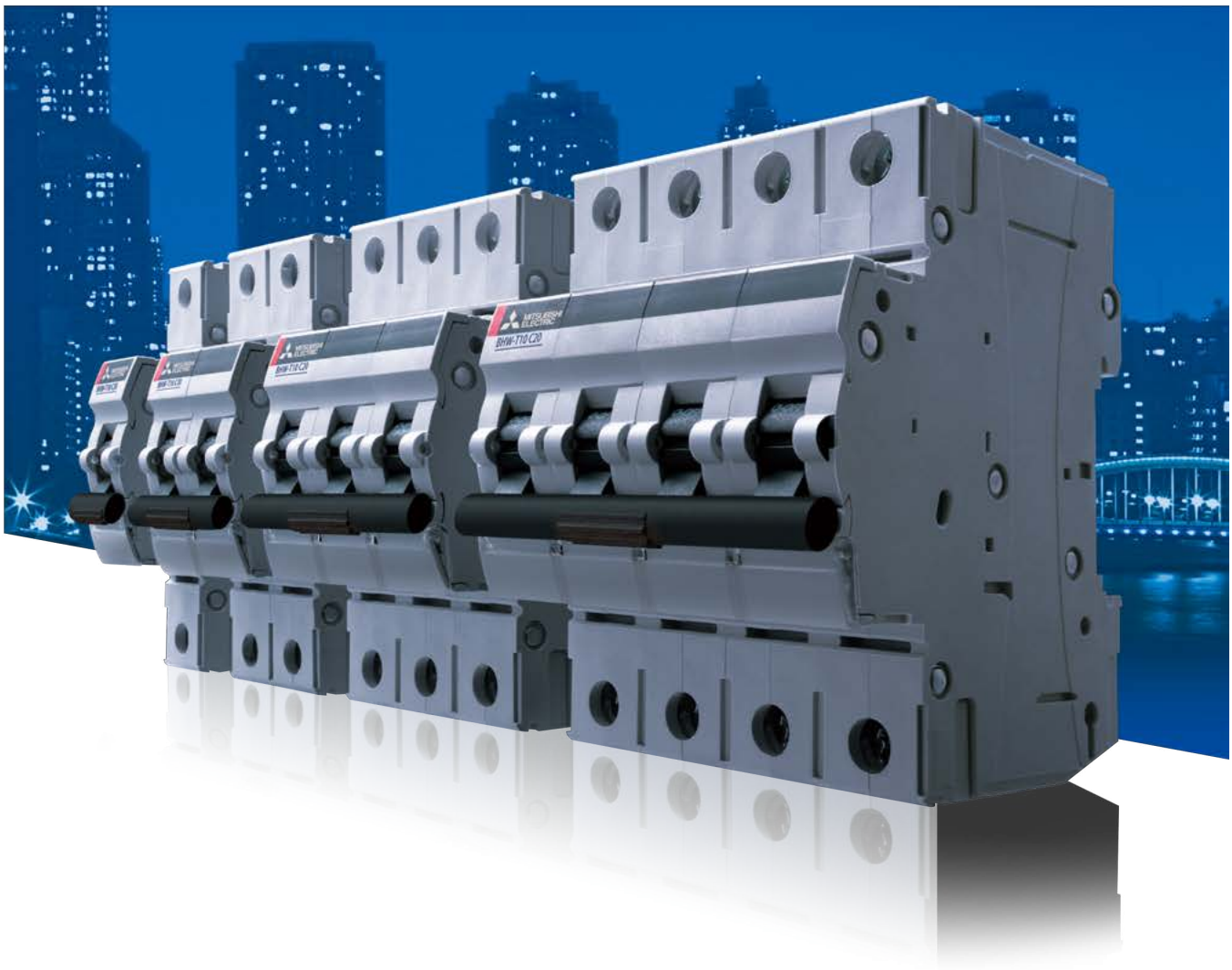
MITSUBISHI ELECTRIC

*Changes for the Better*

FACTORY AUTOMATION

# Miniature Circuit Breakers
# Residual Current Circuit Breakers
# Isolators
# DIN Series



*Empowering Industries*

22 A

# GLOBAL IMPACT OF MITSUBISHI ELECTRIC

Through Mitsubishi Electric's vision, "Changes for the Better" are possible for a brighter future.

## *Changes for the Better*

"Changes for the Better" represents the Mitsubishi Electric Group's attitude to "always strive to achieve something better", as we continue to change and grow. Each one of us shares a strong will and passion to continuously aim for change, reinforcing our commitment to creating "an even better tomorrow".

Our advances in AI and IoT are adding new value to society in diverse areas from automation to information systems. The creation of game-changing solutions is helping to transform the world, which is why we are honored to be recognized in the 2019 "Forbes Digital 100" as one of world's most influential digital corporations.

Mitsubishi Electric is involved in many areas including the following:

**Energy and Electric Systems**
A wide range of power and electrical products from generators to large-scale displays.

**Electronic Devices**
A wide portfolio of cutting-edge semiconductor devices for systems and products.

**Home Appliance**
Dependable consumer products like air conditioners and home entertainment systems.

**Information and Communication Systems**
Commercial and consumer-centric equipment, products and systems.

**Industrial Automation Systems**
Maximizing productivity and efficiency with cutting-edge automation technology.

**MEMO**

# Instructions for Application

## 1 Warranty period and warranty coverage

If any faults or defects (hereinafter “Failure”) found to be the responsibility of Mitsubishi Electric occurs during use of the product within the warranty period, the product shall be repaired at no cost via the sales representative or Mitsubishi Electric Sales office. However, if repairs are required on-site at domestic or overseas locations, expenses to send an engineer will be charged.

### 1. Warranty period

The warranty period of the product shall be for twelve (12) months after the date of purchase or delivery to the designated place.

### 2. Warranty coverage

(1) The primary failure diagnosis should be performed by users. However, if required by users, Mitsubishi Electric or Mitsubishi Electric Sales office may be able to perform the diagnosis. In that case, for damages caused by any cause found to be the responsibility of Mitsubishi Electric, the diagnosis will be performed at no cost. For details, contact a distributor.

