



## 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.

NB1-63H also can be used in DC application:125VDC/pole.

#### 1.2 Selection

Technical data of the network at the point considered: the earthing systems (TNS, TNC), 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 (3-5I<sub>n</sub>)

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

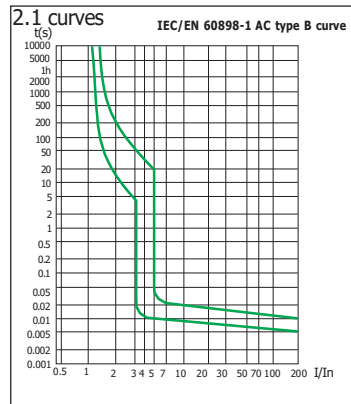
C curve (5-10I<sub>n</sub>)

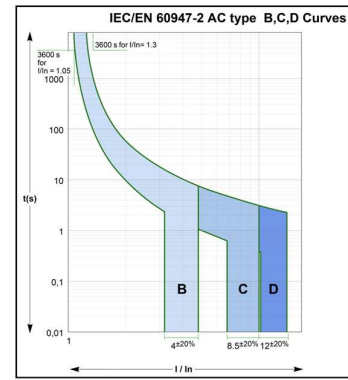
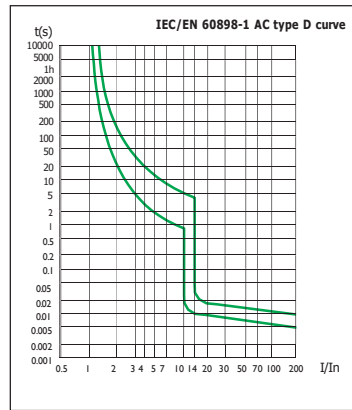
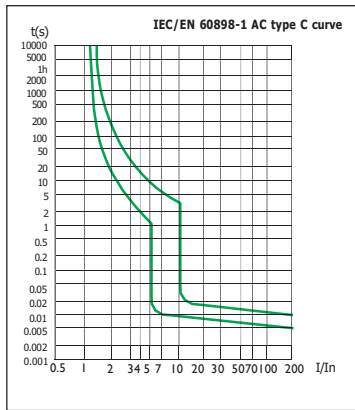
protection for resistive and inductive loads with low inrush current.

D curve(10-14I<sub>n</sub>)

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

### 2. Technical data





2.2

	Standard		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	6000	
	Dielectric test voltage at ind. Freq. for 1 min	kV	2	1.890
	Pollution degree		3	
Power loss per pole		Rated current (A)	Average power loss per pole (W)	
		1, 2, 3, 4, 5, 6, 10	2	
		13, 16, 20, 25, 32	3.5	
		40, 50, 63	5	
Thermo-magnetic release characteristic			B, C, D	
Mechanical features	Electrical life		10, 000	
	Mechanical life		20, 000	
	Contact position indicator		ON/OFF indicate RED/GREEN	
	Protection degree		IP20	
	Reference temperature for setting of thermal element	°C	30	
	Operating Temperature	°C	-35...+ 70 (Special application please refer to P4 for temperature compensation correction)	
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar	
	Terminal size top/bottom for cable	mm <sup>2</sup>	25 (flexible cable ), 35( rigid cable)	
		AWG	18-2	
	Terminal size top/bottom for busbar	mm <sup>2</sup>	10	
		AWG	18-8	
	Tightening torque	N·m	2.5	
		In-Ibs.	22	
Mounting		On DIN rail EN 60715 (35mm) by means of fast clip device		
Combination with accessories	Bus-bar Connection		Both top and bottom	
	Auxiliary contact		Yes	
	Shunt release		Yes	
	Under voltage release		Yes	
	Alarm contact		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, 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: NB1-63, 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: NB1-63, 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)	Power supply side: NM8					
		NM8-125S	NM8-125H	NM8-125R	NM8-250S	NM8-250H	NM8-250R
		Is (kA)					
Load side: NB1-63, 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

