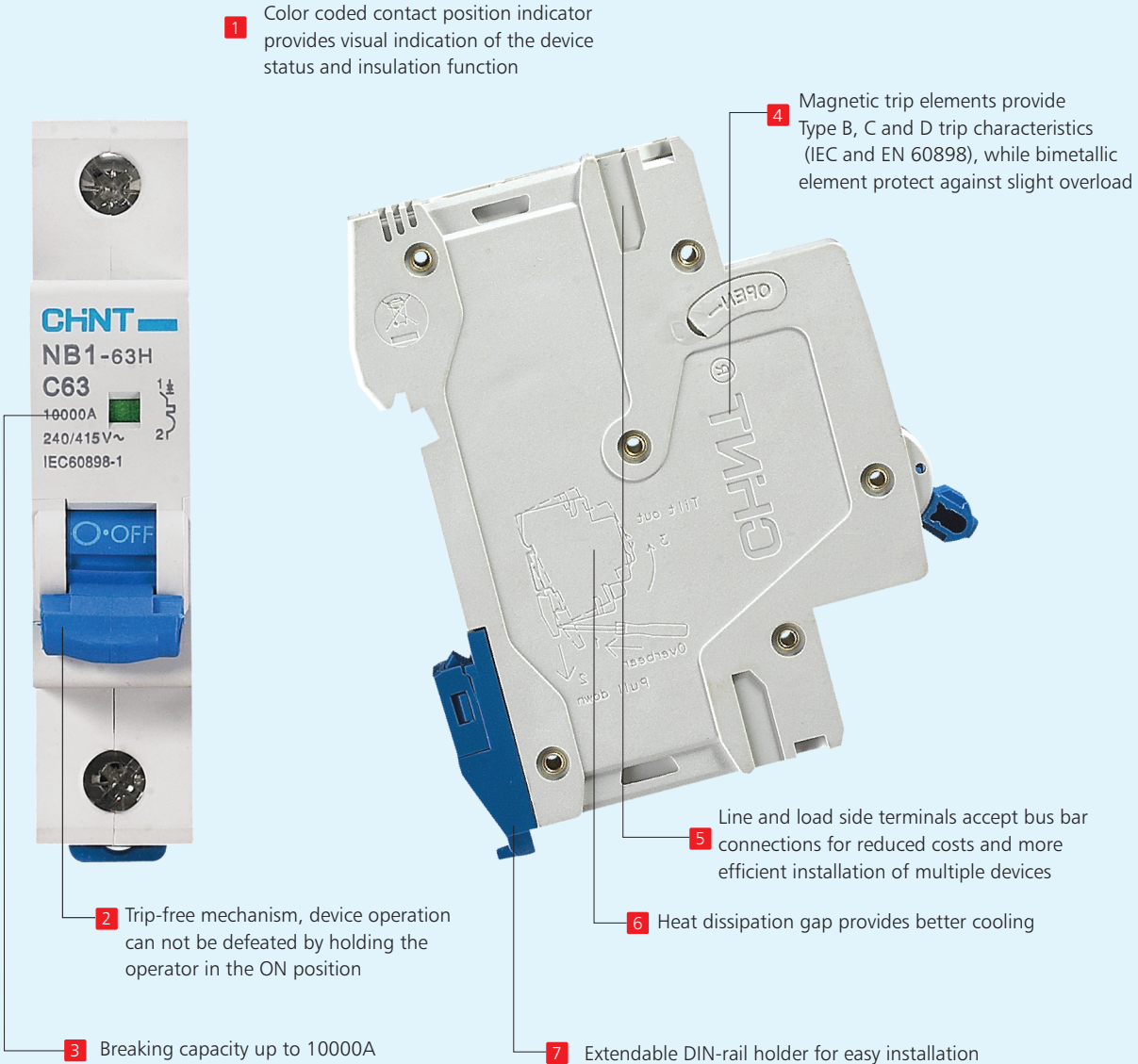


CE										RCC			
EU	Norway	UK	Germany	Sweden	Finland	Czech	Indonesia	Ukraine	Russia	South Africa	Sri Lanka	USA	Canada

## NB1 Miniature Circuit Breaker



**1** Color coded contact position indicator provides visual indication of the device status and insulation function

**2** Trip-free mechanism, device operation can not be defeated by holding the operator in the ON position

**3** Breaking capacity up to 10000A

**4** Magnetic trip elements provide Type B, C and D trip characteristics (IEC and EN 60898), while bimetallic element protect against slight overload

**5** Line and load side terminals accept bus bar connections for reduced costs and more efficient installation of multiple devices

**6** Heat dissipation gap provides better cooling

**7** Extendable DIN-rail holder for easy installation



## 1. General

### 1.1 Application:

For protecting cables and equipment against overload and short circuit.