(2) The coverage shall be limited to ordinary use within the usage state, usage methods, usage environment, and other conditions which follow the instructions and precautions given in the instruction manual, user’s manual, and caution labels on the product.

(3) Even within the warranty period, repair cost shall be charged for the following cases.

① Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by selection of hardware or software design on the user side.

② Failure caused by modifications, etc. to the product by the user without any approvals from Mitsubishi Electric.

③ In case Mitsubishi Electric product is assembled into a user’s device, failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user’s device is subject to or as necessary by industry standards, had been provided.

④ Failure that could have been avoided if the maintenance described in the user’s manual has been performed.

⑤ Failure caused by external irresistible forces such as fires or abnormal voltages, and failure caused by natural disasters such as earthquakes, lightning, wind and water damages.

⑥ Failure caused by reasons unpredictable based on scientific technology standards at the time of shipment from Mitsubishi Electric.

⑦ Any other failure found not to be the responsibility of Mitsubishi Electric or that admitted not to be so by the user.

In addition, the warranty applies only to the product delivered. It does not apply to the damage that is caused by the failure of the product.

### 3. The period to supply the spare parts after discontinuation of production

Mitsubishi Electric shall supply spare parts for five (5) years after discontinuation of production. After five years, Mitsubishi Electric shall supply spare parts until the spare parts run out of stock.

## 2 Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the warranty period, Mitsubishi Electric shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi Electric.

(2) Loss in opportunity, lost profits incurred to the user by failures of Mitsubishi Electric product.

(3) Damages whether foreseeable or not, secondary damages, compensation for accidents, and compensation for damages to products other than Mitsubishi Electric products, caused by exceptional situations.

(4) Compensation for cost occurring secondarily from replacement work by the user, maintenance of on-site equipment and start-up test run and other operations.

## 3 Product applications

(1) When using the products listed in this catalogue, the following conditions must be confirmed and obeyed. The product must be used so that a failure that occurs to the product does not lead to a serious accident. When a damage or failure occurs, the external backup function or fail-safe function must be executed systematically.

(2) The products listed in this catalogue are designed and manufactured as general-purpose products for application to the general industry field. Therefore, the warranty does not apply to the following special uses.

① The use that has a significant influence on the public facilities such as nuclear power plants and other power plants of power companies.
② The use for railway companies, government offices, etc. that require to build the special quality assurance system.
③ The use for aerospace equipment, medical equipment, railway equipment, combustion and fuel equipment, passenger vehicles, manned transportation equipment, recreational equipment, safety equipment, and air conditioner for servers and the cooling facilities that are expected to have a significant influence on life, body, and property.

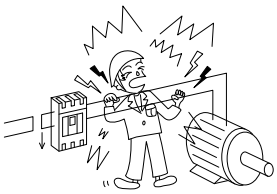
If the products listed in this catalogue are used for the above mentioned special uses, Mitsubishi Electric does not take any responsibility for the quality, performance, and safety of the product, which includes, but is not limited to, default liability, defect liability, quality assurance liability, tort liability, and product liability. However, in case the special quality (beyond general specifications) is not required and the use is a limited purpose and the backup/fail-safe functions are equipped with the facility, Mitsubishi Electric may determine that the products listed in this catalogue can be guaranteed. For details, consult a distributor or Mitsubishi Electric.

# 4 Safety precautions

- Carefully read the safety precautions prior to use the circuit breaker correctly.
- Important safety instructions are given below. Strictly observe the instructions.
- Be sure to communicate these safety precautions to the end user.

**⚠ DANGER**

- Do not touch the terminal area. Doing so can cause an electric shock.
- The residual current circuit breakers are designed to operate when the difference between leaving current and returning current exceeds the specified value. In the case shown in this figure, residual current is not detected. Therefore, never touch the two bare live parts. The circuit breaker will not operate upon occurrence of an electric shock.



Residual current circuit breaker

Instructions for installation

**⚠ CAUTION**

- The electrical work shall be performed by qualified personnel (electrical workers).
- Before performing wiring work, turn off the upstream circuit breaker, and ensure that no current is flowing through the circuit breaker to be wired. Failure to do so may expose you to shock hazard.
- When connecting any wire, tighten the terminal screw to the torque specified in the instruction manual. Failure to do so may cause a fire.
- When the model comes with insulating barriers as standard accessories, install the insulating barriers without fail.
- Do not install the circuit breaker in an abnormal environment with high temperature, high moisture, dust, corrosive gas, vibration or shock.
  Doing so may cause a fire or make the circuit breaker inoperative.
- Protect the circuit breaker so that foreign particles, such as dust, concrete powder and iron powder, and rain water will not enter the circuit breaker.
  Failure to do so may make the circuit breaker inoperative.

[Residual current circuit breaker]

- When using a residual current circuit breaker for use only in 3-phase 4-wire systems, connect the neutral wire to the neutral phase without fail. If they are not connected, the circuit breaker may not operate, thereby resulting in a fire.
- Connect the circuit breaker to a power supply appropriate to the rating of its body.
  Failure to do so may make the circuit breaker inoperative or damage it.

[Explanation of warning symbols]

| | |
|---|---|
| ⚠ DANGER | Incorrect handling of the product will result in a hazardous situation, such as death or serious injury. |
| ⚠ CAUTION | Incorrect handling of the product may result in a hazardous situation according to circumstances. |
| ⊘ | This means something is prohibited and should never be performed. |
| ⚠ | Ignition or fire may occur under certain circumstances. |

Instructions for use

**⚠ CAUTION**

- When the circuit breaker automatically breaks a circuit, turn on the handle after removing the cause. Failure to do so may cause an electric shock or a fire.

[Residual current circuit breaker]

- Ground the earth terminal of electrical equipment.
  Failure to do so may cause an electric shock or a fire.
- Press the test button to check the operation once a month or so. If the earth leakage circuit breaker is not turned off, it is out of order. Consult an electrician.

Instructions for maintenance

**⚠ CAUTION**

- The circuit breakers shall be maintained by persons with specialized knowledge.
- Before maintaining, turn off the upstream circuit breaker, and ensure that no current is flowing through the circuit breaker to be maintained. Failure to do so may expose you to shock hazard.
- Retighten the terminals periodically.
  Failure to do so may cause a fire.

