

CATALOGUE

# FORMULA BW

## Key to Safety



- Safe and reliable
- Optimum protection for residential applications
- Improve safety and performance

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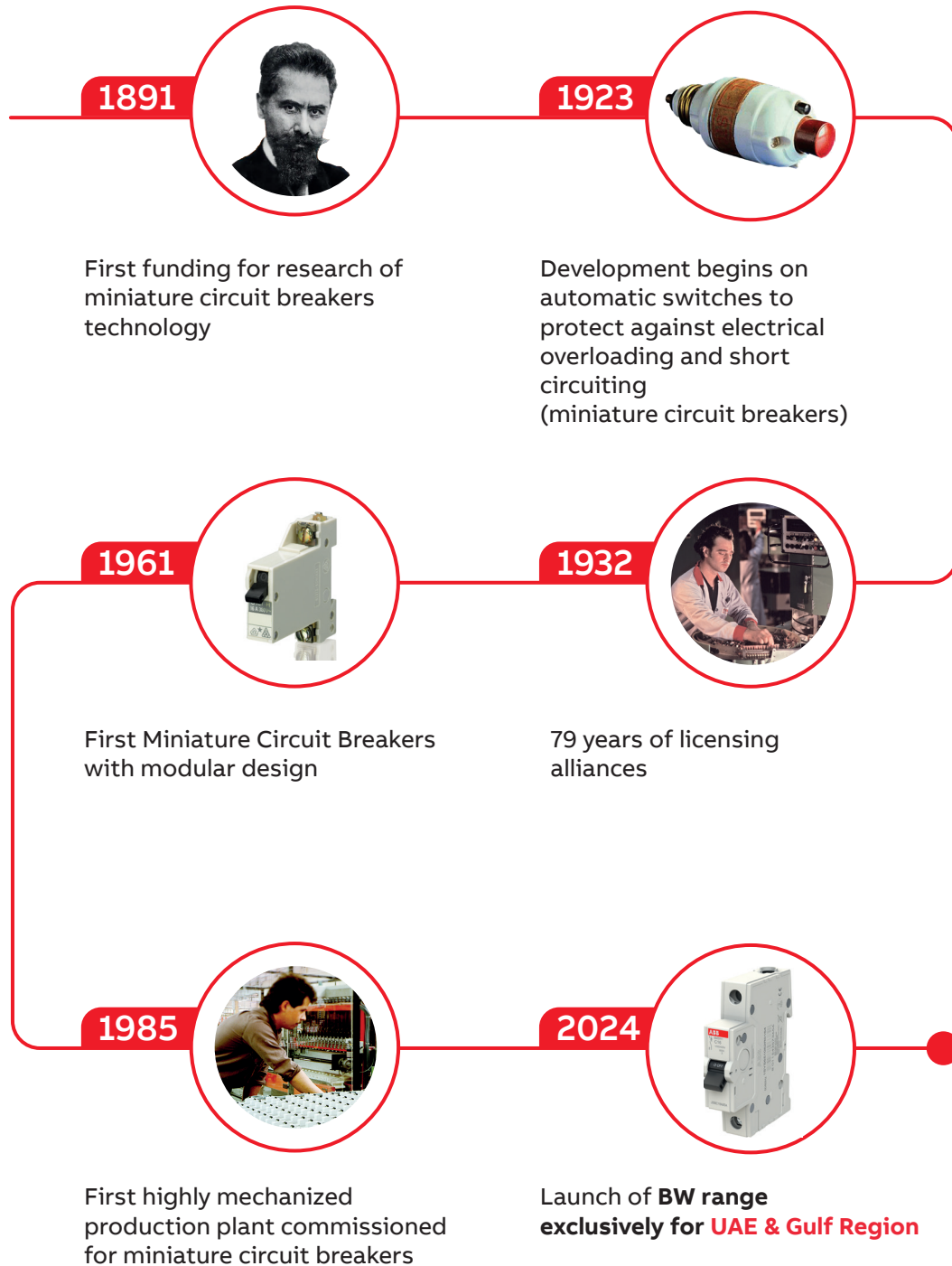
**The Formula BW portfolio offers a complete solution of line protection, designed to work across residential and similar applications; delivering an uncompromised level of safety.**

