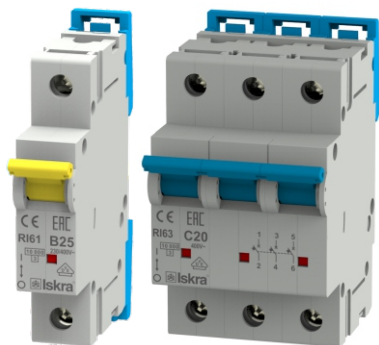


MINIATURE CIRCUIT BREAKERS - RI60



MINIATURE CIRCUIT BREAKERS OF RI 60 SERIES 50 ARE USED FOR OVER-CURRENT (OVERLOAD AND SHORT-CIRCUIT) PROTECTION OF INSTALLATIONS AND DEVICES, AND AS A DISCONNECTOR IN CASE OF ELECTRIC SHOCK.



BENEFITS

- RI 60 miniature circuit breakers are provided with two springs for assembly to a 35 mm wide mounting rail (EN 60715).
- The springs enable simple taking off irrespective of whether a busbar is positioned below or above
- Special springs are available for fixing miniature circuit breakers with two M5 screws
- A handle can be sealed in ON or OFF position
- Optional operation position
- Degree of protection IP20; degree of protection IP40 after installation in a distribution box
- Additional colour indication of the position of main contacts (red - contacts closed; green - contacts open)

TYPES

RI 61	single-pole
RI 61N	single pole + neutral pole
RI 62	two-pole
RI 63	three-pole
RI 63N	three-pole + neutral pole
RI 64	four pole

ORDERING DATA

Miniature circuit breakers RI60 up to 63 A page 2-3-4-5

Technical data page 6-7-8

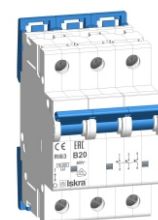
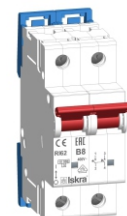
Dimensions page 9

MINIATURE CIRCUIT BREAKERS - RI60

RI60 - B characteristics

Type	Rated current I _n (A)	Rated voltage U _n (V)	Number of poles	Ordering No.	Weight (g)	Packaging (pcs)
RI61 B0.5	0.5	230	1	786.100.031	128	12
RI61 B1	1	230	1	786.100.032	128	12
RI61 B2	2	230	1	786.100.033	128	12
RI61 B3	3	230	1	786.100.034	128	12
RI61 B4	4	230	1	786.100.035	128	12
RI61 B6	6	230	1	786.100.036	128	12
RI61 B8	8	230	1	786.100.037	128	12
RI61 B10	10	230	1	786.100.038	128	12
RI61 B13	13	230	1	786.100.039	128	12
RI61 B16	16	230	1	786.100.040	128	12
RI61 B20	20	230	1	786.100.041	128	12
RI61 B25	25	230	1	786.100.042	128	12
RI61 B32	32	230	1	786.100.043	128	12
RI61 B40	40	230	1	786.100.044	128	12
RI61 B50	50	230	1	786.100.045	128	12
RI61 B63	63	230	1	786.100.046	128	12
RI61N B0.5	0.5	230/400	1 + N	786.100.346	256	6
RI61N B1	1	230/400	1 + N	786.101.900	256	6
RI61N B2	2	230/400	1 + N	786.101.901	256	6
RI61N B3	3	230/400	1 + N	786.101.902	256	6
RI61N B4	4	230/400	1 + N	786.100.349	256	6
RI61N B6	6	230/400	1 + N	786.100.297	256	6
RI61N B8	8	230/400	1 + N	786.101.903	256	6
RI61N B10	10	230/400	1 + N	786.100.237	256	6
RI61N B13	13	230/400	1 + N	786.100.339	256	6
RI61N B16	16	230/400	1 + N	786.100.238	256	6
RI61N B20	20	230/400	1 + N	786.100.239	256	6
RI61N B25	25	230/400	1 + N	786.100.240	256	6
RI61N B32	32	230/400	1 + N	786.100.241	256	6
RI61N B40	40	230/400	1 + N	786.100.242	256	6
RI61N B50	50	230/400	1 + N	786.100.243	256	6
RI61N B63	63	230/400	1 + N	786.100.364	256	6
RI62 B0.5	0.5	230/400	2	786.100.127	256	6
RI62 B1	1	230/400	2	786.101.128	256	6
RI62 B2	2	230/400	2	786.101.129	256	6
RI62 B3	3	230/400	2	786.101.130	256	6
RI62 B4	4	230/400	2	786.100.131	256	6
RI62 B6	6	230/400	2	786.100.132	256	6
RI62 B8	8	230/400	2	786.101.133	256	6
RI62 B10	10	230/400	2	786.100.134	256	6
RI62 B13	13	230/400	2	786.100.135	256	6
RI62 B16	16	230/400	2	786.100.136	256	6
RI62 B20	20	230/400	2	786.100.137	256	6
RI62 B25	25	230/400	2	786.100.138	256	6
RI62 B32	32	230/400	2	786.100.139	256	6
RI62 B40	40	230/400	2	786.100.140	256	6
RI62 B50	50	230/400	2	786.100.141	256	6
RI62 B63	63	230/400	2	786.100.142	256	6
RI63 B0.5	0.5	400	3	786.100.079	384	4
RI63 B1	1	400	3	786.101.080	384	4
RI63 B2	2	400	3	786.101.081	384	4
RI63 B3	3	400	3	786.101.082	384	4
RI63 B4	4	400	3	786.100.083	384	4
RI63 B6	6	400	3	786.100.084	384	4
RI63 B8	8	400	3	786.101.085	384	4
RI63 B10	10	400	3	786.100.086	384	4
RI63 B13	13	400	3	786.100.087	384	4
RI63 B16	16	400	3	786.100.088	384	4
RI63 B20	20	400	3	786.100.089	384	4
RI63 B25	25	400	3	786.100.090	384	4
RI63 B32	32	400	3	786.100.091	384	4
RI63 B40	40	400	3	786.100.092	384	4
RI63 B50	50	400	3	786.100.093	384	4
RI63 B63	63	400	3	786.100.094	384	4