Instructions for disposal

**⚠ CAUTION**

- When disposing of the product, treat it as industrial waste.

# 5 Change in product specifications

The specifications of the product listed in this catalogue, manuals or technical documents are subject to change without prior notice.

# Breaking Through The

## Introducing the DIN Series...

High-quality, high-performance circuit breakers suitable for household electrical distribution panels

# DIN Series

# Industry

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## Features

(1) All models fully comply with IEC regulations

(2) Compliance with IP2X protection rating (front surface)

(3) All models are compatible with reverse connection

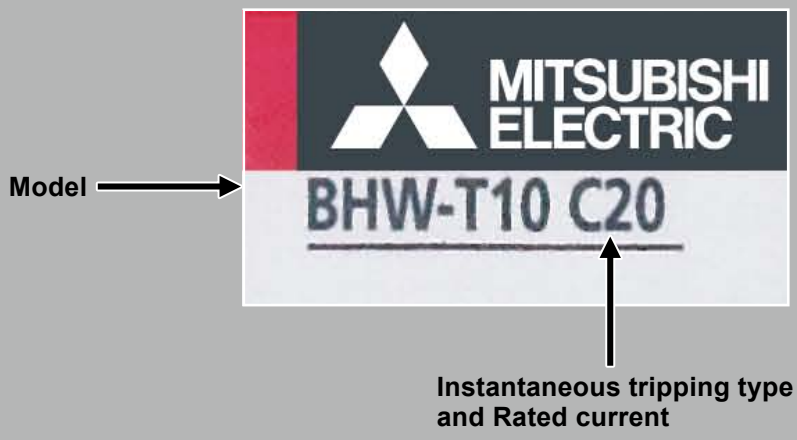
(4) Rated currents up to 100A for MCBs, 100A for RCCBs

(5) Accessories suitable for field fitted for MCBs (80 to 100A)

## Product Line-up

| Model | | No. of poles (P) | Rated current | Instantaneous tripping | Rated operational voltage (V) | Rated short-circuit breaking capacity (kA) | Compliance standard |
|---|---|---|---|---|---|---|---|
| MCBs | BHW-T10 | 1, 2(1+N), 2, 3, 4(3+N), 4 | 6 to 63A | TYPE B | 240/415AC | 10 | IEC 60898-1 |
| | | 1, 2(1+N), 2, 3, 4(3+N), 4 | 0.5 to 63A | TYPE C, D | 240/415AC | | IEC 60898-1 |
| | | 1, 2, 3, 4 | 80 to 100A | TYPE B, C | 240/415AC | 10 | IEC 60898-1<br>IEC 60947-2 |
| RCCBs | BVW-T | 2(1+N), 4(3+N) | 16 to 100A | – | 240/415AC | – | IEC 61008-1 |
| Isolators | KBW-T | 1, 2, 3, 4 | 25 to 63A | – | 240/415AC | – | IEC 60947-3 |
| | | 2, 3, 4 | 80 to 125A | – | 240/415AC | – | IEC 60947-3 |

## Explanation of Markings (Example Model : BHW-T10)




## Technical Specifications

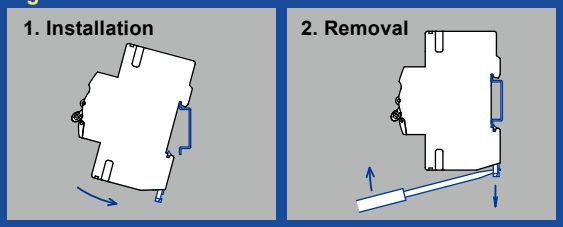
| | | |
|---|---|---|
| Ambient temperature range | MCBs, Isolators | -10 to +40°C |
| | RCCBs | -25 to +40°C |
| Rated frequency | 50/60Hz | |

# Points to Note

## 1 Installation & Removal

Standard IEC 35mm rail installation is possible.
Fix by attaching a slip stopper.

Fig-1




## 2 Connection

At the time of wire connection, fasten the terminal screws with the torque stated in the table below.

**Fastening torque**

| Screw diameter | Fastening torque (N·m) | Model |
|---|---|---|
| M3 | 0.5 | AL-1BHW, AX-05BHW, AX-1BHW |
| M5 | 2.0 | BHW-T10(0.5 to 63A), BVW-T, KBW-T(25 to 63A),SHT (0.5 to 63A) |
| M6 | 2.5 | KBW-T(80 to 125A) |
| M8 | 3.5 | BHW-T10(80 to 100A) |

## 3 Opening, Closing and Tripping Operations

Move the handle up/down to turn power On/Off. Tripping operation refers to automatic opening (breaking) of circuits.

## 4 Earth-leakage Test

**Earth-leakage test steps:**

(1) Move the handle to the On position under rated voltage.
(2) Push the yellow test button.
(3) At this time, the RCCBs must be tripped within the specified time.
(4) The handle will move to the Off position.

* Please conduct the above test regularly.
* Do not use the test button to switch off the RCCBs.

## 5 Cleaning

Never use thinner, detergent, and other chemicals for cleaning.
It is likely to make letters on the plate illegible or to lower insulation performance.
Clean the breaker using air cleaner or by brushing.

## 6 Selection

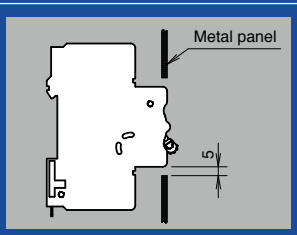
In case of installing MCBs side by side, reduce the passing current to under 80% of the rated current.
Set current rating with enough allowance while taking fluctuation of power voltage and load current into consideration.

## 7 Connection with solderless terminal

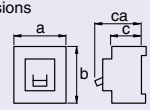
Crimp after loosening strand of the connection wire and putting the core wires together.
Regular inspection and retightening are necessary as the wires come loose as time goes.

## 8 Installation

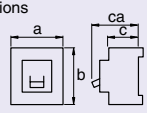
When a metal panel comes close to MCBs (80 to 100A), be sure to secure a distance of more than 5mm in between.