**This series of devices including Miniature Circuit Breaker (MCBs), Residual Current Circuit Breaker (RCCBs) and Isolators are fully CE certified and innovated with the same expertise and technological know-how as the original MCB first invented by ABB almost one hundred years ago.**

**Formula BW range is an easy choice, thanks to its complete portfolio, simplified yet intuitive design with full functionality. Furthermore, this range is your Key to safety.**

# Innovation

## Legacy, invention to A 133 years history



## Made in India

Miniature circuit breakers (MCBs),  
Residual current circuit breakers (RCCBs)  
and Isolators

**2001**

Start of **MCBs** production  
in Bengaluru

**2006**

Start of **MCBs** and **RCCBs**  
production in Haridwar

**2012**

Semi Automated **MCBs**  
production facility in  
Bengaluru for Compact  
Home and **System pro M**  
**compact**® DIN-Rail range

**2019**

Launch of New  
**System pro M**  
**compact**®DIN-Rail range

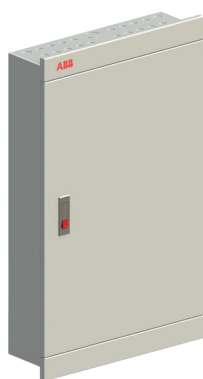
**2024**

Launch of **Formula BW**  
with **BMSW & BMSWM**  
**MCBs**, **BMFW RCCBs**, and  
**BMSDW** isolators ranges



# FORMULA BW portfolio

A solution you can rely on



Minicenter DB's



MCBs



RCCBs



Isolators



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# FORMULA BW portfolio

## The right choice for you

FORMULA BW range offers the right solutions for a lot of electrical installations without losing the ABB quality standards. So we provide tangible benefits and concrete values for your daily installation business.



### Completeness

FORMULA BW range is a complete system solution, including MCBs, RCCBs and Isolators dedicated for residential and similar applications.



### Easy wiring

Mounting and installation of all FORMULA BW range products is possible with the same tools thanks to harmonized terminals, tightening torque and wire stripping length.



### Easy installation

Thanks to bottom-side terminals equipped to accommodate the Pin and Fork-Type Busbar, enabling easy and hassle free installations



### Easy selection

The technical information on the website enable you to make the right choice from the FORMULA BW range



### Environment friendly

By using the state-of-the-art housing material, ABB is taking care of the environment. 100% halogen free, with environmental pollution.

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FORMULA BW range is the right solution for electrical professionals who are looking to provide optimum protections in residential applications without compromises. With the FORMULA DIN-Rail range of MCBs, RCCBs and Isolators we help you to improve safety and performance according to the necessary requirements.



#### **Residential Applications**

- The range complies to the standards of residential applications and local regulations



#### **Safety**

- Perfect choice for your protection of the installation and safety of the user



#### **Performance**

- Longer electrical life and higher breaking capacity will ensure the long running uncompromised performance

