.2	20	15.36	18.6	17.8	16.80
25	33	32	31.25	30	28.75	27.75	26.5	25	24	23.25	22.25	21
32	42.56	41.28	40	38.72	37.12	35.52	33.92	32	30.72	29.76	28.16	26.88
40	53.20	51.2	50	48	46.4	44.8	42.4	40	38.4	37.2	35.6	33.60
50	67	65.5	63	60.5	58	56	53	50	48	46.5	44	41.50
63	83.79	81.9	80.01	76.86	73.71	70.56	66.78	63	60.48	58.9	55.44	52.29

When several simultaneously operating circuit breakers are mounted side by side in a small enclosure, the temperature rise inside the enclosure causes a reduction in current rating.

You must then assign the rating (already derated if necessary according to ambient temperatuer) a downrating factor of 0.8.

3. Overall and mounting dimensions (mm)

XF9 (Auxiliary Contact for NB1, NBH8, NB1L, NBH8LE)

1. General

Indication of the position of the device's contacts.
To be mounted on the left side of the MCBs/RCBOs thanks to the special pin.

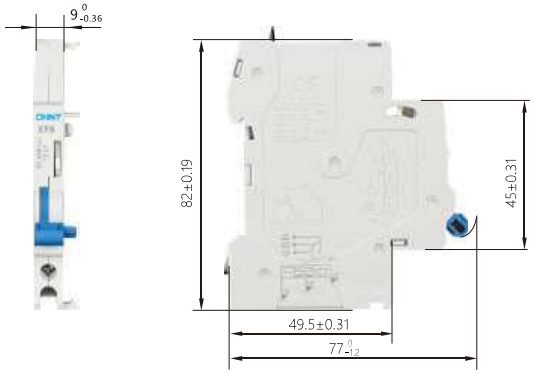
CE

2.Technical data

	Standard		IEC/EN 60947-5-1	
Electrical features	Rated value		UN (V)	In (A)
			AC415 50/60Hz	3
			AC240 50/60Hz	6
			DC130	1
			DC48	2
			DC24	6
	Configurations		1N/O+1N/C	
	Rated impulse withstand voltage (1.2/50)Uimp	V	4,000	
	Dielectric TEST voltage at ind. Freq. for 1min	kV	2	
	Insulation voltage Ui	V	500	
	Pollution degree		2	
Mechanical features	Electrical life		6,050	
	Mechanical life		10,000	
	Protection degree		IP20	
	Ambient temperature (with daily average ≤ 35℃)	℃	-5...+40	
	Storage temperature	℃	-25...+70	
Installation	Terminal connection type		Cable	
	Terminal size top/bottom for cable	mm^2	2.5	
		AWG	18-14	
	Tightening torque	N·m	0.8	
		In-lbs.	7	

A

3. Overall and mounting dimensions (mm)



XF9J (Alarm Auxiliary Contact for NB1, NBH8, NB1L, NBH8LE)

1. General

1.1 Indication of the position of the device's contacts only after the automatic release of the MCBs and RCBOs due to an overload or a short-circuit.

1.2 To be mounted on the left side of the MCBs/RCBOs thanks to the special pin.

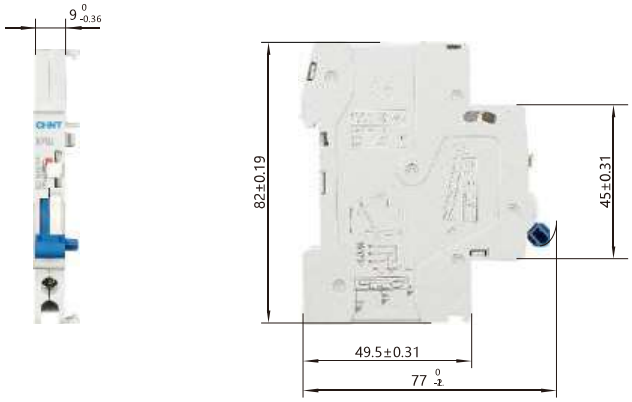
CE

2.Technical data

	Standard		IEC/EN 60947-5-1	
Electrical features	Rated value		UN (V)	In (A)
			AC415 50/60Hz	3
			AC240 50/60Hz	6
			DC130	1
			DC48	2
			DC24	6
	Configurations		1N/O+1N/C	
	Rated impulse withstand voltage (1.2/50)Uimp	V	4,000	
	Dielectric TEST voltage at ind. Freq. for 1min	kV	2	
	Insulation voltage Ui	V	500	
	Pollution degree		2	
Mechanical features	Electrical life		6,050	
	Mechanical life		10,000	
	Protection degree		IP20	
	Ambient temperature (with daily average ≤ 35℃)	℃	-5...+40	
	Storage temperature	℃	-25...+70	
Installation	Terminal connection type		Cable	
	Terminal size top/bottom for cable	mm^2	2.5	
		AWG	18-14	
	Tightening torque	N·m	0.8	
		In-lbs.	7	

