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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)

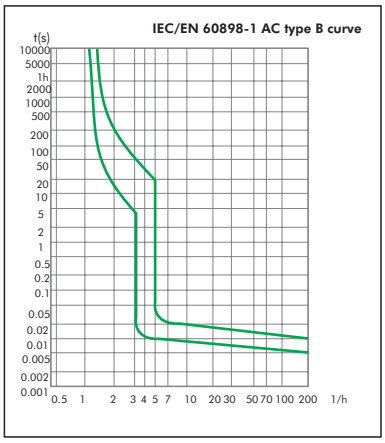
protection for circuits which supply loads with high inrush current at the circuit closing
(LV/LV transformers, breakdown lamps).

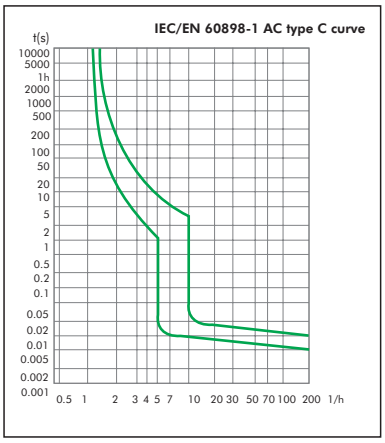
1.3 Approvals and certificates

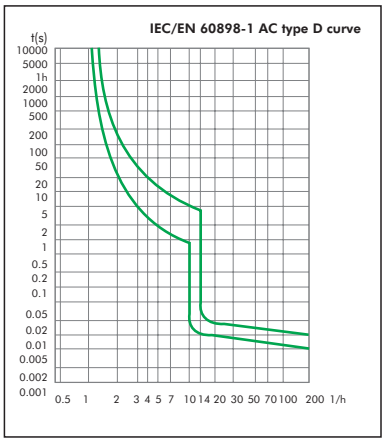
Detailed information, please refer to Certificates Table on the last page.

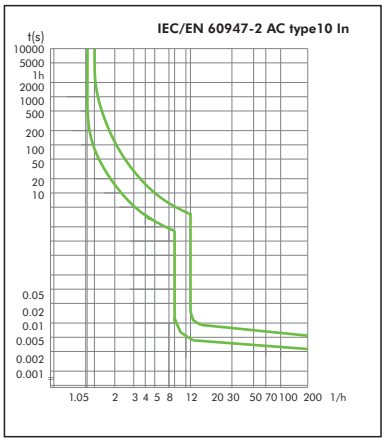
2.Technical data

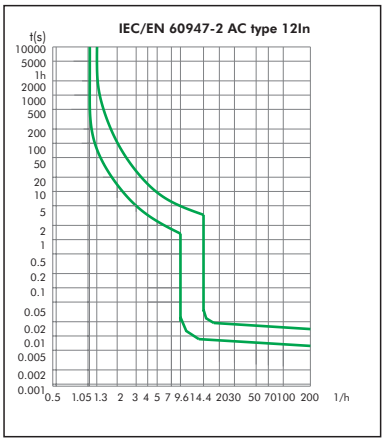
2.1 Curves

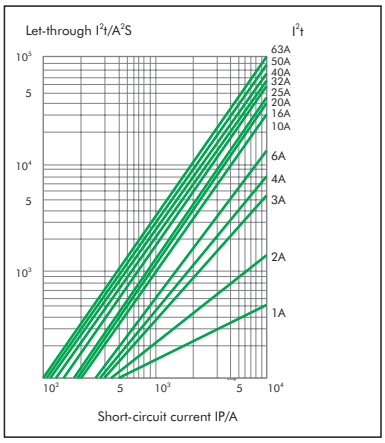












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2.2

	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		Electric feeding from top or 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:

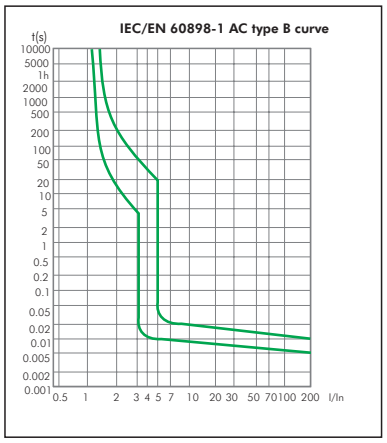
B curve (3-5In)
protection for people and big length cables in TN and IT systems.

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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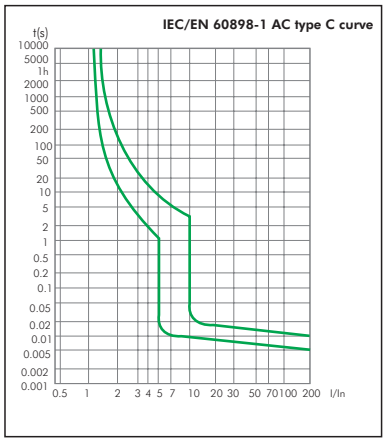

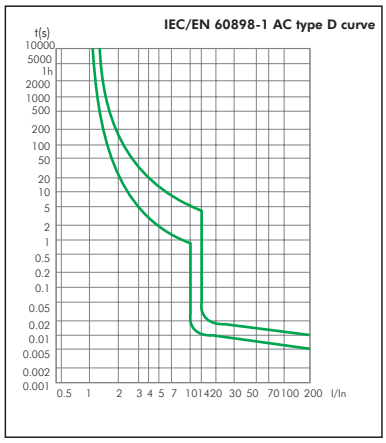

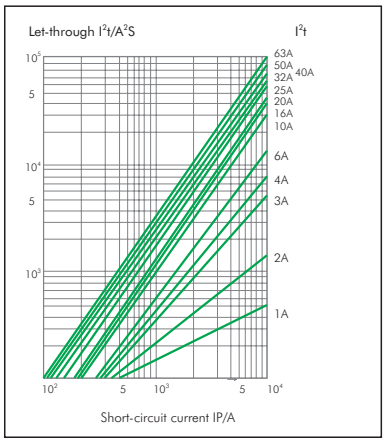

2.2

			IEC/EN 60898-1	IEC/EN 60947-2
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	1P, 2P, 3P, 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	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)
			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		Electric feeding from top or 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
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	16			1.2	1.8	2.6	3	5.6	6	6
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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
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	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.

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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

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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)