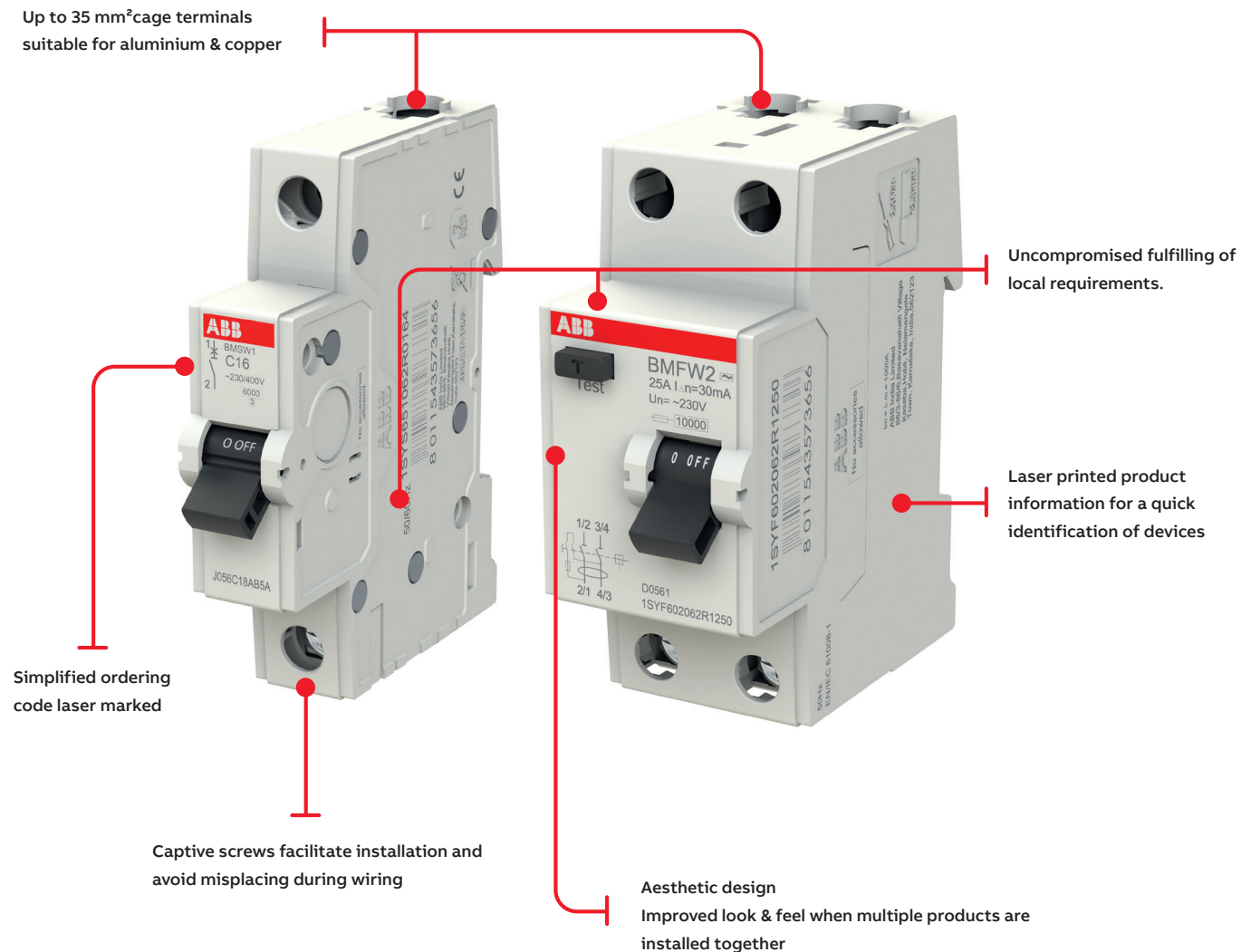


#### **Reliability**

- Guaranteed safety and reliability, thanks to multiple automated testing of each single product

# FORMULA BW

## Portfolio features



### MCB – Miniature circuit breaker

- Protect installations against overloads and short-circuit, guaranteeing reliability and safety of operations
- BMSW & BMSWM MCBs with breaking capacity of 6 kA, 10 kA in B/C characteristics and 1/2/3/4P configurations up to 63A

### ISOLATORS

- Opening a disconnecter ensures isolation of downstream circuit
- BMSDW with 2/3/4P configurations in 40/63A

### RCCB – Residual current circuit breaker

- RCCB is the safety device to detect earth leakage current and trip the circuit
- Sensitive only to earth fault current, therefore they have to be connected in series with a MCB or a fuse to protect them against over-currents and short-circuits
- BMFW RCCBs with sensitivity 30/100/300mA in AC type and 2/4P configuration up to 63A, corresponding to all requirements in residential applications

# FORMULA BW

## Benefits



**Dual termination**  
Fork-type busbars for easy mounting and installation



**Space for a better circulation**  
Perfectly designed breathing channels between the poles for proper heat dissipation and better thermal performance



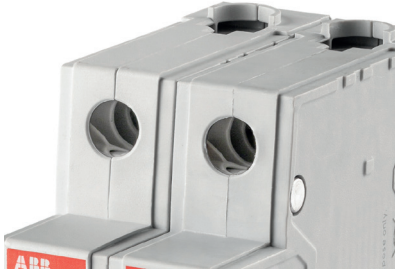
**Positive contact indication**  
Ergonomically designed knob for smooth operation. Clear visibility of **ON /OFF** marking on the toggle



