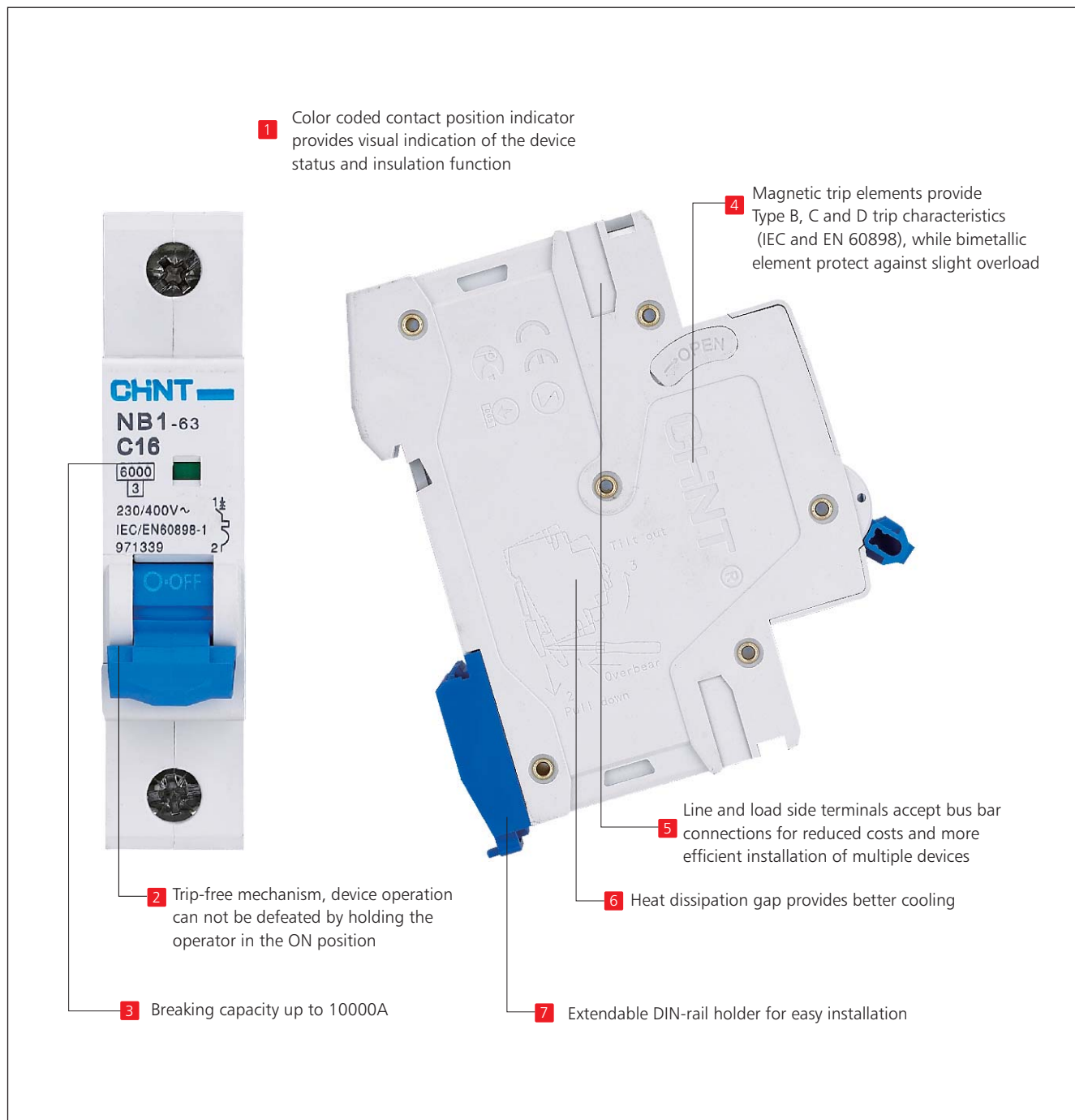


## NB1 Miniature Circuit Breaker





## NB1 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:  
 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).

#### 1.3 Approvals and certificates

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



2.4 UL1077  
Icn=5kA, AC type

★ NB1, 1P



In (A)	CTN	Order Code		
		Curve B RoHS	Curve C RoHS	Curve D RoHS
1	180	985223	985275	985327
2	180	985224	985276	985328
3	180	985225	985277	985329
4	180	985226	985278	985330
6	180	985227	985279	985331
10	180	985228	985280	985332
16	180	985229	985281	985333
20	180	985230	985282	985334
25	180	985231	985283	985335
32	180	985232	985284	985336
40	180	985233	985285	985337
50	180	985234	985286	985338
63	180	985235	985287	985339