### 1.2 General rules for choosing MCB.

#### a. 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.

#### b. There are 3 curve characteristics for magnetic operation:

B curve (3-5 In) protection and control of the circuits against overloads and short-circuits; protection for people and big length cables in TN and IT systems.

C curve (5-10 In) protection and control of the circuits against overloads and short-circuits; protection for resistive and inductive loads with low inrush current.

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

### 1.3 Detailed certificates information, please refer to Certificates Table on P153.



## 2. Ordering information

### 2.1 Fully comply with IEC/EN 60898-1

➔ **Icn=6000A, AC operation (Breaking capacity 10kA IEC/EN 60947-2)**

★ 1P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	180	131001	971276	131053	971332	131105	971388
2	180	131002	971277	131054	971333	131106	971389
3	180	131003	971278	131055	971334	131107	971390
4	180	131004	971279	131056	971335	131108	971391
6	180	131005	971280	131057	971336	131109	971392
10	180	131006	971281	131058	971337	131110	971393
13	180	131365	971282	131369	971338	131373	971394
16	180	131007	971283	131059	971339	131111	971395
20	180	131008	971284	131060	971340	131112	971396
25	180	131009	971285	131061	971341	131113	971397
32	180	131010	971286	131062	971342	131114	971398
40	180	131011	971287	131063	971343	131115	971399
50	180	131012	971288	131064	971344	131116	971400
63	180	131013	971289	131065	971345	131117	971401

★ 2P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	90	131014	971290	131066	971346	131118	971402
2	90	131015	971291	131067	971347	131119	971403
3	90	131016	971292	131068	971348	131120	971404
4	90	131017	971293	131069	971349	131121	971405
6	90	131018	971294	131070	971350	131122	971406
10	90	131019	971295	131071	971351	131123	971407
13	90	131366	971296	131370	971352	131324	971408
16	90	131020	971297	131072	971353	131124	971409
20	90	131021	971298	131073	971354	131125	971410
25	90	131022	971299	131074	971355	131126	971411
32	90	131023	971300	131075	971356	131127	971412
40	90	131024	971301	131076	971357	131128	971413
50	90	131025	971302	131077	971358	131129	971414
63	90	131026	971303	131078	971359	131130	971415

★ 3P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	60	131027	971304	131079	971360	131131	971416
2	60	131028	971305	131080	971361	131132	971417
3	60	131029	971306	131081	971362	131133	971418
4	60	131030	971307	131082	971363	131134	971419
6	60	131031	971308	131083	971364	131135	971420
10	60	131032	971309	131084	971365	131136	971421
13	60	131367	971310	131371	971366	131375	971422
16	60	131033	971311	131085	971367	131137	971423
20	60	131034	971312	131086	971368	131138	971424
25	60	131035	971313	131087	971369	131139	971425
32	60	131036	971314	131088	971370	131140	971426
40	60	131037	971315	131089	971371	131141	971427
50	60	131038	971316	131090	971372	131142	971428
63	60	131039	971317	131091	971373	131143	971429

★ 4P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	45	131040	971318	131092	971374	131144	971430
2	45	131041	971319	131093	971375	131145	971431
3	45	131042	971320	131094	971376	131146	971432
4	45	131043	971321	131095	971377	131147	971433
6	45	131044	971322	131096	971378	131148	971434
10	45	131045	971323	131097	971379	131149	971435
13	45	131368	971324	131372	971380	131376	971436
16	45	131046	971325	131098	971381	131150	971437
20	45	131047	971326	131099	971382	131151	971438
25	45	131048	971327	131100	971383	131152	971439
32	45	131049	971328	131101	971384	131153	971440
40	45	131050	971329	131102	971385	131154	971441
50	45	131051	971330	131103	971386	131155	971442
63	45	131052	971331	131104	971387	131156	971443