**Wiring diagram**  
Wiring diagram for easy reference



**Line load reversibility**  
Freedom for connecting incomer at the top or bottom



**IP20 protection**  
Additional protrusion to ensure safety and avoid any accidents

# FORMULA BMSW & BMSWM

## Miniature circuit breakers

### Technical details



| Standard product                                           | IEC/EN 60898-1                                                                                                                                                                    |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Data</b>                                        |                                                                                                                                                                                   |
| Standards                                                  | IEC/EN 60898-1                                                                                                                                                                    |
| Poles                                                      | 1P, 2P, 3P, 4P                                                                                                                                                                    |
| Tripping Characteristics                                   | B, C                                                                                                                                                                              |
| Rated short-circuit capacity (Icn)                         | 6kA & 10 kA                                                                                                                                                                       |
| Rated frequency                                            | 50/60Hz                                                                                                                                                                           |
| Rated voltage Ue                                           | 1P : 230/400 V AC ,2P, 3P, 4P : 400 V AC                                                                                                                                          |
| Reference temperature for tripping characteristics         | 30°C                                                                                                                                                                              |
| Energy limiting class (B-,C- Curve)                        | 3                                                                                                                                                                                 |
| Rated current In                                           | B & C: 6, 10, 16, 20, 25, 32, 40, 50, 63 A                                                                                                                                        |
| Electrical endurance                                       | In < 32A: 20,000 ops.(AC), In ≥ 32A: 10,000 ops.(AC);<br>Frequency of operation:<br>1 cycle (2s - ON, 13s - OFF, In ≤ 32A),<br>1 cycle (2s - ON, 28s - OFF, In > 32A)             |
| Load line reversibility                                    | Yes                                                                                                                                                                               |
| Min. operating voltage                                     | 12 V AC                                                                                                                                                                           |
| Rated impulse withstand voltage Uimp. (1.2/50μs)           | 4 kV (Test Voltage 6.2kV at sea level, 5.8kV at 2000m)                                                                                                                            |
| "Max. Loop impedance Zs at various rated current           | B Curve: 6A=7.3, 10A=4.3, 16A= 2.6, 20A=2, 25A= 1.5, 32A=1.1, 40A=0.9, 50A=0.6, 63A=0.4 C curve: 6A=3.5, 10A=2.0, 16A= 1.1, 20A=0.8, 25A= 0.6, 32A=0.4, 40A=0.3, 50A=0.2, 63A=0.1 |
| Dielectric test voltage                                    | 2 kV (50/60Hz, 1 min.)                                                                                                                                                            |
| Overvoltage category                                       | III                                                                                                                                                                               |
| Rated insulation voltage Ui acc. to IEC/EN 60664-1         | 250 V AC (phase to ground) , 440 V AC (phase to phase)                                                                                                                            |
| Pollution degree                                           | 2                                                                                                                                                                                 |
| <b>Mechanical Data</b>                                     |                                                                                                                                                                                   |
| Contact position indication                                | White Marking on toggle ( 'I' ON / 'O' OFF )                                                                                                                                      |
| Protection degree acc. to EN 60529                         | IP20 & IP40 in enclosure with cover                                                                                                                                               |
| Mechanical endurance                                       | In < 32A: 20,000 ops.(AC), In ≥ 32A: 10,000 ops.(AC);                                                                                                                             |
| Ambient temperature (with daily average ≤ +35°C)           | -25 ... +55°C                                                                                                                                                                     |
| Tropicalisation acc. to IEC/EN 60068-2-30                  | Severity 2 Cyclic test with 55°C/90-96% and 25°C/95-100%                                                                                                                          |
| Storage temperature                                        | -40 ... +70°C                                                                                                                                                                     |
| Housing                                                    | Insulation group II                                                                                                                                                               |
| <b>Installation</b>                                        |                                                                                                                                                                                   |
| Terminal                                                   | Cage terminal                                                                                                                                                                     |
| Cross-section of conductors (top / bottom) Solid, Stranded | 35 mm <sup>2</sup> / 35 mm <sup>2</sup>                                                                                                                                           |
| Flexible                                                   | 25 mm <sup>2</sup> / 25 mm <sup>2</sup>                                                                                                                                           |
| Cross-section of busbars (top / bottom)                    | 10 mm <sup>2</sup>                                                                                                                                                                |
| Busbars type                                               | Pin and Fork Type Busbar provision                                                                                                                                                |
| Tightening Torque                                          | 2 Nm                                                                                                                                                                              |
| Screwdriver                                                | No. 2 Pozidrive                                                                                                                                                                   |
| Mounting                                                   | On DIN rail 35 mm                                                                                                                                                                 |
| Mounting position                                          | Any                                                                                                                                                                               |
| Supply                                                     | Any                                                                                                                                                                               |
| Cable Length                                               | 12.5mm                                                                                                                                                                            |
| <b>Dimensions and weight</b>                               |                                                                                                                                                                                   |
| Mounting dimensions acc. to DIN 43880                      | Mounting dimension 1                                                                                                                                                              |
| Pole dimensions (H x D x W) (per pole)                     | 88 x 69.2 x 17.5 mm                                                                                                                                                               |
| Pole weight (per pole)                                     | 110Gms                                                                                                                                                                            |
| <b>Approvals</b>                                           |                                                                                                                                                                                   |
| CE marking approved                                        | Yes                                                                                                                                                                               |
| MolAT LVE Certification                                    | Yes                                                                                                                                                                               |
| MolAT RoHS Certification                                   | Yes                                                                                                                                                                               |

