

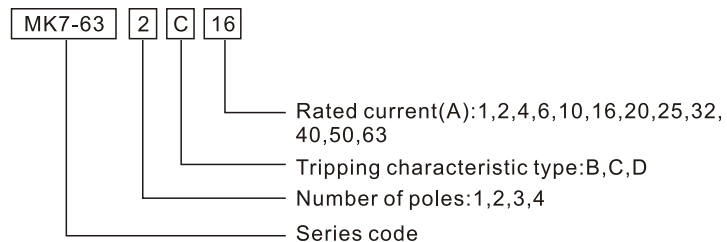


### MK7-63 Miniature Circuit Breaker

#### Functions

- ◆ Overload protection
- ◆ Short circuit protection
- ◆ Isolation
- ◆ Controlling
- ◆ Used in residential building, non-residential building, energy, industry and infrastructure.

#### Instruction of type code



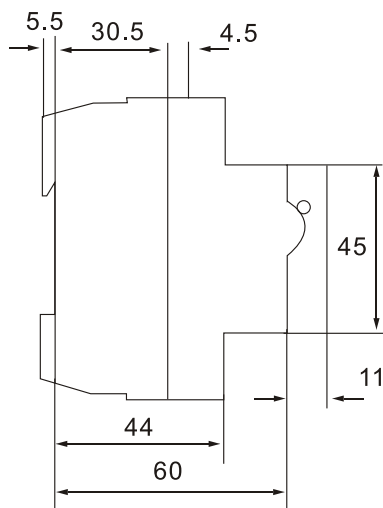
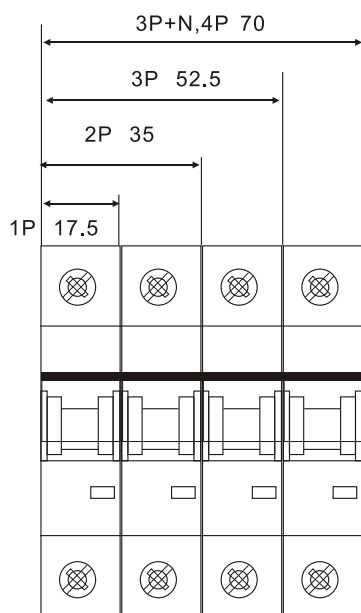
#### Technical specifications

- ◆ Standard: IEC60898-1, IEC60947-2
- ◆ Approvals: CB, CE, VDE (applying)
- ◆ Rated current  $I_n$  (A): 2, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63
- ◆ Rated voltage  $U_e$  (AC): 230/400V
- ◆ Operational voltage (AC): Min. 24V Max. 250/440V
- ◆ Rated frequency (Hz): 50/60
- ◆ Rated insulation voltage (AC): 500V
- ◆ Rated impulse withstand voltage: 6KV
- ◆ Number of poles: 1P, 2P, 3P, 4P
- ◆ Tripping Characteristics: B, C, D
  - Characteristic curve B( $I_n$ ): 3-5
  - Characteristic curve C( $I_n$ ): 5-10
  - Characteristic curve D( $I_n$ ): 10-20
- ◆ Thermal operating limit ( $I_n$ ): 1.13-1.45
- ◆ Rated switching capacity  $I_{cn}$  (KA): 6, 10
- ◆ Degree of protection: IP40 (top), IP20 (terminal), with connected conductors
- ◆ Electrical life (0-C): 8,000
- ◆ Mechanical life (0-C): 20,000
- ◆ Max fuse: 100gL (>10KA)
- ◆ Breaking Capacity:

| Model  | Rated voltage (V) | $I_{cu}$ (KA) | $I_{cs}$ (kA) | Standards  |
|--------|-------------------|---------------|---------------|------------|
| MK7-63 | 1P: 230           | 6, 10         | 6, 7.5        | IEC60898-1 |
|        | 2-4P: 400         | 6, 10         | 6, 7.5        | IEC60898-1 |

- ◆ Fire resistance according to UL 94: V0
- ◆ Mounting position: any
- ◆ Terminal could use for busbar connection thickness (mm): 0.8-2, wiring ( $mm^2$ ): 1-25
- ◆ Terminal tightening torque (N.m): 2.5-3
- ◆ The relative humidity is max 95% when ambient temperature ( $^{\circ}C$ ): 55
- ◆ Storage temperature ( $^{\circ}C$ ): -40~+85
- ◆ Altitude Max. (meters): 2000