2.2 Fully comply with IEC/EN 60898-1

➔ **Icn=10000A, AC type (Breaking capacity 15kA IEC/EN 60947-2)**

★ 1P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	180	131761	971780	131817	971836	131873	971892
2	180	131762	971781	131818	971837	131874	971893
3	180	131763	971782	131819	971838	131875	971894
4	180	131764	971783	131820	971839	131876	971895
6	180	131765	971784	131821	971840	131877	971896
10	180	131766	971785	131822	971841	131878	971897
13	180	131767	971786	131823	971842	131879	971898
16	180	131768	971787	131824	971843	131880	971899
20	180	131769	971788	131825	971844	131881	971900
25	180	131770	971789	131826	971845	131882	971901
32	180	131771	971790	131827	971846	131883	971902
40	180	131772	971791	131828	971847	131884	971903
50	180	131773	971792	131829	971848	131885	971904
63	180	131774	971793	131830	971849	131886	971905

★ 2P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	90	131775	971794	131831	971850	131887	971906
2	90	131776	971795	131832	971851	131888	971907
3	90	131777	971796	131833	971852	131889	971908
4	90	131778	971797	131834	971853	131890	971909
6	90	131779	971798	131835	971854	131891	971910
10	90	131780	971799	131836	971855	131892	971911
13	90	131781	971800	131837	971856	131893	971912
16	90	131782	971801	131838	971857	131894	971913
20	90	131783	971802	131839	971858	131895	971914
25	90	131784	971803	131840	971859	131896	971915
32	90	131785	971804	131841	971860	131897	971916
40	90	131786	971805	131842	971861	131898	971917
50	90	131787	971806	131843	971862	131899	971918
63	90	131788	971807	131844	971863	131900	971919

★ 3P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	60	131789	971808	131845	971864	131901	971920
2	60	131790	971809	131846	971865	131902	971921
3	60	131791	971810	131847	971866	131903	971922
4	60	131792	971811	131848	971867	131904	971923
6	60	131793	971812	131849	971868	131905	971924
10	60	131794	971813	131850	971869	131906	971925
13	60	131795	971814	131851	971870	131907	971926
16	60	131796	971815	131852	971871	131908	971927
20	60	131797	971816	131853	971872	131909	971928
25	60	131798	971817	131854	971873	131910	971929
32	60	131799	971818	131855	971874	131911	971930
40	60	131800	971819	131856	971875	131912	971931
50	60	131801	971820	131857	971876	131913	971932
63	60	131802	971821	131858	971877	131914	971933

★ 4P



In (A)	CTN	Order Code					
		Curve B		Curve C		Curve D	
		Standard	RoHS	Standard	RoHS	Standard	RoHS
1	45	131803	971822	131859	971878	131915	971934
2	45	131804	971823	131860	971879	131916	971935
3	45	131805	971824	131861	971880	131917	971936
4	45	131806	971825	131862	971881	131918	971937
6	45	131807	971826	131863	971882	131919	971938
10	45	131808	971827	131864	971883	131920	971939
13	45	131809	971828	131865	971884	131921	971940
16	45	131810	971829	131866	971885	131922	971941
20	45	131811	971830	131867	971886	131923	971942
25	45	131812	971831	131868	971887	131924	971943
32	45	131813	971832	131869	971888	131925	971944
40	45	131814	971833	131870	971889	131926	971945
50	45	131815	971834	131871	971890	131927	971946
63	45	131816	971835	131872	971891	131928	971947

2.3 Fully comply with IEC/EN 60947-2

➔ Icn=6kA, AC type

★ 1P



In (A)	CTN	Standard	RoHS
1	180	139320	985379
2	180	139321	985380
3	180	139322	985381
4	180	139323	985382
6	180	139324	985383
10	180	139325	985384
16	180	139326	985385
20	180	139327	985386
25	180	139328	985387
32	180	139329	985388
40	180	139330	985389
50	180	139331	985390
63	180	139332	985391

★ 2P



In (A)	CTN	Standard	RoHS
1	180	139333	985392
2	180	139334	985393
3	180	139335	985394
4	180	139336	985395
6	180	139337	985396
10	180	139338	985397
16	180	139339	985398
20	180	139340	985399
25	180	139341	985400
32	180	139342	985401
40	180	139343	985402
50	180	139344	985403
63	180	139345	985404