Icn=5kA, AC type

★ NB1, 2P



In (A)	CTN	Order Code		
		Curve B RoHS	Curve C RoHS	Curve D RoHS
1	90	985236	985288	985340
2	90	985237	985289	985341
3	90	985238	985290	985342
4	90	985239	985291	985343
6	90	985240	985292	985344
10	90	985241	985293	985345
16	90	985242	985294	9853446
20	90	985243	985295	9853447
25	90	985244	985296	9853448
32	90	985245	985297	9853449
40	90	985246	985298	9853450
50	90	985247	985299	9853451
63	90	985248	985300	9853452

Icn=5kA, AC type

★ NB1, 3P



In (A)	CTN	Order Code		
		Curve B RoHS	Curve C RoHS	Curve D RoHS
1	60	985249	985301	985353
2	60	985250	985302	985354
3	60	985251	985303	985355
4	60	985252	985304	985356
6	60	985253	985305	985357
10	60	985254	985306	985358
16	60	985255	985307	985359
20	60	985256	985308	985360
25	60	985257	985309	985361
32	60	985258	985310	985362
40	60	985259	985311	985363
50	60	985260	985312	985364
63	60	985261	985313	985365

Icn=5kA, AC type

★ NB1, 4P



In (A)	CTN	Order Code		
		Curve B RoHS	Curve C RoHS	Curve D RoHS
1	45	985262	985314	985366
2	45	985263	985315	985367
3	45	985264	985316	985368
4	45	985265	985317	985369
6	45	985266	985318	985370
10	45	985267	985319	985371
16	45	985268	985320	985372
20	45	985269	985321	985373
25	45	985270	985322	985374
32	45	985271	985323	985375
40	45	985272	985324	985376
50	45	985273	985325	985377
63	45	985274	985326	985378

2.5 UL1077  
 Icn=10kA, DC type

★ NB1, 1P



Icn=10kA, DC type

★ NB1, 2P



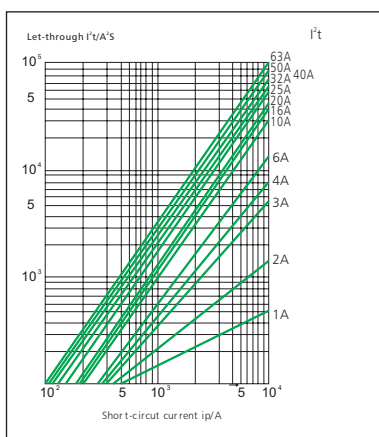
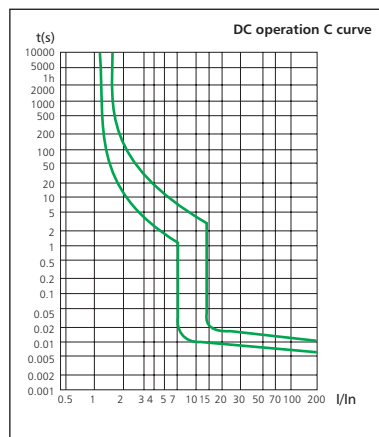
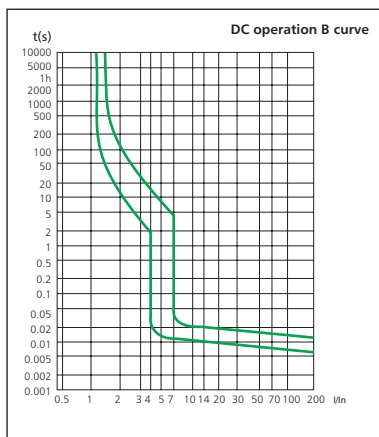
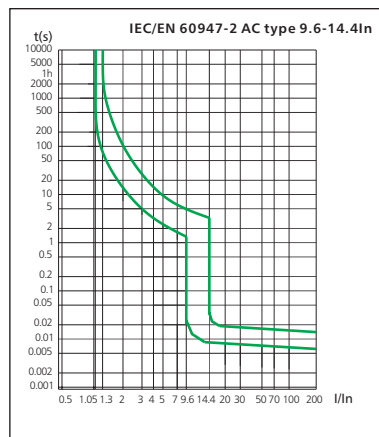
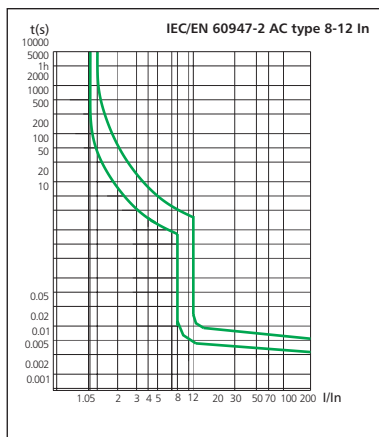
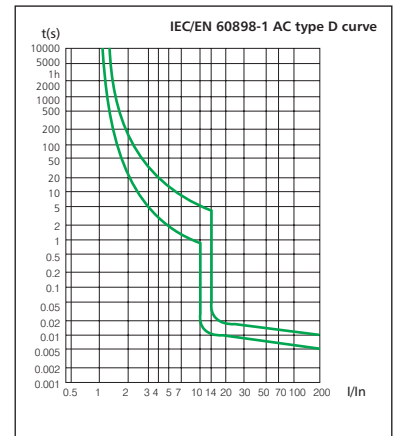
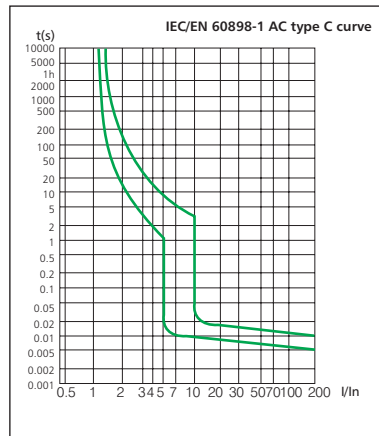
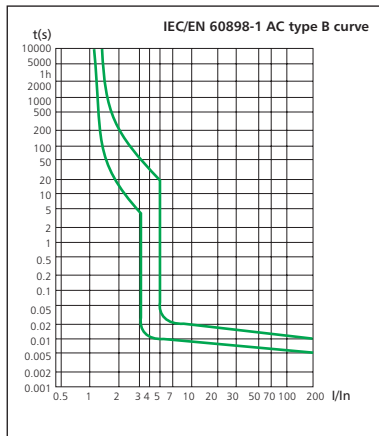
In (A)	CTN	Order Code	
		Curve B	Curve C
		RoHS	RoHS
1	180	985431	985457
2	180	985432	985458
3	180	985433	985459
4	180	985434	985460
6	180	985435	985461
10	180	985436	985462
16	180	985437	985463
20	180	985438	985464
25	180	985439	985465
32	180	985440	985466
40	180	985441	985467
50	180	985442	985468
63	180	985443	985469