A

3. Overall and mounting dimensions (mm)



S9
(Shunt Release for NB1, NBH8, NB1L, NBH8LE)

1. General

1.1 Remote opening of the device when a voltage is applied.

1.2 To be mounted on the left side of the MCBs/RCBOs thanks to the special pin.

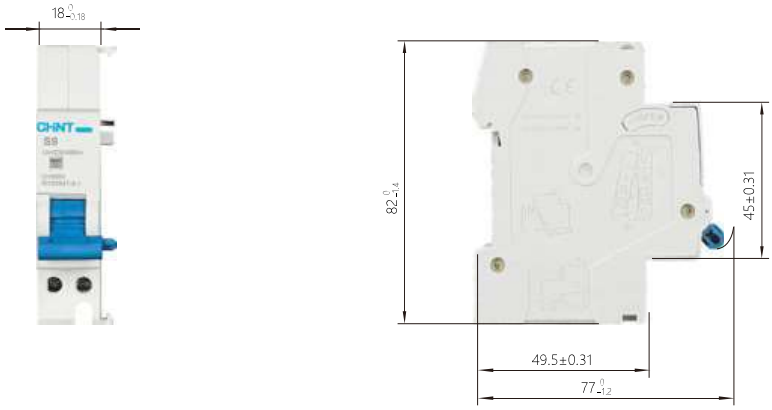
CE

2.Technical data

	Standard		IEC/EN 60947-5-1
Electrical features	Rated voltage Us	V	AC230/400 50/60Hz
			AC/DC24
			AC/DC48
	Rated impulse withstand voltage (1.2/50)Uimp	V	4,000
	Dielectric TEST voltage at ind. Freq. for 1min	kV	2
	Insulation voltage Ui	V	500
	Pollution degree		2
Mechanical features	Electrical life		4,000
	Mechanical life		4,000
	Protection degree		IP20
	Ambient temperature (with daily average ≤ 35℃)	℃	-5...+40
	Storage temperature	℃	-25...+70
Installation	Terminal connection type		Cable
	Terminal size top/bottom for cable	mm^2	2.5
		AWG	18-14
	Tightening torque	N·m	0.8
		In-lbs.	7

A

3. Overall and mounting dimensions (mm)



V9
(Under Voltage Release for NB1, NBH8, NB1L,NBH8LE)

1. General

1.1 Protection of the load in the event of a voltage drop (between 70% and 35% of its rated value)

1.2 Positive safety (device's tripping when the voltage is disconnected) emergency stop by means of a button.

1.3 To be mounted on the left side of the MCBs/RCBOs thanks to the special pin.

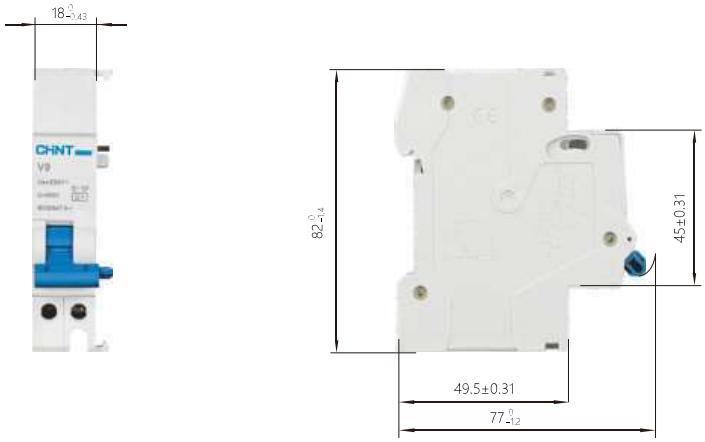
CE

2.Technical data

	Standard		IEC/EN 60947-5-1
Electrical features	Rated voltage Us	V	AC230 50/60Hz
	Optional voltage of release		70-35%Ue, reliable operation
			< 35%Ue, prevent breaker from making
			85~110%Ue, reliable operation
	Rated impulse withstand voltage (1.2/50)Uimp	V	4,000
	Dielectric TEST voltage at ind. Freq. for 1min	kV	2
	Insulation voltage Ui	V	500
	Pollution degree		2
Mechanical features	Electrical life		4,000
	Mechanical life		4,000
	Protection degree		IP20
	Ambient temperature (with daily average ≤ 35℃)	℃	-5...+40
	Storage temperature	℃	-25...+70
Installation	Terminal connection type		Cable
	Terminal size top/bottom for cable	mm^2	2.5
		AWG	18-14
	Tightening torque	N·m	0.8
		In-lbs.	7

A

3. Overall and mounting dimensions (mm)



Note