# Specifications

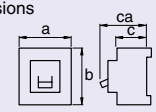
| | | | | MCBs | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | | | | BHW-T10 | | | | | | | | | | | |
| Image | | | |  | | | | | | | | | | | |
| No. of poles [P] | | | | 1 | 2(1+N)*1 | 2 | 3 | 4(3+N)*1 | 4 | 1 | 2(1+N)*1 | 2 | 3 | 4(3+N)*1 | 4 |
| Instantaneous tripping*2 | | | | Type B | | | | | | Type C, D | | | | | |
| Rated insulation voltage $U_i$ [V] | | | | 660 | | | | | | 660 | | | | | |
| Rated current $I_n$ [A] at ambient temperature 30˚C | | | | 6, 10, 16, 20, 25, 32, 40, 50, 63 | | | | | | 0.5, 1, 2, 3, 4, 5, 6, 10, 16, 20, 25, 32, 40, 50, 63 | | | | | |
| Rated short-circuit breaking capacity [kA] | IEC/EN 60898-1 ($I_{cn}$) | AC | 240V | 10 | | | | | | 10 | | | | | |
| | | | 240/415V | 10 | – | 10 | | | | 10 | – | 10 | | | |
| | | | 415V | – | | 10 | | | | – | | 10 | | | |
| Energy limiting class*3 | | | | Class 3 | | | | | | | | | | | |
| Number of operating cycles | | Without current | | 4,000 | | | | | | | | | | | |
| | | With current | | 4,000 | | | | | | | | | | | |
| Dimensions [mm]  | | | a | 18 | 36 | | 54 | 72 | | 18 | 36 | | 54 | 72 | |
| | | | b | 92.6 | | | | | | | | | | | |
| | | | c | 44 | | | | | | | | | | | |
| | | | ca | Max. 73.5 | | | | | | | | | | | |
| Type of overcurrent release | | | | Thermal-magnetic | | | | | | | | | | | |
| Mounting | | | | IEC 35mm rail | | | | | | | | | | | |
| Applicable wire size [mm$^2$] | | | | 1 to 25 | | | | | | | | | | | |
| Mass [kg] | | | | 0.13 | 0.25 | 0.26 | 0.39 | 0.51 | 0.52 | 0.13 | 0.25 | 0.26 | 0.39 | 0.51 | 0.52 |
| Accessories (optional) | | Auxiliary switch (AX)*4 | | ○ | | | | | | | | | | | |
| | | Shunt trip (SHT)*5 | | ○ | | | | | | | | | | | |
| Terminal connection | | | | Solderless terminal | | | | | | | | | | | |
| Based on standard | | | | IEC/EN 60898-1 | | | | | | | | | | | |
| CE marking | | | | Self-declaration | | | | | | | | | | | |
| UKCA marking | | | | Self-declaration | | | | | | | | | | | |

*1: N pole is a switched neutral pole (without overcurrent release device).
*2: Type B (3 $I_n$ <, ≦ 5 $I_n$), Type C (5 $I_n$ <, ≦ 10 $I_n$), Type D (10 $I_n$ <, ≦ 20 $I_n$)
*3: Except for Type D
*4: Field fitted
*5: Factory fitted
*6: In case of installing breakers side by side, reduce the passing current to under 80% of the rated current.

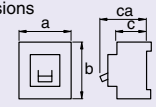
| | | | | MCBs | | | |
|---|---|---|---|---|---|---|---|
| Model | | | | BHW-T10 | | | |
| Image | | | |  | | | |
| No. of poles [P] | | | | 1 | 2 | 3 | 4 |
| Instantaneous tripping*1 | | | | Type B, C | | | |
| Rated insulation voltage $U_i$ [V] | | | | 690 | | | |
| Rated current $I_n$ [A] | Amb. temp. | IEC/EN 60898-1 | 30˚C | 80, 100 | | | |
| | | IEC/EN 60947-2 | 40˚C | | | | |
| Rated short-circuit breaking capacity [kA] | IEC/EN 60898-1 ($I_{cn}$) | AC | 240V | 10 | | | |
| | | | 240/415V | 10 | | | |
| | | | 415V | – | 10 | | |
| | IEC/EN 60947-2 ($I_{cu}$/$I_{cs}$) | AC | 240V | 10/7.5 | | | |
| | | | 415V | – | 10/7.5 | | |
| Rated impulse withstand voltage $U_{imp}$ [kV] | | | | 6 | | | |
| Utilization category | | | | A | | | |
| Pollution degree | | | | 3 | | | |
| Number of operating cycles | | Without current | | 10,000 | | | |
| | | With current | | 4,000 | | | |
| Dimensions (mm)  | | | a | 27 | 54 | 81 | 108 |
| | | | b | 94 | | | |
| | | | c | 44 | | | |
| | | | ca | 74.5 | | | |
| Type of overcurrent release | | | | Thermal-magnetic | | | |
| Mounting | | | | IEC 35mm rail | | | |
| Applicable wire size [mm$^2$] | | | | 10 to 35 | | | |
| Mass [kg] | | | | 0.21 | 0.42 | 0.63 | 0.84 |
| Accessories (optional)*2 | | Alarm switch (AL) | | ○ | | | |
| | | Auxiliary switch (AX) | | ○ | | | |
| Terminal connection | | | | Solderless terminal | | | |
| Based on standard | | | | IEC/EN 60898-1, IEC/EN 60947-2 | | | |
| CE marking | | | | Self-declaration | | | |
| UKCA marking | | | | Self-declaration | | | |

*1: Type B (3 $I_n$ <, ≦ 5 $I_n$), Type C (5 $I_n$ <, ≦ 10 $I_n$)
*2: Field fitted
*3: In case of installing breakers side by side, reduce the passing current to under 80% of the rated current.