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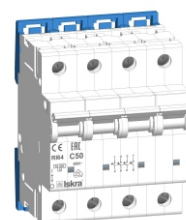
ORDERING DATA

MINIATURE CIRCUIT BREAKERS - RI60

RI60 - B characteristics

Type	Rated current I_n (A)	Rated voltage U_n (V)	Number of poles	Ordering No.	Weight (g)	Packaging (pcs)
RI63N B0.5	0.5	400	3 + N	786.101.919	494	3
RI63N B1	1	400	3 + N	786.101.920	494	3
RI63N B2	2	400	3 + N	786.101.921	494	3
RI63N B3	3	400	3 + N	786.101.922	494	3
RI63N B4	4	400	3 + N	786.101.923	494	3
RI63N B6	6	400	3 + N	786.100.360	494	3
RI63N B8	8	400	3 + N	786.101.924	494	3
RI63N B10	10	400	3 + N	786.100.246	494	3
RI63N B13	13	400	3 + N	786.100.342	494	3
RI63N B16	16	400	3 + N	786.100.247	494	3
RI63N B20	20	400	3 + N	786.100.248	494	3
RI63N B25	25	400	3 + N	786.100.249	494	3
RI63N B32	32	400	3 + N	786.100.250	494	3
RI63N B40	40	400	3 + N	786.100.251	494	3
RI63N B50	50	400	3 + N	786.100.252	494	3
RI63N B63	63	400	3 + N	786.100.253	494	3
RI64 B0.5	0.5	400	4	786.100.175	512	3
RI64 B1	1	400	4	786.100.176	512	3
RI64 B2	2	400	4	786.100.177	512	3
RI64 B3	3	400	4	786.100.178	512	3
RI64 B4	4	400	4	786.100.179	512	3
RI64 B6	6	400	4	786.100.180	512	3
RI64 B8	8	400	4	786.100.181	512	3
RI64 B10	10	400	4	786.100.182	512	3
RI64 B13	13	400	4	786.100.183	512	3
RI64 B16	16	400	4	786.100.184	512	3
RI64 B20	20	400	4	786.100.185	512	3
RI64 B25	25	400	4	786.100.186	512	3
RI64 B32	32	400	4	786.100.187	512	3
RI64 B40	40	400	4	786.100.188	512	3
RI64 B50	50	400	4	786.100.189	512	3
RI64 B63	63	400	4	786.100.190	512	3