# FORMULA BMSW

## Miniature circuit breakers

Ordering Codes - BMSW MCB, B Curve, 6kA

|                                                                                     | Curve | Poles | Rated current<br>In (A) | Description | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|-------------------------------------------------------------------------------------|-------|-------|-------------------------|-------------|-----------------|-----------------------|------------------|
|    | B     | 1     | 6                       | BMSW1B06    | 1SYS651062R0065 | 96                    | 12               |
|                                                                                     |       |       | 10                      | BMSW1B10    | 1SYS651062R0105 | 96                    | 12               |
|                                                                                     |       |       | 16                      | BMSW1B16    | 1SYS651062R0165 | 96                    | 12               |
|                                                                                     |       |       | 20                      | BMSW1B20    | 1SYS651062R0205 | 103                   | 12               |
|                                                                                     |       |       | 25                      | BMSW1B25    | 1SYS651062R0255 | 103                   | 12               |
|                                                                                     |       |       | 32                      | BMSW1B32    | 1SYS651062R0325 | 103                   | 12               |
|                                                                                     |       |       | 40                      | BMSW1B40    | 1SYS651062R0405 | 111                   | 12               |
|                                                                                     |       |       | 50                      | BMSW1B50    | 1SYS651062R0505 | 111                   | 12               |
|  | B     | 2     | 63                      | BMSW1B63    | 1SYS651062R0635 | 111                   | 12               |
|                                                                                     |       |       | 6                       | BMSW2B06    | 1SYS652062R0065 | 182                   | 6                |
|                                                                                     |       |       | 10                      | BMSW2B10    | 1SYS652062R0105 | 182                   | 6                |
|                                                                                     |       |       | 16                      | BMSW2B16    | 1SYS652062R0165 | 182                   | 6                |
|                                                                                     |       |       | 20                      | BMSW2B20    | 1SYS652062R0205 | 206                   | 6                |
|                                                                                     |       |       | 25                      | BMSW2B25    | 1SYS652062R0255 | 206                   | 6                |
|                                                                                     |       |       | 32                      | BMSW2B32    | 1SYS652062R0325 | 206                   | 6                |
|                                                                                     |       |       | 40                      | BMSW2B40    | 1SYS652062R0405 | 221                   | 6                |
|  | B     | 3     | 50                      | BMSW2B50    | 1SYS652062R0505 | 221                   | 6                |
|                                                                                     |       |       | 63                      | BMSW2B63    | 1SYS652062R0635 | 221                   | 6                |
|                                                                                     |       |       | 6                       | BMSW3B06    | 1SYS653062R0065 | 272                   | 4                |
|                                                                                     |       |       | 10                      | BMSW3B10    | 1SYS653062R0105 | 272                   | 4                |
|                                                                                     |       |       | 16                      | BMSW3B16    | 1SYS653062R0165 | 272                   | 4                |
|                                                                                     |       |       | 20                      | BMSW3B20    | 1SYS653062R0205 | 304                   | 4                |
|                                                                                     |       |       | 25                      | BMSW3B25    | 1SYS653062R0255 | 304                   | 4                |
|                                                                                     |       |       | 32                      | BMSW3B32    | 1SYS653062R0325 | 304                   | 4                |
|  | B     | 4     | 40                      | BMSW3B40    | 1SYS653062R0405 | 331                   | 4                |
|                                                                                     |       |       | 50                      | BMSW3B50    | 1SYS653062R0505 | 331                   | 4                |
|                                                                                     |       |       | 63                      | BMSW3B63    | 1SYS653062R0635 | 331                   | 4                |
|                                                                                     |       |       | 6                       | BMSW4B06    | 1SYS654062R0065 | 368                   | 3                |
|                                                                                     |       |       | 10                      | BMSW4B10    | 1SYS654062R0105 | 368                   | 3                |
|                                                                                     |       |       | 16                      | BMSW4B16    | 1SYS654062R0165 | 368                   | 3                |
|                                                                                     |       |       | 20                      | BMSW4B20    | 1SYS654062R0205 | 406                   | 3                |
|                                                                                     |       |       | 25                      | BMSW4B25    | 1SYS654062R0255 | 406                   | 3                |
|  | B     | 4     | 32                      | BMSW4B32    | 1SYS654062R0325 | 406                   | 3                |
|                                                                                     |       |       | 40                      | BMSW4B40    | 1SYS654062R0405 | 442                   | 3                |
|                                                                                     |       |       | 50                      | BMSW4B50    | 1SYS654062R0505 | 442                   | 3                |
|                                                                                     |       |       | 63                      | BMSW4B63    | 1SYS654062R0635 | 442                   | 3                |
|                                                                                     |       |       |                         |             |                 |                       |                  |

