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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)**

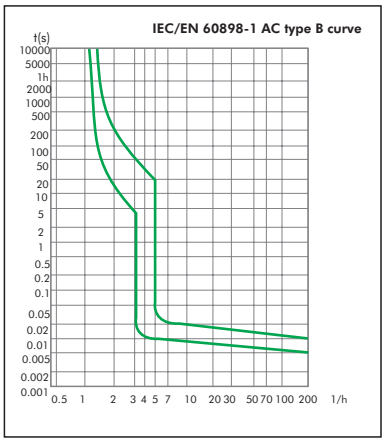
protection for circuits which supply loads with high inrush current at the circuit closing
(LV/LV transformers, breakdown lamps).

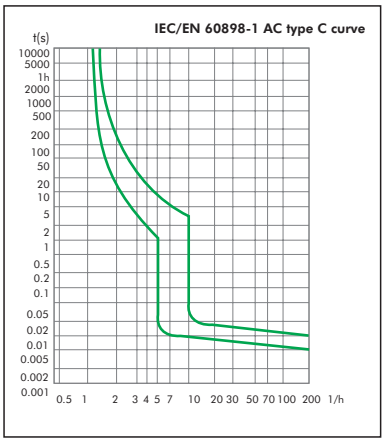
1.3 Approvals and certificates

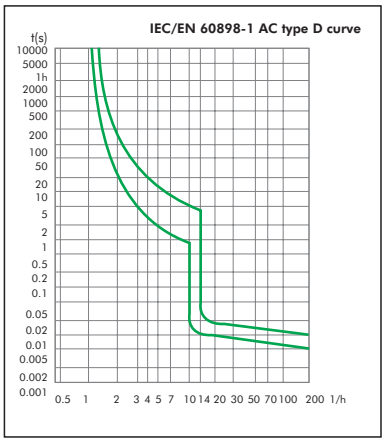
Detailed information, please refer to Certificates Table on the last page.

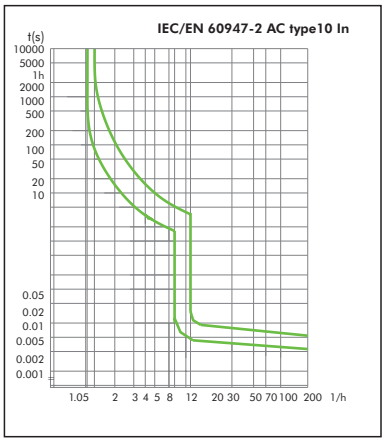
## 2.Technical data

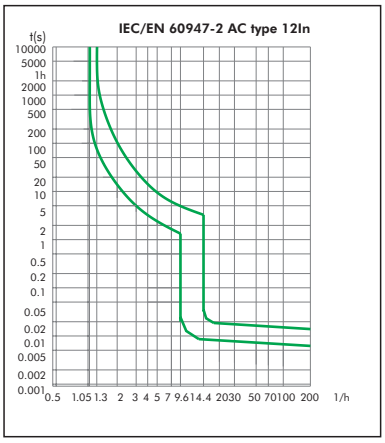
2.1 Curves

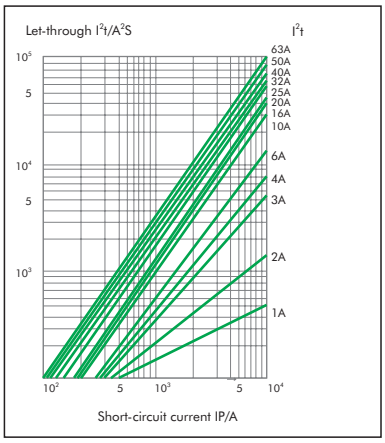


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2.2

| | 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:

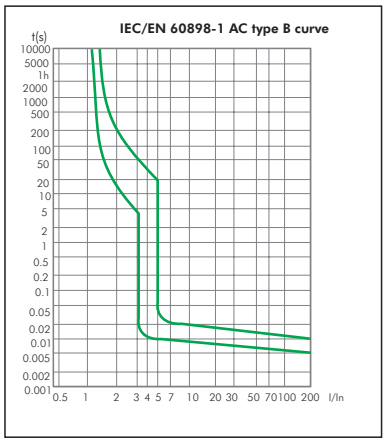
**B curve (3-5In)**
protection for people and big length cables in TN and IT systems.

**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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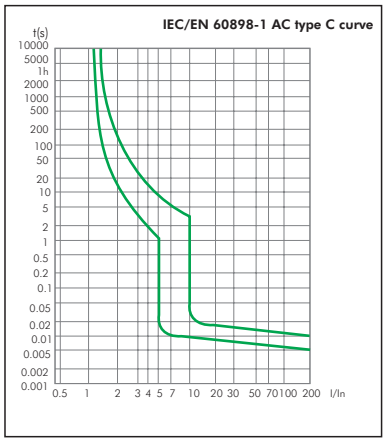


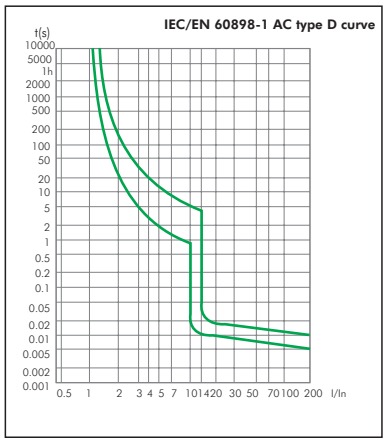


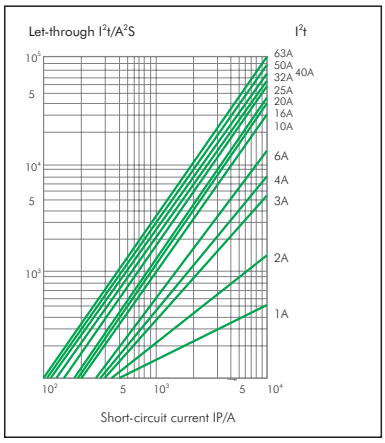


2.2

| | | | 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 |
| | 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: NB1-63H 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: NB1-63H 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.

**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 | 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 |

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)