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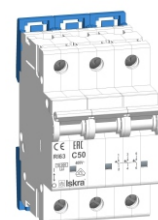
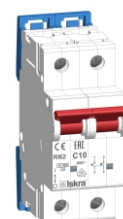


MINIATURE CIRCUIT BREAKERS - RI60

RI60 - C characteristics

Type	Rated current I _n (A)	Rated voltage U _n (V)	Number of poles	Ordering No.	Weight (g)	Packaging (pcs)
RI61 C0.5	0.5	230	1	786.100.047	128	12
RI61 C1	1	230	1	786.100.048	128	12
RI61 C2	2	230	1	786.100.049	128	12
RI61 C3	3	230	1	786.100.050	128	12
RI61 C4	4	230	1	786.100.051	128	12
RI61 C6	6	230	1	786.100.052	128	12
RI61 C8	8	230	1	786.100.053	128	12
RI61 C10	10	230	1	786.100.054	128	12
RI61 C13	13	230	1	786.100.055	128	12
RI61 C16	16	230	1	786.100.056	128	12
RI61 C20	20	230	1	786.100.057	128	12
RI61 C25	25	230	1	786.100.058	128	12
RI61 C32	32	230	1	786.100.059	128	12
RI61 C40	40	230	1	786.100.060	128	12
RI61 C50	50	230	1	786.100.061	128	12
RI61 C63	63	230	1	786.100.062	128	12
RI61N C0.5	0.5	230/400	1 + N	786.100.347	256	6
RI61N C1	1	230/400	1 + N	786.100.363	256	6
RI61N C2	2	230/400	1 + N	786.100.338	256	6
RI61N C3	3	230/400	1 + N	786.101.904	256	6
RI61N C4	4	230/400	1 + N	786.100.361	256	6
RI61N C6	6	230/400	1 + N	786.100.341	256	6
RI61N C8	8	230/400	1 + N	786.101.905	256	6
RI61N C10	10	230/400	1 + N	786.100.325	256	6
RI61N C13	13	230/400	1 + N	786.100.344	256	6
RI61N C16	16	230/400	1 + N	786.100.326	256	6
RI61N C20	20	230/400	1 + N	786.100.327	256	6
RI61N C25	25	230/400	1 + N	786.100.328	256	6
RI61N C32	32	230/400	1 + N	786.100.329	256	6
RI61N C40	40	230/400	1 + N	786.100.354	256	6
RI61N C50	50	230/400	1 + N	786.100.340	256	6
RI61N C63	63	230/400	1 + N	786.100.316	256	6
RI62 C0.5	0.5	230/400	2	786.100.143	256	6
RI62 C1	1	230/400	2	786.101.144	256	6
RI62 C2	2	230/400	2	786.101.145	256	6
RI62 C3	3	230/400	2	786.101.146	256	6
RI62 C4	4	230/400	2	786.100.147	256	6
RI62 C6	6	230/400	2	786.100.148	256	6
RI62 C8	8	230/400	2	786.101.149	256	6
RI62 C10	10	230/400	2	786.100.150	256	6
RI62 C13	13	230/400	2	786.100.151	256	6
RI62 C16	16	230/400	2	786.100.152	256	6
RI62 C20	20	230/400	2	786.100.153	256	6
RI62 C25	25	230/400	2	786.100.154	256	6
RI62 C32	32	230/400	2	786.100.155	256	6
RI62 C40	40	230/400	2	786.100.156	256	6
RI62 C50	50	230/400	2	786.100.157	256	6
RI62 C63	63	230/400	2	786.100.158	256	6
RI63 C0.5	0.5	400	3	786.100.095	384	4
RI63 C1	1	400	3	786.100.096	384	4
RI63 C2	2	400	3	786.100.097	384	4
RI63 C3	3	400	3	786.100.098	384	4
RI63 C4	4	400	3	786.100.099	384	4
RI63 C6	6	400	3	786.100.100	384	4
RI63 C8	8	400	3	786.100.101	384	4
RI63 C10	10	400	3	786.100.102	384	4
RI63 C13	13	400	3	786.100.103	384	4
RI63 C16	16	400	3	786.100.104	384	4
RI63 C20	20	400	3	786.100.105	384	4
RI63 C25	25	400	3	786.100.106	384	4
RI63 C32	32	400	3	786.100.107	384	4
RI63 C40	40	400	3	786.100.108	384	4
RI63 C50	50	400	3	786.100.109	384	4
RI63 C63	63	400	3	786.100.110	384	4