## Specifications

| | | RCCBs | |
|---|---|---|---|
| Model | | BVW-T | |
| Image | |  | |
| No. of poles [P] | | 2 (1+N)*1 | 4(3+N)*1 |
| Rated voltage [VAC] | | 240 | 415 |
| Rated current $I_n$ [A] at ambient temperature 30˚C | | 16, 25, 32, 40, 63, 80, 100 | |
| Rated residual operating current $I_{\Delta n}$ [mA] | | 30, 100, 300 | |
| Max. operating time at 5 $I_{\Delta n}$ [s] | | 0.04 | |
| Pulsating current sensitivity | | Type AC | |
| Residual operation | | Independent of line voltage | |
| Short-circuit protective device | | BHW-T10 | |
| Rated making and breaking capacity $I_m$ [A] | | 500($I_n$ 16, 25, 32, 40A), 630($I_n$ 63A), 800($I_n$ 80A), 1000($I_n$ 100A) | |
| Rated conditional short-circuit current $I_{nc}$ [kA] | | 10 | |
| Rated residual making and breaking capacity $I_{\Delta m}$ [A] | | 500($I_n$ 16, 25, 32, 40A), 630($I_n$ 63A), 800($I_n$ 80A), 1000($I_n$ 100A) | |
| Rated conditional residual short-circuit current $I_{\Delta c}$ [kA] | | 10 | |
| Number of operating cycles | Without current | 4,000*2 | |
| | With current | 2,000 | |
| Dimensions [mm]  | a | 36 | 72 |
| | b | 90 | |
| | c | 44 | |
| | ca | 74 | |
| Mounting | | IEC 35mm rail | |
| Applicable wire size [mm$^2$] | | 1 to 35 | |
| Mass [kg] | | 0.22 | 0.44 |
| Accessories | | Not available | |
| Terminal connection | | Solderless terminal | |
| Based on standard | | IEC/EN 61008-1 | |
| CE marking | | Self-declaration | |
| UKCA marking | | Self-declaration | |

*1: N pole is a switched neutral pole.
*2: In case of ampere rating 32, 40, 63, 80 and 100A, the number of operating cycles is 3,000.

| | | Isolators | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Model | | KBW-T | | | | | | |
| Image | |  | | | | | | |
| No. of poles [P] | | 1 | 2 | 3 | 4 | 2 | 3 | 4 |
| Utilization category | | AC-22A | | | | AC-22A | | |
| Rated operational current $I_n$ [A] at ambient temperature 30˚C | | 25, 40, 63 | | | | 80, 100, 125 | | |
| Rated operational voltage [VAC] | | 240 | 240/415 | | | 240/415 | | |
| Rated short-time withstand current $I_{cw}$ [A] | | 12×$I_n$, 1s | | | | 12×$I_n$, 1s | | |
| Rated short-circuit making capacity $I_{cm}$ [A] | | 12×$I_n$ | | | | 12×$I_n$ | | |
| Rated impulse withstand voltage $U_{imp}$ [kV] | | 6 | | | | 6 | | |
| Pollution degree | | 2 | | | | 2 | | |
| Dimensions [mm]  | a | 18 | 36 | 54 | 72 | 36 | 54 | 72 |
| | b | 92.6 | | | | 92.6 | | |
| | c | 44 | | | | 44 | | |
| | ca | Max. 73.5 | | | | Max. 73.5 | | |
| Number of operating cycles | Without current | 10,000 | | | | 10,000($I_n$ 80, 100A) 8,000($I_n$ 125A) | | |
| | With current | 1,500 | | | | 1,500($I_n$ 80, 100A) 1,000($I_n$ 125A) | | |
| Mounting | | IEC 35mm rail | | | | IEC 35mm rail | | |
| Applicable wire size [mm$^2$] | | 1 to 25 | | | | 10 to 50 | | |
| Mass [kg] | | 0.12 | 0.22 | 0.33 | 0.47 | 0.20 | 0.30 | 0.40 |
| Accessories | | Not available | | | | Not available | | |
| Terminal connection | | Solderless terminal | | | | Solderless terminal | | |
| Based on standard | | IEC/EN 60947-3 | | | | IEC/EN 60947-3 | | |
| CE marking | | Self-declaration | | | | Self-declaration | | |
| UKCA marking | | Self-declaration | | | | Self-declaration | | |

# Characteristics and Dimensions

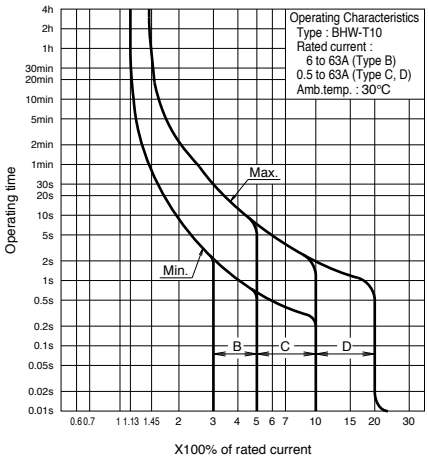
## Miniature Circuit Breakers (MCBs)

### BHW-T10 (0.5 to 63A)

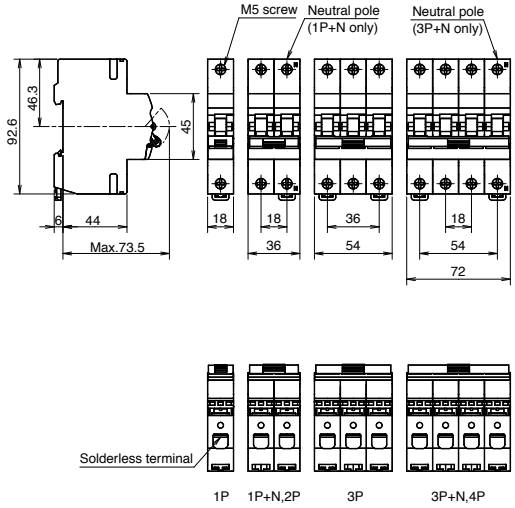
| Model | | | | BHW-T10 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of poles [P] | | | | 1 | 2(1+N)*1 | 2 | 3 | 4(3+N)*1 | 4 | 1 | 2(1+N)*1 | 2 | 3 | 4(3+N)*1 | 4 |
| Instantaneous tripping | | | | Type B | | | | | | Type C,D | | | | | |
| Rated insulation voltage $U_i$ [V] | | | | 660 | | | | | | 660 | | | | | |
| Rated current $I_n$ [A] at ambient temperature 30˚C | | | | 6,10,16,20,25, 32,40,50,63 | | | | | | 0.5,1,2,3,4,5, 6,10,16,20,25, 32,40,50,63 | | | | | |
| Rated short-circuit breaking capacity [kA] | IEC/EN 60898-1 ($I_{cn}$) | AC | 240V | 10 | | | | | | 10 | | | | | |
| | | | 240/415V | 10 | – | 10 | | | | 10 | – | 10 | | | |
| | | | 415V | – | | 10 | | | | – | | 10 | | | |

*1: N pole is a switched neutral pole (without overcurrent release device).