### 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°C**

Rated current(A)	Ambient temperature											
	-35°C	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
1	1.30	1.26	1.23	1.19	1.15	1.11	1.05	1.00	0.96	0.93	0.88	0.83
2	2.60	2.52	2.46	2.38	2.28	2.20	2.08	2.00	1.92	1.86	1.76	1.66
3	3.90	3.78	3.69	3.57	3.42	3.30	3.12	3.00	2.88	2.79	2.64	2.49
4	5.20	5.04	4.92	4.76	4.56	4.40	4.16	4.00	3.84	3.76	3.52	3.32
6	7.80	7.56	7.38	7.14	6.84	6.60	6.24	6.00	5.76	5.64	5.28	4.98
10	13.20	12.70	12.50	12.00	11.50	11.10	10.60	10.00	9.60	9.30	8.90	8.40
16	21.12	20.48	20.00	19.20	18.40	17.76	16.96	16.00	15.36	14.88	14.24	13.44
20	26.40	25.60	25.00	24.00	23.00	22.20	21.20	20.00	19.20	18.60	17.80	16.8
25	33.00	32.00	31.25	30.00	28.75	27.75	26.50	25.00	24.00	23.25	22.25	21.00
32	42.56	41.28	40.00	38.72	37.12	35.52	33.92	32.00	30.72	29.76	28.16	26.88
40	53.20	51.20	50.00	48.00	46.40	44.80	42.40	40.00	38.40	37.20	35.60	33.6
50	67.00	65.50	63.00	60.50	58.00	56.00	53.00	50.00	48.00	46.50	44.00	41.50
63	83.79	81.90	80.01	76.86	73.71	70.56	66.78	63.00	60.48	58.90	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 temperature) a downrating factor of 0.8.

### 3. Overall and mounting dimensions (mm)



**4. Ordering information**

Order code	Description and specification	Order code	Description and specification
179781	NB1-63H 1P C1 10kA	179816	NB1-63H 2P B3 10kA
179782	NB1-63H 1P C10 10kA	179817	NB1-63H 2P B32 10kA
179783	NB1-63H 1P C13 10kA	179818	NB1-63H 2P B4 10kA
179784	NB1-63H 1P C16 10kA	179819	NB1-63H 2P B40 10kA
179785	NB1-63H 1P C2 10kA	179820	NB1-63H 2P B50 10kA
179786	NB1-63H 1P C20 10kA	179821	NB1-63H 2P B6 10kA
179787	NB1-63H 1P C25 10kA	179822	NB1-63H 2P B63 10kA
179788	NB1-63H 1P C3 10kA	179823	NB1-63H 2P C1 10kA
179789	NB1-63H 1P C32 10kA	179824	NB1-63H 2P C10 10kA
179790	NB1-63H 1P C4 10kA	179825	NB1-63H 2P C13 10kA
179791	NB1-63H 1P C40 10kA	179826	NB1-63H 2P C16 10kA
183220	NB1-63H 1P C5 10kA	179827	NB1-63H 2P C2 10kA
179792	NB1-63H 1P C50 10kA	179828	NB1-63H 2P C20 10kA
179793	NB1-63H 1P C6 10kA	179829	NB1-63H 2P C25 10kA
179794	NB1-63H 1P C63 10kA	179830	NB1-63H 2P C3 10kA
179795	NB1-63H 1P D1 10kA	179831	NB1-63H 2P C32 10kA
179796	NB1-63H 1P D10 10kA	179832	NB1-63H 2P C4 10kA
179797	NB1-63H 1P D13 10kA	179833	NB1-63H 2P C40 10kA
179798	NB1-63H 1P D16 10kA	179834	NB1-63H 2P C50 10kA
179799	NB1-63H 1P D2 10kA	179835	NB1-63H 2P C6 10kA
179800	NB1-63H 1P D20 10kA	179836	NB1-63H 2P C63 10kA
179801	NB1-63H 1P D25 10kA	179837	NB1-63H 2P D1 10kA
179802	NB1-63H 1P D3 10kA	179838	NB1-63H 2P D10 10kA
179803	NB1-63H 1P D32 10kA	179839	NB1-63H 2P D13 10kA
179804	NB1-63H 1P D4 10kA	179840	NB1-63H 2P D16 10kA
179805	NB1-63H 1P D40 10kA	179841	NB1-63H 2P D2 10kA
179806	NB1-63H 1P D50 10kA	179842	NB1-63H 2P D20 10kA
179807	NB1-63H 1P D6 10kA	179843	NB1-63H 2P D25 10kA
179808	NB1-63H 1P D63 10kA	179844	NB1-63H 2P D3 10kA
181106	NB1-63H 1P D8 10kA	179845	NB1-63H 2P D32 10kA
181069	NB1-63H 1P+N C10 10kA	179846	NB1-63H 2P D4 10kA
181070	NB1-63H 1P+N C13 10kA	179847	NB1-63H 2P D40 10kA
181071	NB1-63H 1P+N C16 10kA	179848	NB1-63H 2P D50 10kA
181072	NB1-63H 1P+N C20 10kA	179849	NB1-63H 2P D6 10kA
181073	NB1-63H 1P+N C25 10kA	179850	NB1-63H 2P D63 10kA
181074	NB1-63H 1P+N C32 10kA	181107	NB1-63H 2P D8 10kA
181075	NB1-63H 1P+N C40 10kA	179851	NB1-63H 3P B1 10kA
181076	NB1-63H 1P+N C50 10kA	179852	NB1-63H 3P B10 10kA
181068	NB1-63H 1P+N C6 10kA	179853	NB1-63H 3P B13 10kA
181077	NB1-63H 1P+N C63 10kA	179854	NB1-63H 3P B16 10kA
179809	NB1-63H 2P B1 10kA	179855	NB1-63H 3P B2 10kA
179810	NB1-63H 2P B10 10kA	179856	NB1-63H 3P B20 10kA
179811	NB1-63H 2P B13 10kA	179857	NB1-63H 3P B25 10kA
179812	NB1-63H 2P B16 10kA	179858	NB1-63H 3P B3 10kA
179813	NB1-63H 2P B2 10kA	179859	NB1-63H 3P B32 10kA
179814	NB1-63H 2P B20 10kA	179860	NB1-63H 3P B4 10kA
179815	NB1-63H 2P B25 10kA	179861	NB1-63H 3P B40 10kA