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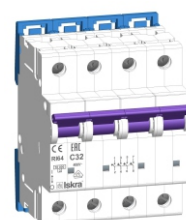
ORDERING DATA

MINIATURE CIRCUIT BREAKERS - RI60

RI60 - C characteristics

Type	Rated current I _n (A)	Rated voltage U _n (V)	Number of poles	Ordering No.	Weight (g)	Packaging (pcs)
RI63N C0.5	0.5	400	3 + N	786.101.906	494	3
RI63N C1	1	400	3 + N	786.100.378	494	3
RI63N C2	2	400	3 + N	786.100.379	494	3
RI63N C3	3	400	3 + N	786.101.907	494	3
RI63N C4	4	400	3 + N	786.100.380	494	3
RI63N C6	6	400	3 + N	786.100.232	494	3
RI63N C8	8	400	3 + N	786.101.908	494	3
RI63N C10	10	400	3 + N	786.100.233	494	3
RI63N C13	13	400	3 + N	786.101.918	494	3
RI63N C16	16	400	3 + N	786.100.234	494	3
RI63N C20	20	400	3 + N	786.100.235	494	3
RI63N C25	25	400	3 + N	786.100.228	494	3
RI63N C32	32	400	3 + N	786.100.227	494	3
RI63N C40	40	400	3 + N	786.100.229	494	3
RI63N C50	50	400	3 + N	786.100.230	494	3
RI63N C63	63	400	3 + N	786.100.231	494	3
RI64 C0.5	0.5	400	4	786.100.191	512	3
RI64 C1	1	400	4	786.100.192	512	3
RI64 C2	2	400	4	786.100.193	512	3
RI64 C3	3	400	4	786.100.194	512	3
RI64 C4	4	400	4	786.100.195	512	3
RI64 C6	6	400	4	786.100.196	512	3
RI64 C8	8	400	4	786.100.197	512	3
RI64 C10	10	400	4	786.100.198	512	3
RI64 C13	13	400	4	786.100.199	512	3
RI64 C16	16	400	4	786.100.200	512	3
RI64 C20	20	400	4	786.100.201	512	3
RI64 C25	25	400	4	786.100.202	512	3
RI64 C32	32	400	4	786.100.203	512	3
RI64 C40	40	400	4	786.100.204	512	3
RI64 C50	50	400	4	786.100.205	512	3
RI64 C63	63	400	4	786.100.206	512	3

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ORDERING DATA

MINIATURE CIRCUIT BREAKERS - RI60, RI60J

Type	Symbol	Unit	RI60	RI60J
Area of use			AC systems	DC systems
Standards			IEC/EN 60898-1, IEC/EN 60947-2	
Approvals			VDE, EAC, CE	EAC, CE
Number of poles			1, 1+N, 2, 3, 3+N, 4	1, 2
Tripping characteristics			B, C, D	C
Rated currents	I_n	A	0.5 ... 63	
Rated voltage	U_n	V	230, 230/400, 400 (IEC/EN 60898-1)	220 (single-pole)
			230, 400 (IEC/EN 60947-2)	440 (two-poles)
				880 (four-poles)
Rated DC voltage	U_n	V	max. 40 - 1-pole	220, 440, 880
Max. time constant for DC voltage	t	ms	15/60 V DC max.	3
Rated impulse withstand voltage	U_{imp}	kV	4	
Rated insulation voltage	U_i	V	500	
Rated frequency	f	Hz	50/60	-
Rated short-circuit breaking capacity	I_{cu}, I_{cs}	kA	10	4.5
Service short-circuit breaking capacity	I_{cs}	kA	7.5	4.5
Selectivity class			3	1
Electrical endurance		op.c.	6000	4000
Mechanical endurance		op.c.	100 000	
Terminal capacity		mm ²	1.5 ... 25 for Cu conductors	
			2.5 ... 25 for Al conductors	
Screw type			M5	
Screw head			PZ2	
Tightening torque		Nm	2	
Mounting			35 mm DIN rail acc. to 60715, with clip on panel	
Degree of protection			IP 20	
Ambient temperature		°C	IP 40 from the front panel	
Altitude			-25 ... 55	
Above max. altitude the voltages U_i and U_n are reduced by 1.2%, nominal rating I_n is reduced by 0.4% for every additional 100 m		m	up to 3000	
			any	
Mounting position			3 g (8 ... 50 Hz)	
Resistance against vibrations			Auxiliary and signal contacts PKJ, 2PKJ, PKJ+SKJ	
Accessories			Shunt trip release VC60	
			Undervoltage release PC60	