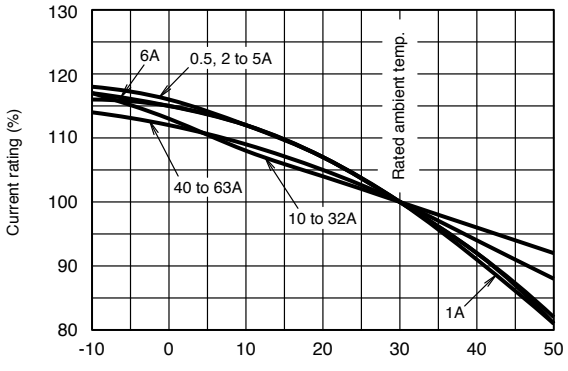
## ■Operating Characteristics




## ■Outline Drawing




## ■Temperature Compensation Curve




* In case of installing breakers side by side, reduce the passing current to under 80% of the rated current.

# Accessories

## Functions of Accessories

| Accessory | Function |
|---|---|
| **AX** Auxiliary switch | Electrically indicates the On/Off status of the circuit breaker. |
| **SHT** Shunt trip | Electrically trips the circuit breaker from a remote location.<br>Permissible working voltage is 100% of the rated voltage. |

## Specifications

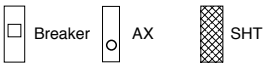
| Accessory | | AX |
|---|---|---|
| Model | | AX-05BHW |
| Contact | Configuration | 1C |
| | Contact capacity | 230VAC 5A |
| Connection | | Solderless terminal |
| Fitment | | Field fitted |

| Accessory | SHT | | | |
|---|---|---|---|---|
| Cut-off switch | Equipped | | | |
| Voltage | 12VDC | 24VDC | 48VDC | 220VAC |
| Input power requirement [VA] | 40 | 110 | 300 | 250 |
| Operating time [ms] | <20 | | | |
| Connection | Solderless terminal | | | |
| Fitment | Factory fitted | | | |

∗Secure a sufficient input power supply so that the voltage will not drop below the permissible working voltage (100% of the rated voltage).
∗The operating time denotes the time from when the rated voltage is applied to SHT until the time the main contact of the breaker starts to open.

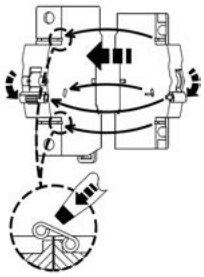
## Combinations of Accessories

| | | |
|---|---|---|
| Accessory connection combinations | AX |  |
| | SHT |  |
| | AX + SHT |  |



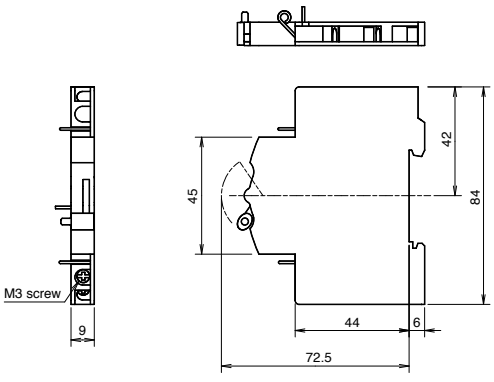

## Installation of Accessories

AX

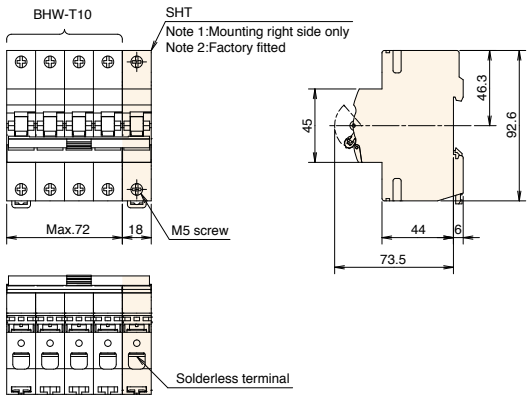


## Outline Drawing

AX




SHT



# Characteristics and Dimensions

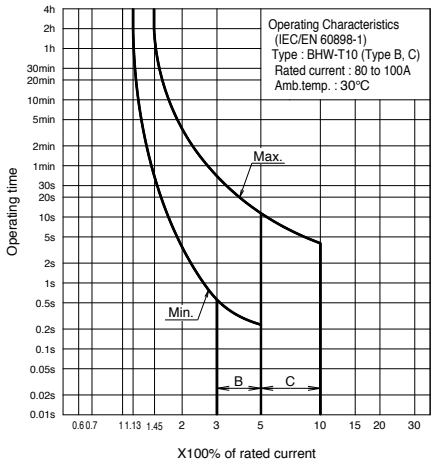
## Miniature Circuit Breakers (MCBs)