### Outline and Installation dimensions



### Magnetic release

An electromagnet with plunger ensures instantaneous tripping in case of short circuit. The IEC 60898 distinguishes three different types, following the current for instantaneous release : type B,C,D

|   | Test Current | Tripping Time |              | Applications   |
|---|--------------|---------------|--------------|--|
| B | 3In          | $t \geq 0.1s$ | Non-Tripping | Only for resistive loads such as:<br>-electrical heating<br>-water heater<br>-stoves         |
|   | 5In          | $t < 0.1s$    | Tripping     |  |
| C | 5In          | $t \geq 0.1s$ | Non-Tripping | Usual loads such as:<br>-lighting<br>-socket outlets<br>-small motors                        |
|   | 10In         | $t < 0.1s$    | Tripping     |  |
| D | 10In         | $t \geq 0.1s$ | Non-Tripping | Control and protection of circuits having important transient inrush currents (large motors) |
|   | 20In         | $t < 0.1s$    | Tripping     |  |

### Thermal release

- ◆ The release is initiated by a bimetal strip in case of overload
- ◆ The standard defines the range of release for specific overload values
- ◆ Reference ambient temperature is 30°C

| Test Current | Tripping Time  |              |
|--------------|--|--------------|
| 1.13In       | $t \geq 1h (In \leq 63A)$                                  | Non-Tripping |
| 1.45In       | $t < 1h (In \leq 63A)$                                     | Tripping     |
| 2.55In       | $1s < t < 60s (In \leq 32A)$<br>$1s < t < 120s (In > 32A)$ | Tripping     |

### Features

- ◆ The handle being sealable or equipped with padlock bracket avoids dangerous operation changes (ON/OFF)
- ◆ The handle provides a clear indication of the contact position
- ◆ Adequate printing of all data on the front provides long-term identification
- ◆ Energy limiting class : 3
- ◆ The emission of ionized gases is limited to the severest restrictions : 45 mm grid distance
- ◆ This MCB for household in accordance with : IEC 60898 B,C and D tripping characteristics
- ◆ This MCB for industry in accordance with IEC 60947-2 instantaneous tripping characteristic with release  
B :  $4In \pm 20\%$ , release C :  $8In \pm 20\%$ , release D :  $12In \pm 20\%$
- ◆ This MCB may be extended with:
- ◆ A wide range of RCDs
- ◆ Full sets of additional components
- ◆ Full sets of accessories

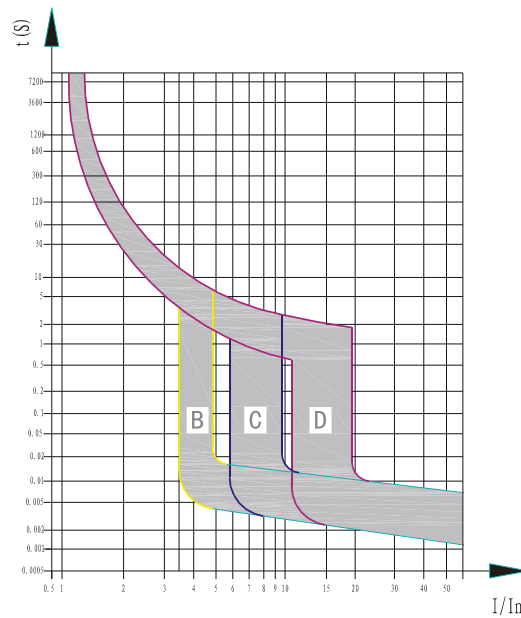
MK7-63 the short circuit capacity of Fuse D0 or NH