MINIATURE CIRCUIT BREAKERS - RI60

Internal impedances, power losses, loop impedance and rated currents corrections

Ratted current I _n (A)	Internal impedance Z (mΩ)	Power losses P(W)	Max. impedance of fault loop Z(Ω)			Rated cuurrents correction at the ambient air temperature from -20 °C to +60 °C								
	Characteristics B, C, D		Char.B	Char.C	Char.D	-20 °C	-10 °C	0 °C	10 °C	20 °C	30 °C	40 °C	50 °C	60 °C
0.2			230.0	127.8	71.9	0.24	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17
0.3			153.3	85.2	47.9	0.36	0.35	0.34	0.33	0.32	0.30	0.28	0.26	0.25
0.4			115.0	63.9	35.9	0.48	0.47	0.46	0.44	0.42	0.40	0.37	0.35	0.33
0.5	6600	1.7	92.0	51.1	28.8	0.61	0.59	0.57	0.55	0.53	0.50	0.47	0.44	0.42
0.6			76.7	42.6	24.0	0.73	0.71	0.68	0.66	0.63	0.60	0.56	0.53	0.50
0.8		2.0	57.5	31.9	18.0	0.97	0.94	0.91	0.88	0.84	0.80	0.74	0.70	0.67
1	1650	1.7	46.0	25.6	14.4	1.21	1.18	1.14	1.10	1.05	1.0	0.93	0.88	0.83
1.2			38.3	21.3	12.0	1.45	1.42	1.37	1.32	1.26	1.20	1.12	1.06	1.00
2	370	1.5	23.0	12.8	7.2	2.42	2.36	2.28	2.20	2.10	2.0	1.86	1.76	1.67
3	210	1.9	15.3	8.5	4.8	3.63	3.54	3.42	3.30	3.15	3.0	2.79	2.64	2.50
4	126		11.5	6.4	3.6	4.84	4.72	4.56	4.40	4.20	4.0	3.72	3.52	3.33
4.2			11.0	6.1	3.4	5.1	5.0	4.8	4.6	4.4	4.2	3.9	3.7	3.5
6	51	1.8	7.7	4.3	2.4	7.3	7.1	6.8	6.6	6.3	6.0	5.6	5.3	5.0
8	21	1.3	5.8	3.2	1.8	9.7	9.4	9.1	8.8	8.4	8.0	7.4	7.0	6.7
10	14.8	1.5	4.6	2.6	1.4	12.1	11.8	11.4	11.0	10.5	10.0	9.3	8.8	8.3
12			3.8	2.1	1.2	14.5	14.2	13.7	13.2	12.6	12.0	11.2	10.6	10.0
13	11.3	1.9	3.5	2.0	1.1	15.7	15.3	14.8	14.3	13.7	13.0	12.1	11.5	10.8
14			3.3	1.8	1.0	16.9	16.5	16.0	15.4	14.7	14.0	13.0	12.3	11.7
16	7.5	1.9	2.9	1.6	0.9	19.4	18.9	18.2	17.6	16.8	16.0	14.9	14.1	13.3
17			2.7	1.5	0.8	20.6	20.1	19.4	18.7	17.9	17.0	15.8	15.0	14.2
20	6.3	2.5	2.3	1.3	0.7	24.2	23.6	22.8	22.0	21.0	20.0	18.6	17.6	16.7
21			2.2	1.2	0.7	25.4	24.8	23.9	23.1	22.1	21.0	19.5	18.5	17.5
25	4.4	2.8	1.8	1.0	0.6	30.3	29.5	28.5	27.5	26.3	25.0	23.3	22.0	20.8
32	3.1	3.2	1.4	0.8	0.4	38.7	37.8	36.5	35.2	33.6	32.0	29.8	28.2	26.7
35	3.1	3.8	1.3	0.7	0.4	42.3	41.3	39.9	38.5	36.8	35.0	32.6	30.8	29.2
40	2.5	4.0	1.2	0.6	0.4	48.4	47.2	45.6	44.0	42.0	40.0	37.2	35.2	33.8
50	2.2	5.5	0.9	0.5	0.3	60.5	59.0	57.0	55.0	52.5	50.0	46.5	44.1	41.7
63	1.6	6.4	0.7	0.4	0.2	76.2	74.3	71.8	69.3	66.2	63.0	58.6	55.5	52.5