### BHW-T10 (80 to 100A)

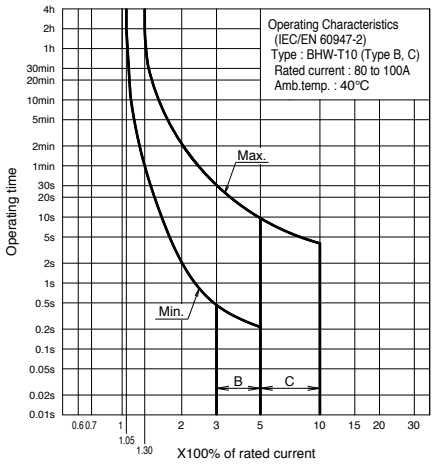
| Model | | | | BHW-T10 | | | |
|---|---|---|---|---|---|---|---|
| No. of poles [P] | | | | 1 | 2 | 3 | 4 |
| Instantaneous tripping | | | | Type B, C | | | |
| Rated insulation voltage $U_i$ [V] | | | | 690 | | | |
| Rated current $I_n$ [A] | Amb. temp. | IEC/EN 60898-1 | 30˚C | 80, 100 | | | |
| | | IEC/EN 60947-2 | 40˚C | | | | |
| Rated short-circuit breaking capacity [kA] | IEC/EN 60898-1 ($I_{cn}$) | AC | 240V | 10 | | | |
| | | | 240/415V | 10 | | | |
| | | | 415V | – | 10 | | |
| | IEC/EN 60947-2 ($I_{cu}/I_{cs}$) | AC | 240V | 10/7.5 | | | |
| | | | 415V | – | 10/7.5 | | |

## ■Operating Characteristics

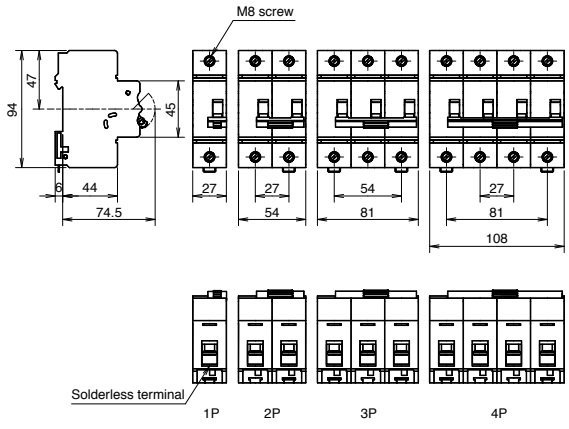
IEC/EN 60898-1



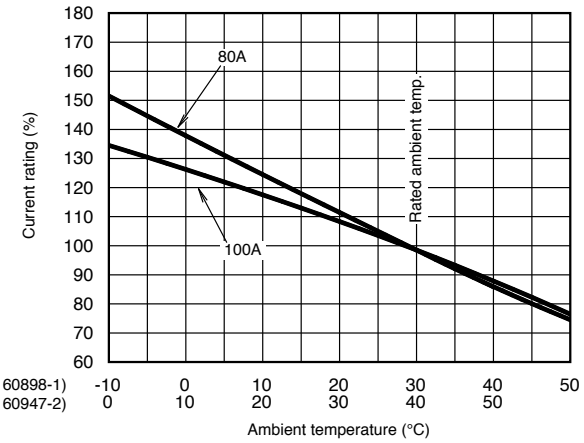

IEC/EN 60947-2




## ■Outline Drawing




## ■Temperature Compensation Curve




* In case of installing breakers side by side, reduce the passing current to under 80% of the rated current.

# Accessories

## Functions of Accessories

| Accessory | Function |
|---|---|
| **AL** Alarm switch | Electrically indicates the trip status of the circuit breaker. |
| **AX** Auxiliary switch | Electrically indicates the On/Off status of the circuit breaker. |

## Specifications

| Accessory | | AL | AX |
|---|---|---|---|
| Model | | AL-1BHW | AX-1BHW |
| Contact | Configuration | 1C | 1C |
| | Contact capacity | 230VAC 5A | 230VAC 5A |
| Connection | | Solderless terminal | Solderless terminal |
| Fitment | | Field fitted | Field fitted |

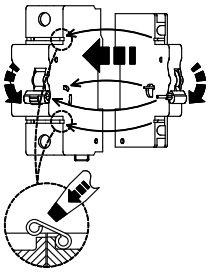
## Combinations of Accessories

| Accessory connection combinations | AL | |
|---|---|---|
| | AX | |

Breaker AL AX

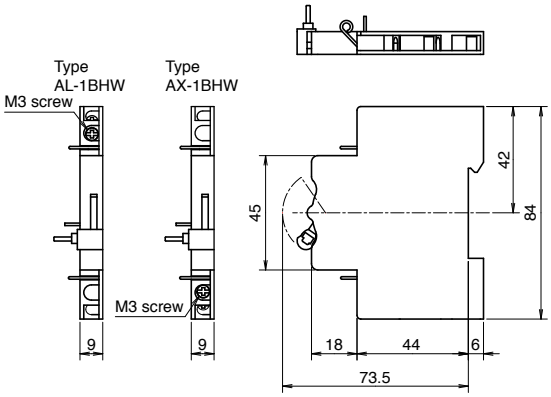
## Installation of Accessories

AL, AX



## Outline Drawing

AL, AX



# Characteristics and Dimensions

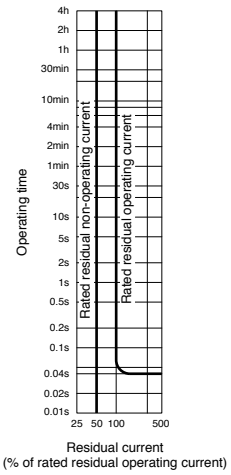
## Residual Current Circuit Breakers (RCCBs)