Order code	Description and specification	Order code	Description and specification
179862	NB1-63H 3P B50 10kA	179899	NB1-63H 4P B25 10kA
179863	NB1-63H 3P B6 10kA	179900	NB1-63H 4P B3 10kA
179864	NB1-63H 3P B63 10kA	179901	NB1-63H 4P B32 10kA
179865	NB1-63H 3P C1 10kA	179902	NB1-63H 4P B4 10kA
179866	NB1-63H 3P C10 10kA	179903	NB1-63H 4P B40 10kA
179867	NB1-63H 3P C13 10kA	179904	NB1-63H 4P B50 10kA
179868	NB1-63H 3P C16 10kA	179905	NB1-63H 4P B6 10kA
179869	NB1-63H 3P C2 10kA	179906	NB1-63H 4P B63 10kA
179870	NB1-63H 3P C20 10kA	179907	NB1-63H 4P C1 10kA
179871	NB1-63H 3P C25 10kA	179908	NB1-63H 4P C10 10kA
179872	NB1-63H 3P C3 10kA	179909	NB1-63H 4P C13 10kA
179873	NB1-63H 3P C32 10kA	179910	NB1-63H 4P C16 10kA
179874	NB1-63H 3P C4 10kA	179911	NB1-63H 4P C2 10kA
179875	NB1-63H 3P C40 10kA	179912	NB1-63H 4P C20 10kA
179876	NB1-63H 3P C50 10kA	179913	NB1-63H 4P C25 10kA
179877	NB1-63H 3P C6 10kA	179914	NB1-63H 4P C3 10kA
179878	NB1-63H 3P C63 10kA	179915	NB1-63H 4P C32 10kA
179879	NB1-63H 3P D1 10kA	179916	NB1-63H 4P C4 10kA
179880	NB1-63H 3P D10 10kA	179917	NB1-63H 4P C40 10kA
179881	NB1-63H 3P D13 10kA	179918	NB1-63H 4P C50 10kA
179882	NB1-63H 3P D16 10kA	179919	NB1-63H 4P C6 10kA
179883	NB1-63H 3P D2 10kA	179920	NB1-63H 4P C63 10kA
179884	NB1-63H 3P D20 10kA	179921	NB1-63H 4P D1 10kA
179885	NB1-63H 3P D25 10kA	179922	NB1-63H 4P D10 10kA
179886	NB1-63H 3P D3 10kA	179923	NB1-63H 4P D13 10kA
179887	NB1-63H 3P D32 10kA	179924	NB1-63H 4P D16 10kA
179888	NB1-63H 3P D4 10kA	179925	NB1-63H 4P D2 10kA
179889	NB1-63H 3P D40 10kA	179926	NB1-63H 4P D20 10kA
179890	NB1-63H 3P D50 10kA	179927	NB1-63H 4P D25 10kA
179891	NB1-63H 3P D6 10kA	179928	NB1-63H 4P D3 10kA
179892	NB1-63H 3P D63 10kA	179929	NB1-63H 4P D32 10kA
181078	NB1-63H 3P+N C10 10kA	179930	NB1-63H 4P D4 10kA
181079	NB1-63H 3P+N C13 10kA	179931	NB1-63H 4P D40 10kA
181080	NB1-63H 3P+N C16 10kA	179932	NB1-63H 4P D50 10kA
181081	NB1-63H 3P+N C20 10kA	179933	NB1-63H 4P D6 10kA
181082	NB1-63H 3P+N C25 10kA	179934	NB1-63H 4P D63 10kA
181083	NB1-63H 3P+N C32 10kA		
181084	NB1-63H 3P+N C40 10kA		
181085	NB1-63H 3P+N C50 10kA		
181884	NB1-63H 3P+N C6 10kA		
181086	NB1-63H 3P+N C63 10kA		
179893	NB1-63H 4P B1 10kA		
179894	NB1-63H 4P B10 10kA		
179895	NB1-63H 4P B13 10kA		
179896	NB1-63H 4P B16 10kA		
179897	NB1-63H 4P B2 10kA		
179898	NB1-63H 4P B20 10kA		