Selectivity of miniature circuit breakers RI60 of characteristic B with backup fuses (kA)

NH gG								
I_n (A)	20	25	32	40	50	63	80	100
≤1	0.5	1.1	5	10	10	10	10	10
2	0.5	0.9	2.5	10	10	10	10	10
4	0.5	0.8	1.3	4.8	6	10	10	10
6	0.5	0.8	1.1	2.5	3.5	5	8	10
8	0.5	0.7	1	2	2.3	3	6	10
10	0.5	0.7	0.9	1.8	2.1	2.7	5	8.5
13	0.5	0.6	0.8	1.6	2	2.6	4.2	7
16		0.6	0.8	1.5	1.9	2.5	3.8	6.5
20		0.5	0.7	1.4	1.8	2.4	3.6	6.1
25			0.7	1.3	1.8	2.3	3.4	5.8
32				1.2	1.7	2.2	3.3	5.3
40						2.1	3.2	5.1
50						2	3	4.8
63								4.5

Selectivity of miniature circuit breakers RI60 of characteristic C with backup fuses (kA)

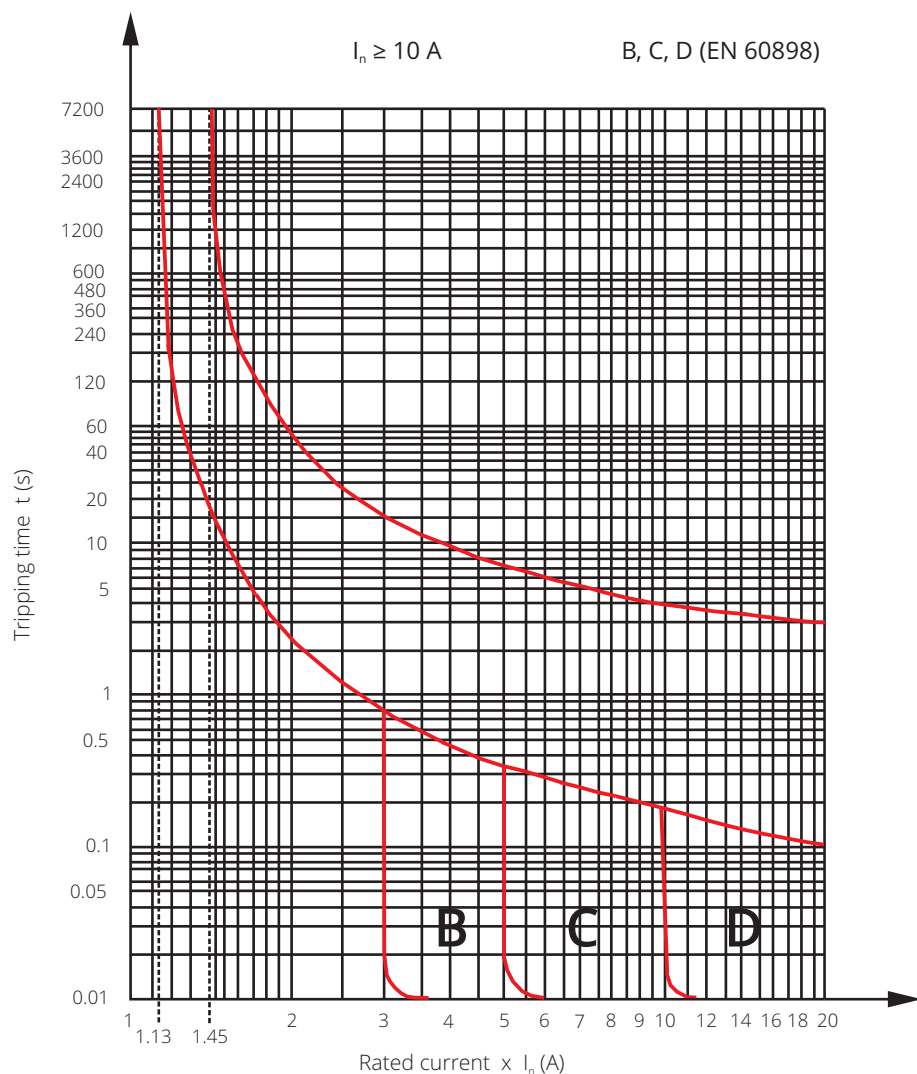
NH gG								
I_n (A)	20	25	32	40	50	63	80	100
≤1	0.5	1.3	10	10	10	10	10	10
2	0.5	0.9	3.5	10	10	10	10	10
4	0.5	0.8	2.5	3	3.5	5	10	10
6	0.5	0.8	1	2	2.3	3	8	10
8	0.5	0.8	0.9	1.6	2	2.7	6	8.5
10		0.7	0.8	1.5	1.9	2.6	5	7
13			0.8	1.4	1.8	2.5	4.2	6.5
16				1.3	1.7	2.4	3.8	6.1