★ 3P



In (A)	CTN	Standard	RoHS
1	180	139346	985405
2	180	139347	985406
3	180	139348	985407
4	180	139349	985408
6	180	139350	985409
10	180	139351	985410
16	180	139352	985411
20	180	139353	985412
25	180	139354	985413
32	180	139355	985414
40	180	139356	985415
50	180	139357	985416
63	180	139358	985417

★ 4P



In (A)	CTN	Standard	RoHS
1	180	139359	985418
2	180	139360	985419
3	180	139361	985420
4	180	139362	985421
6	180	139363	985422
10	180	139364	985423
16	180	139365	985424
20	180	139366	985425
25	180	139367	985426
32	180	139368	985427
40	180	139369	985428
50	180	139370	985429
63	180	139371	985430

2.4 Fully comply with UL1077

➔ Icn=5kA, AC type

★ 1P



In (A)	CTN	Order Code		
		Curve B	Curve C	Curve D
		RoHS	RoHS	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

★ 2P



In (A)	CTN	Order Code		
		Curve B	Curve C	Curve D
		RoHS	RoHS	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

★ 3P



In (A)	CTN	Order Code		
		Curve B	Curve C	Curve D
		RoHS	RoHS	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



★ 4P



In (A)	CTN	Order Code		
		Curve B	Curve C	Curve D
		RoHS	RoHS	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 Fully comply with UL1077

➔ Icn=10kA, DC type

★ 1P



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

★ 2P



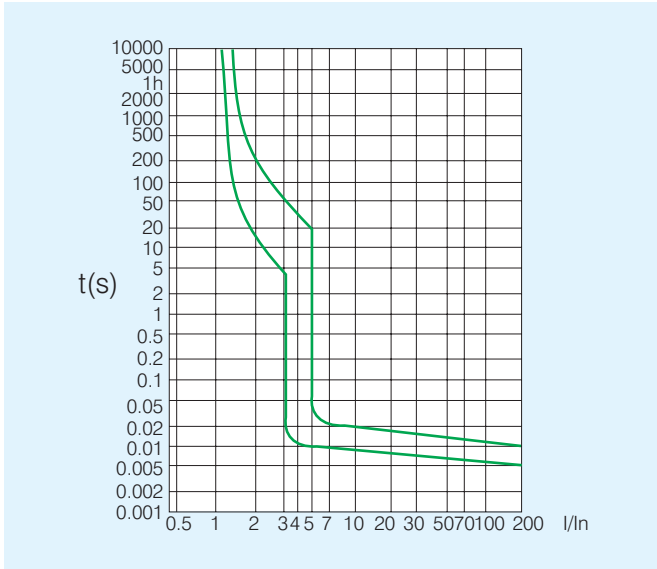
In (A)	CTN	Order Code	
		Curve B	Curve C
		RoHS	RoHS
1	180	985444	985470
2	180	985445	985471
3	180	985446	985472
4	180	985447	985473
6	180	985448	985474
10	180	985449	985475
16	180	985450	985476
20	180	985451	985477
25	180	985452	985478
32	180	985453	985479
40	180	985454	985480
50	180	985455	985481
63	180	985456	985482