### BVW-T

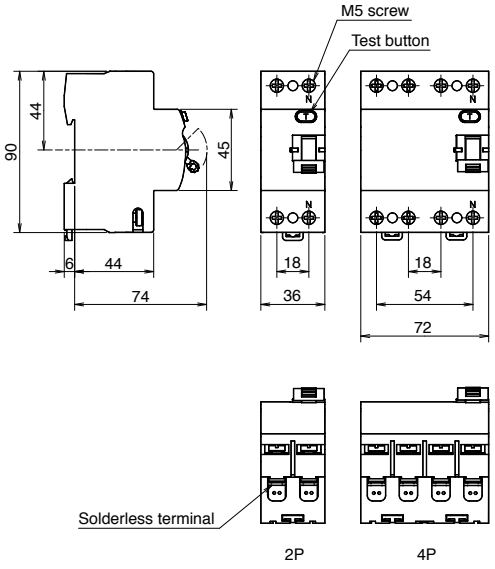
| Model | BVW-T | |
|---|---|---|
| No. of poles [P] | 2(1+N)*1 | 4(3+N)*1 |
| Rated voltage [VAC] | 240 | 415 |
| Rated current $I_n$ [A] at ambient temperature 30˚C | 16, 25, 32, 40, 63, 80, 100 | |
| Rated residual operating current $I_{\Delta n}$ [mA] | 30, 100, 300 | |
| Max. operating time at 5 $I_{\Delta n}$ [s] | 0.04 | |
| Pulsating current sensitivity | Type AC | |
| Residual operation | Independent of line voltage | |
| Rated making and breaking capacity $I_m$ [A] | 500($I_n$ 16, 25, 32, 40A), 630($I_n$ 63A), 800($I_n$ 80A), 1000($I_n$ 100A) | |
| Rated conditional short-circuit current $I_{nc}$ [kA] | 10 | |
| Rated residual making and breaking capacity $I_{\Delta m}$ [A] | 500($I_n$ 16, 25, 32, 40A), 630($I_n$ 63A), 800($I_n$ 80A), 1000($I_n$ 100A) | |
| Rated conditional residual short-circuit current $I_{\Delta c}$ [kA] | 10 | |

*1: N pole is a switched neutral pole.

## ■Earth-Leakage Tripping Characteristics




## ■Outline Drawing

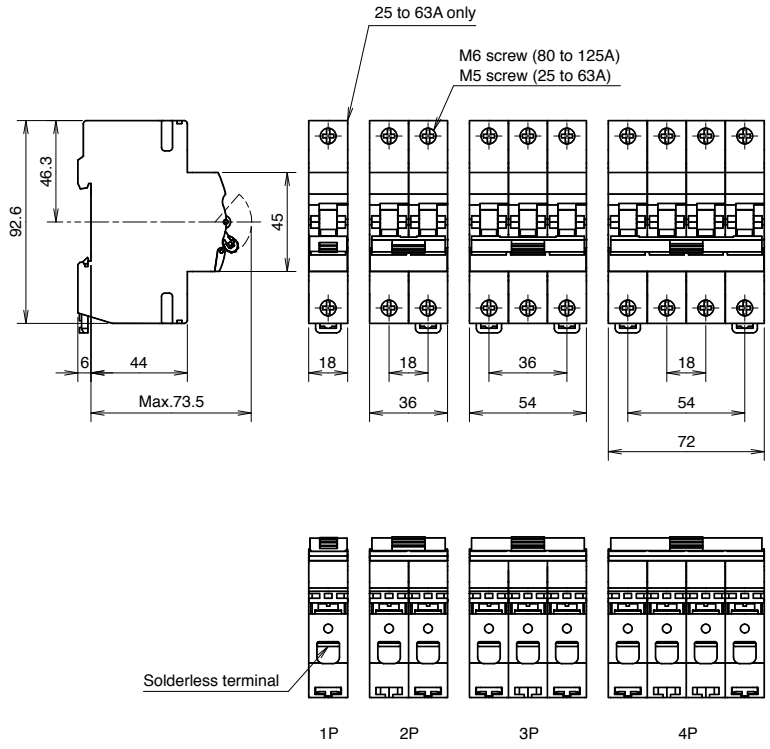


# Characteristics and Dimensions
## Isolators

### KBW-T

| Model | KBW-T | | | | | | |
|---|---|---|---|---|---|---|---|
| No. of poles [P] | 1 | 2 | 3 | 4 | 2 | 3 | 4 |
| Utilization category | AC-22A | | | | AC-22A | | |
| Rated insulation voltage $U_i$ [V] | 660 | | | | 660 | | |
| Rated operational voltage $U_e$ [VAC] | 240 | 240/415 | | | 240/415 | | |
| Rated operational current $I_n$ [A] at ambient temperature 30˚C | 25, 40, 63 | | | | 80, 100, 125 | | |
| Rated short-time withstand current $I_{cw}$ [A] | 12×$I_n$, 1s | | | | 12×$I_n$, 1s | | |
| Rated short-circuit making capacity $I_{cm}$ [A] | 12×$I_n$ | | | | 12×$I_n$ | | |

## ■Outline Drawing



# Ordering Information

## ●MCBs

Please specify items with ☐

| Model | Number of poles | Instantaneous tripping | Rated current | Internal accessory | Quantity |
|---|---|---|---|---|---|
| BHW-T10 | 1P | Type C | 16A | SHT(12VDC) | 12 |
| | 1P, 1P+N, 2P, 3P, 3P+N, 4P | Type B<br>Type C<br>Type D | 0.5A, 1A, 2A, 3A, 4A, 5A,*1 6A, 10A, 16A, 20A, 25A, 32A, 40A, 50A, 63A | SHT(12VDC)<br>SHT(24VDC)<br>SHT(48VDC)<br>SHT(220VAC) — Shunt trip | |

*1: 0.5A to 5A only for Type C and Type D.

| Model | Number of poles | Instantaneous tripping | Rated current | Quantity |
|---|---|---|---|---|
| BHW-T10 | 1P | Type C | 80A | 8 |
| | 1P, 2P, 3P, 4P | Type B<br>Type C | 80A, 100A | |

| Model | Quantity |
|---|---|
| AL-1BHW | 12 |

| | |
|---|---|
| AL-1BHW | Alarm switch |
| AX-05BHW | Auxiliary switch |
| AX-1BHW | Auxiliary switch |

## ●RCCBs

| Model | Number of poles | Rated current | Rated residual operating current | Quantity |
|---|---|---|---|---|
| BVW-T | 2P | 63A | 30mA | 5 |
| | 2P, 4P | 16A, 25A, 32A, 40A, 63A, 80A, 100A | 30mA, 100mA, 300mA | |

## ●Isolators

| Model | Number of poles | Rated operational current | Quantity |
|---|---|---|---|
| KBW-T | 1P | 63A | 12 |
| | 1P, 2P, 3P, 4P | 25A, 40A, 63A, 80A, 100A, 125A | |

# Information from Fukuyama Works

### FA Global Site

**https://www.mitsubishielectric.com/fa/products/lvd/lvcb/index.html**

### Four Key Features

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❹ Support