20				1.2	1.6	2.3	3.6	5.8
25					1.5	2.2	3.4	5.3
32						2.1	3.3	5.1
40						2	3.1	4.8
50								4.5
63								

MINIATURE CIRCUIT BREAKERS - RI60

Selectivity of miniature circuit breakers RI60 of characteristic D with backup fuses (kA)

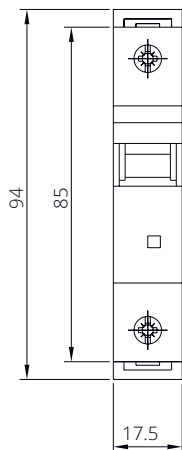
NH gG								
I_n (A)	20	25	32	40	50	63	80	100
≤ 1	5	8	10	10	10	10	10	10
2	1.7	2	5	10	10	10	10	10
4	0.7	1.1	2	3	3.5	5.1	10	10
6	0.6	1	1.4	2	2.4	3.5	7.5	10
8	0.5	0.9	1.2	1.6	2.1	2.7	5	10
10	0.5	0.8	1	1.5	2	2.6	4.5	10
13		0.7	0.9	1.4	1.9	2.5	4.1	8
16		0.6	0.8	1.3	1.7	2.4	3.8	6.1
20			0.5	1.2	1.6	2.3	3.6	5.8
25				1.1	1.5	2.2	3.4	5.3
32					1.4	2.1	3.3	5.1
40						1.9	3.1	4.8
50							2.5	4.5
63								4

Tripping characteristics

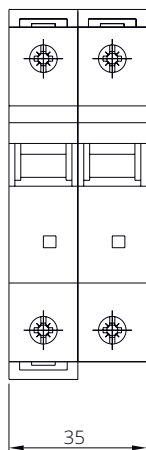


MINIATURE CIRCUIT BREAKERS - RI60, RI60J

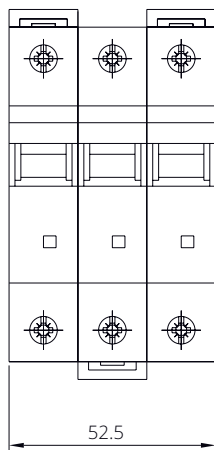
**RI61
RI61J**



**RI62
RI62J**



**RI62 +N
RI63**



**RI63 +N
RI64**