1.4 high selectivity is up to 1.4kA:  No selectivity

| Rated current          | Fuse gL rated current(A)(IEC269-1) |      |      |      |      |      |      |      |      |      |
|------------------------|------------------------------------|------|------|------|------|------|------|------|------|------|
|                        | 10                                 | 16   | 20   | 25   | 35   | 50   | 63   | 80   | 100  |      |
| C Characteristic curve | 1                                  | <0.5 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 2                                  | <0.5 | <0.5 | 0.5  | 0.7  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 3                                  | <0.5 | <0.5 | <0.5 | 0.6  | 1.9  | 5.2  | 10.0 | 10.0 | 10.0 |
|                        | 4                                  | <0.5 | <0.5 | <0.5 | 0.6  | 1.6  | 4.0  | 7.6  | 10.0 | 10.0 |
|                        | 6                                  |      | <0.5 | <0.5 | <0.5 | 1.2  | 2.7  | 4.5  | 10.0 | 10.0 |
|                        | 10                                 |      |      | <0.5 | <0.5 | 1.2  | 2.3  | 3.1  | 5.4  | 10.0 |
|                        | 16                                 |      |      |      |      | 1.1  | 2.1  | 2.8  | 5.4  | 9.5  |
|                        | 20                                 |      |      |      |      | 1.0  | 1.1  | 2.6  | 4.0  | 8.3  |
|                        | 25                                 |      |      |      |      |      | 1.0  | 2.5  | 3.8  | 7.8  |
|                        | 32                                 |      |      |      |      |      |      | 2.5  | 3.7  | 7.3  |
|                        | 40                                 |      |      |      |      |      |      |      | 3.5  | 7.0  |
|                        | 50                                 |      |      |      |      |      |      |      |      | 6.5  |
|                        | 63                                 |      |      |      |      |      |      |      |      | 5.9  |
| D Characteristic curve | 1                                  | <0.5 | <0.5 | 0.7  | 1.3  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 2                                  | <0.5 | <0.5 | 0.6  | 0.8  | 2.2  | 6.7  | 10.0 | 10.0 | 10.0 |
|                        | 3                                  | <0.5 | <0.5 | 0.5  | 0.7  | 1.8  | 4.8  | 9.3  | 10.0 | 10.0 |
|                        | 4                                  |      | <0.5 | 0.5  | 0.7  | 1.7  | 4.6  | 7.7  | 10.0 | 10.0 |
|                        | 6                                  |      |      | <0.5 | 0.5  | 1.3  | 2.9  | 4.5  | 9.0  | 10.0 |
|                        | 10                                 |      |      |      | 0.5  | 1.1  | 2.2  | 3.0  | 5.0  | 10.0 |
|                        | 16                                 |      |      |      |      |      | 1.9  | 2.6  | 3.9  | 9.0  |
|                        | 20                                 |      |      |      |      |      | 1.7  | 2.3  | 3.5  | 8.0  |
|                        | 25                                 |      |      |      |      |      |      | 2.2  | 3.4  | 7.5  |
|                        | 32                                 |      |      |      |      |      |      |      | 2.9  | 6.5  |
|                        | 40                                 |      |      |      |      |      |      |      |      | 5.7  |

| Rated current          | Fuse gL rated current(A)(IEC269-1) |      |      |      |      |      |      |      |      |      |      |      |
|------------------------|------------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                        | 10                                 | 16   | 20   | 25   | 35   | 50   | 63   | 80   | 100  | 125  | 150  |      |
| C Characteristic curve | 1                                  | 0.9  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 2                                  | <0.5 | 0.6  | 1.0  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 3                                  | <0.5 | <0.5 | 0.7  | 1.8  | 2.6  | 4.7  | 6.6  | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 4                                  | <0.5 | <0.5 | 0.7  | 1.5  | 2.1  | 3.6  | 5.0  | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 6                                  | <0.5 | <0.5 | 0.5  | 1.2  | 1.5  | 2.5  | 3.3  | 5.7  | 10.0 | 10.0 | 10.0 |
|                        | 10                                 |      |      | 0.5  | 1.0  | 1.4  | 2.0  | 2.5  | 3.8  | 8.0  | 10.0 | 10.0 |
|                        | 16                                 |      |      |      | 1.0  | 1.3  | 1.8  | 2.3  | 3.3  | 6.0  | 8.8  | 10.0 |
|                        | 20                                 |      |      |      | 1.0  | 1.2  | 1.7  | 2.2  | 3.2  | 5.5  | 7.7  | 10.0 |
|                        | 25                                 |      |      |      |      |      | 1.6  | 2.1  | 3.0  | 5.2  | 7.3  | 10.0 |
|                        | 32                                 |      |      |      |      |      |      | 2.1  | 2.9  | 5.0  | 7.0  | 10.0 |
|                        | 40                                 |      |      |      |      |      |      |      | 2.8  | 4.8  | 6.7  | 10.0 |
|                        | 50                                 |      |      |      |      |      |      |      |      | 4.5  | 6.3  | 9.5  |
|                        | 63                                 |      |      |      |      |      |      |      |      |      | 5.9  | 8.4  |
| D Characteristic curve | 1                                  | <0.5 | <0.6 | 1.4  | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 2                                  | <0.5 | <0.5 | 0.8  | 2.1  | 3.1  | 6.0  | 8.6  | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 3                                  | <0.5 | <0.5 | 0.7  | 1.7  | 2.4  | 4.3  | 6.0  | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 4                                  | <0.5 | <0.5 | 0.4  | 1.6  | 2.2  | 3.8  | 5.2  | 10.0 | 10.0 | 10.0 | 10.0 |
|                        | 6                                  |      | <0.5 | 0.5  | 1.2  | 1.6  | 2.6  | 3.3  | 5.5  | 10.0 | 10.0 | 10.0 |
|                        | 10                                 |      |      | 0.5  | 1.0  | 1.3  | 1.9  | 2.5  | 3.6  | 7.2  | 10.0 | 10.0 |
|                        | 16                                 |      |      |      |      | 1.1  | 1.6  | 2.0  | 3.0  | 5.5  | 8.0  | 10.0 |
|                        | 20                                 |      |      |      |      |      | 1.4  | 1.8  | 2.8  | 5.0  | 7.5  | 10.0 |
|                        | 25                                 |      |      |      |      |      |      | 1.8  | 2.7  | 4.8  | 7.0  | 10.0 |
|                        | 32                                 |      |      |      |      |      |      |      | 2.4  | 4.1  | 6.2  | 9.3  |
|                        | 40                                 |      |      |      |      |      |      |      |      | 4.0  | 6.0  | 9.0  |