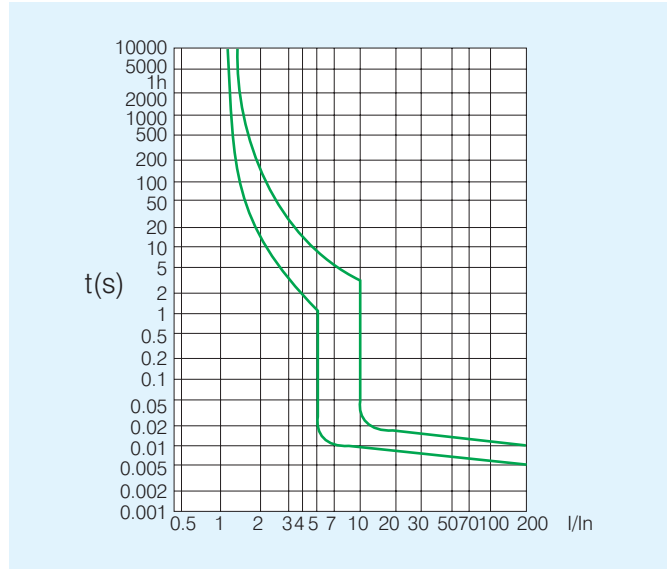
### 3. Technical features

#### 3.1 curve

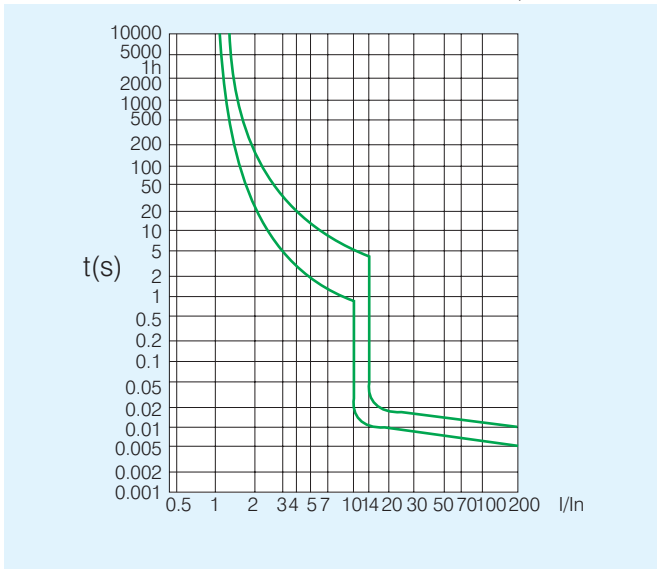
AC operation B curve



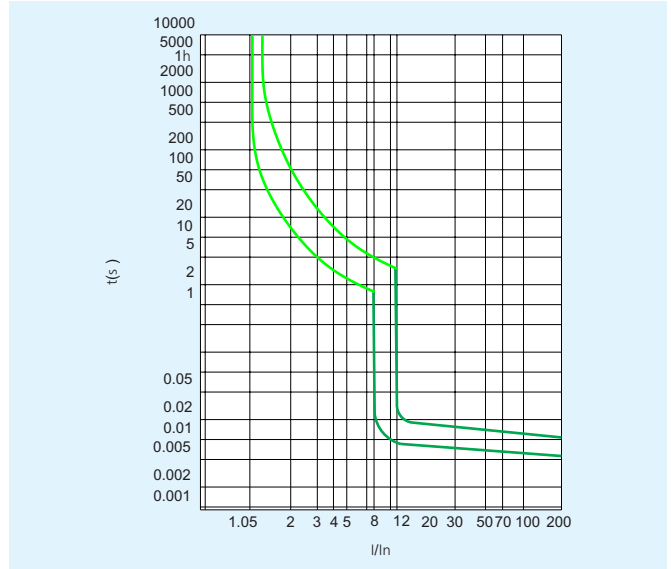
AC operation C curve



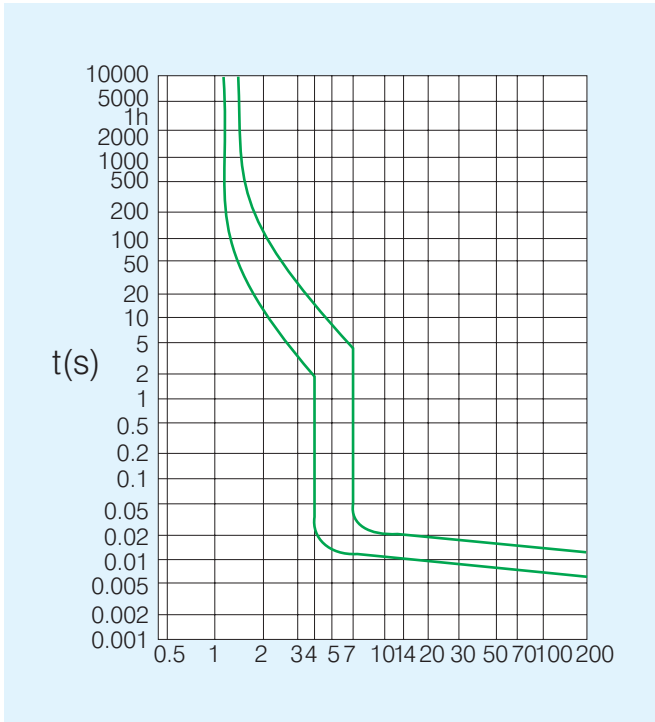
AC operation D curve



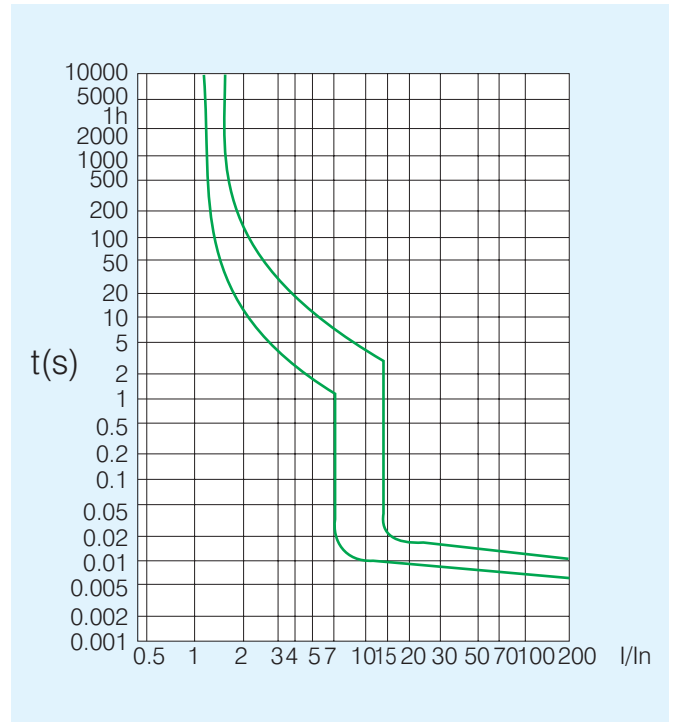
IEC/EN 60947-2



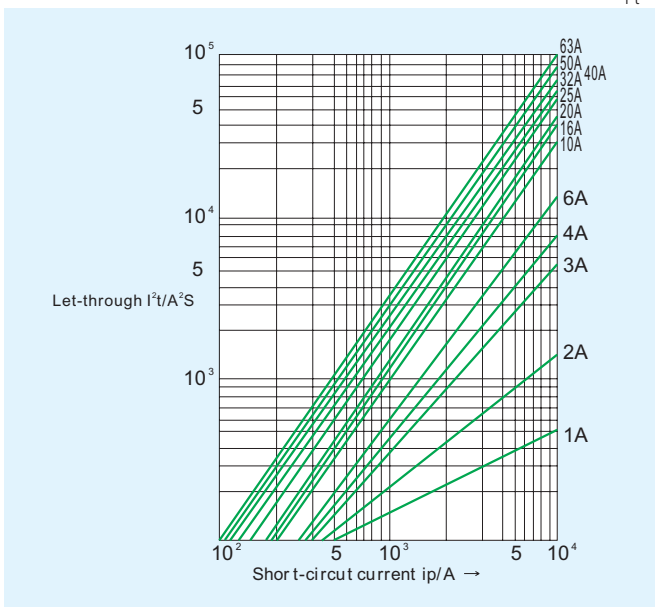
DC operation B curve



DC operation C curve



$I^2t$





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, 13, 16, 20, 25, 32, 40, 50, 63				
	Poles		1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P, 3P, 4P	1P, 2P	
	Rated voltage Ue	V	240/415	240/415	277/480	110/125	
	Insulation voltage Ui	V	500				
	Rated frequency		50/60Hz				
	Rated breaking capacity	A	6000/10000	6k	5k	10k	
	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		2	
				13, 16, 20, 25, 32		3.5	
Thermo-magnetic release characteristic			40, 50, 63		5		
			B, C, D	8-12In	B, C, D	4-7In, 7-14In	
Mechanical features	Electrical life		8, 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 P13 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	18-3				
	Terminal size top/bottom for busbar	mm <sup>2</sup>	25				
		AWG	18-3				
	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 contact		Yes				

3.3 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									

3.4 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



### 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.

Temperature	-10°C	0°C	10°C	20°C	30°C	40°C	50°C	55°C	60°C
Temperature compensation coefficient	1.20	1.15	1.10	1.05	1.00	0.95	0.90	0.875	0.85

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)

Overall and Mounting Dimensions