In (A)	CTN	Order Code	
		Curve B	Curve C
		RoHS	RoHS
1	90	985444	985470
2	90	985445	985471
3	90	985446	985472
4	90	985447	985473
6	90	985448	985474
10	90	985449	985475
16	90	985450	985476
20	90	985451	985477
25	90	985452	985478
32	90	985453	985479
40	90	985454	985480
50	90	985455	985481
63	90	985456	985482

A

**3. Technical data**

3.1 curves



3.2

	Standard		IEC/EN 60898-1	IEC/EN 60947-2	UL1077	UL1077	
Electrical features	Rated current In	A	1, 2, 3, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63		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	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	6000/10000	6k	5k	10k	
	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		2	
				13, 16, 20, 25, 32		3.5	
				40, 50, 63		5	
Thermo-magnetic release characteristic		B, C, D	8-12In, 9.6-14.4In	B, C, D	4-7In, 7-14In		
Mechanical features	Electrical life		4, 000				
	Mechanical life		20, 000				
	Contact position indicator		Yes				
	Protection degree		IP20				
	Reference temperature for setting of thermal element	°C	30				
	Ambient temperature (with daily average ≤35°C)	°C	-5...+40(Special application please refer to P14 for temperature compensation correction)				
	Storage temperature	°C	-25...+70				
Installation	Terminal connection type		Cable/U-type busbar/Pin-type busbar				
	Terminal size top/bottom for cable	mm <sup>2</sup>	25				
		AWG	18-4				
	Terminal size top/bottom for busbar	mm <sup>2</sup>	10				
		AWG	18-8				
	Tightening torque	N*m	2.5				
		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 contact		Yes				



3.3 Selectivity

In (A)	Power supply side: RT36-00 (fuse)								
	20	25	36	50	63	80	100	125	160
	Is (kA)								
≤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)								
≤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									

3.4 Backup protection

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

In (A)	Power supply side: NM8					
	NM8-125S	NM8-125H	NM8-125R	NM8-250S	NM8-250H	NM8-250R
	Is (kA)					
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

3.5 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**

Ambient temperature Rated current(A)	-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.

4. Overall and mounting dimensions (mm)