- Tripping character meets the standard of IEC898(EN60898).
- B character curve: Usually used for lighting distribution systems.
- C character curve: Usually used for lighting distribution, socket loop and some power distribution systems.
- D character curve: Usually used for power load or other inductive load circuit

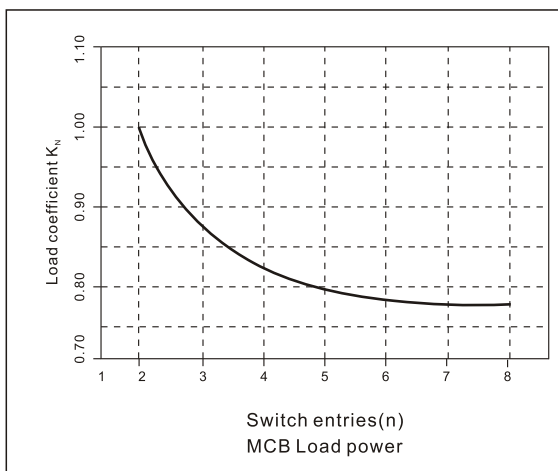


### Practice experience

To adjust the tripping current from 5-10In to 7-9.5In could avoid the false tripping when the equipment isn't easy to start.

### Load power

• Corresponding temperature and the permissible working load of n switches :  $I_{DL} = I_n K_T(T) K_n(N)$



| $I_n$ [A] | Environment T [ ° C ] |     |     |     |     |     |     |      |      |      |      |      |      |
|-----------|-----------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
|           | -25                   | -20 | -10 | 0   | 10  | 20  | 30  | 35   | 40   | 45   | 50   | 55   | 60   |
| 1         | 1.2                   | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 0.99 | 0.97 | 0.95 | 0.93 | 0.90 | 0.89 |
| 2         | 2.4                   | 2.4 | 2.3 | 2.2 | 2.2 | 2.1 | 2.0 | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  |
| 3         | 3.4                   | 3.6 | 3.5 | 3.4 | 3.3 | 3.1 | 3.0 | 3.0  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  |
| 4         | 4.9                   | 4.8 | 4.7 | 4.5 | 4.3 | 4.2 | 4.0 | 3.9  | 3.9  | 3.8  | 3.7  | 3.6  | 3.5  |
| 5         | 6.1                   | 6.0 | 5.8 | 5.6 | 5.4 | 5.2 | 5.0 | 4.9  | 4.8  | 4.7  | 4.6  | 4.5  | 4.4  |
| 6         | 7.3                   | 7.2 | 7.0 | 6.7 | 6.5 | 6.3 | 6.0 | 5.9  | 5.8  | 5.7  | 5.6  | 5.4  | 5.3  |
| 10        | 12                    | 12  | 12  | 11  | 11  | 10  | 10  | 9.9  | 9.7  | 9.5  | 9.3  | 9.0  | 8.9  |
| 15        | 18                    | 18  | 17  | 17  | 16  | 16  | 15  | 15   | 15   | 14   | 14   | 14   | 13   |
| 16        | 20                    | 19  | 19  | 18  | 17  | 17  | 16  | 16   | 16   | 15   | 15   | 14   | 14   |
| 20        | 24                    | 24  | 23  | 22  | 22  | 21  | 20  | 20   | 19   | 19   | 19   | 18   | 18   |
| 25        | 31                    | 30  | 29  | 28  | 27  | 26  | 25  | 25   | 24   | 24   | 23   | 23   | 22   |
| 32        | 39                    | 38  | 37  | 36  | 35  | 33  | 32  | 32   | 31   | 30   | 30   | 29   | 28   |
| 40        | 49                    | 48  | 47  | 45  | 43  | 42  | 40  | 39   | 39   | 38   | 37   | 36   | 35   |
| 50        | 61                    | 60  | 58  | 56  | 54  | 52  | 50  | 49   | 48   | 47   | 46   | 45   | 44   |
| 63        | 77                    | 76  | 73  | 71  | 68  | 66  | 63  | 62   | 61   | 60   | 58   | 57   | 56   |