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 50°C

Rated current(A)	Ambient temperature											
	-35°C	-30°C	-20°C	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	60°C	70°C
1	1.40	1.35	1.32	1.28	1.24	1.19	1.13	1.08	1.03	1.00	0.95	0.89
2	2.80	2.71	2.65	2.56	2.45	2.37	2.24	2.15	2.06	2.00	1.89	1.78
3	4.19	4.06	3.97	3.84	3.68	3.55	3.35	3.23	3.10	3.00	2.84	2.68
4	5.53	5.36	5.23	5.06	4.85	4.68	4.43	4.26	4.09	4.00	3.74	3.53
6	8.30	8.04	7.85	7.60	7.28	7.02	6.64	6.38	6.13	6.00	5.62	5.30
10	14.19	13.66	13.44	12.90	12.37	11.94	11.40	10.75	10.32	10.00	9.57	9.03
16	22.71	22.02	21.51	20.65	19.78	19.10	18.24	17.20	16.52	16.00	15.31	14.45
20	28.39	27.53	26.88	25.81	24.73	23.87	22.80	21.51	20.65	20.00	19.14	18.06
25	35.48	34.41	33.60	32.26	30.91	29.84	28.49	26.88	25.81	25.00	23.92	22.58
32	45.76	44.39	43.01	41.63	39.91	38.19	36.47	34.41	33.03	32.00	30.28	28.90
40	57.20	55.05	53.76	51.61	49.89	48.17	45.59	43.01	41.29	40.00	38.28	36.13
50	72.04	70.43	67.74	65.05	62.37	60.22	56.99	53.76	51.61	50.00	47.31	44.62
63	89.62	87.60	85.58	82.21	78.84	75.47	71.43	67.39	64.69	63.00	59.30	55.93

6. Ordering information

Order code	Description and specification	Packing Qty	Order code	Description and specification	Packing Qty
201916	NB1-63H 1P C10 10kA DB Tel	180	201932	NB1-63H 3P C10 10kA DB Tel	60
201917	NB1-63H 1P C16 10kA DB Tel	180	201933	NB1-63H 3P C16 10kA DB Tel	60
201918	NB1-63H 1P C20 10kA DB Tel	180	201934	NB1-63H 3P C20 10kA DB Tel	60
201919	NB1-63H 1P C25 10kA DB Tel	180	201935	NB1-63H 3P C25 10kA DB Tel	60
171795	NB1-63H 1P C32 10kA DB Tel	180	201936	NB1-63H 3P C32 10kA DB Tel	60
201920	NB1-63H 1P C40 10kA DB Tel	180	201937	NB1-63H 3P C40 10kA DB Tel	60
201921	NB1-63H 1P C50 10kA DB Tel	180	201938	NB1-63H 3P C50 10kA DB Tel	60
201922	NB1-63H 1P C6 10kA DB Tel	180	201939	NB1-63H 3P C6 10kA DB Tel	60
171796	NB1-63H 1P C63 10kA DB Tel	180	171797	NB1-63H 3P C63 10kA DB Tel	60
201923	NB1-63H 2P C10 10kA DB Tel	90	201940	NB1-63H 4P C10 10kA DB Tel	45
201924	NB1-63H 2P C16 10kA DB Tel	90	201941	NB1-63H 4P C16 10kA DB Tel	45
201925	NB1-63H 2P C20 10kA DB Tel	90	201942	NB1-63H 4P C20 10kA DB Tel	45
201926	NB1-63H 2P C25 10kA DB Tel	90	201943	NB1-63H 4P C25 10kA DB Tel	45
201927	NB1-63H 2P C32 10kA DB Tel	90	201944	NB1-63H 4P C32 10kA DB Tel	45
201928	NB1-63H 2P C40 10kA DB Tel	90	201945	NB1-63H 4P C40 10kA DB Tel	45
201929	NB1-63H 2P C50 10kA DB Tel	90	201946	NB1-63H 4P C50 10kA DB Tel	45
201930	NB1-63H 2P C63 10kA DB Tel	90	201947	NB1-63H 4P C63 10kA DB Tel	45
201931	NB1-63H 2P C6 10kA DB Tel	90	201948	NB1-63H 4P C6 10kA DB Tel	45