# FORMULA BMSW

## Miniature circuit breakers

Ordering Codes - BMSW MCB, C Curve 6kA

|                                                                                              | Curve | Poles | Rated<br>current<br>In (A) | Description     | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|----------------------------------------------------------------------------------------------|-------|-------|----------------------------|-----------------|-----------------|-----------------------|------------------|
| <br>BMSW1  | C     | 1     | 6                          | BMSW1C06        | 1SYS651062R0064 | 104                   | 12               |
|                                                                                              |       |       | 10                         | BMSW1C10        | 1SYS651062R0104 | 104                   | 12               |
|                                                                                              |       |       | 16                         | BMSW1C16        | 1SYS651062R0164 | 104                   | 12               |
|                                                                                              |       |       | 20                         | BMSW1C20        | 1SYS651062R0204 | 111                   | 12               |
|                                                                                              |       |       | 25                         | BMSW1C25        | 1SYS651062R0254 | 111                   | 12               |
|                                                                                              |       |       | 32                         | BMSW1C32        | 1SYS651062R0324 | 111                   | 12               |
|                                                                                              |       |       | 40                         | BMSW1C40        | 1SYS651062R0404 | 119                   | 12               |
|                                                                                              |       |       | 50                         | BMSW1C50        | 1SYS651062R0504 | 119                   | 12               |
|                                                                                              |       |       | 63                         | BMSW1C63        | 1SYS651062R0634 | 119                   | 12               |
|                                                                                              | C     | 1     | 6                          | BMSW1C06 - BULK | 1SYS651062U0064 | -                     | 72               |
|                                                                                              |       |       | 10                         | BMSW1C10 - BULK | 1SYS651062U0104 | -                     | 72               |
|                                                                                              |       |       | 16                         | BMSW1C16 - BULK | 1SYS651062U0164 | -                     | 72               |
|                                                                                              |       |       | 20                         | BMSW1C20 - BULK | 1SYS651062U0204 | -                     | 72               |
|                                                                                              |       |       | 25                         | BMSW1C25 - BULK | 1SYS651062U0254 | -                     | 72               |
|                                                                                              |       |       | 32                         | BMSW1C32 - BULK | 1SYS651062U0324 | -                     | 72               |
| <br>BMSW2 | C     | 2     | 6                          | BMSW2C06        | 1SYS652062R0064 | 192                   | 6                |
|                                                                                              |       |       | 10                         | BMSW2C10        | 1SYS652062R0104 | 192                   | 6                |
|                                                                                              |       |       | 16                         | BMSW2C16        | 1SYS652062R0164 | 192                   | 6                |
|                                                                                              |       |       | 20                         | BMSW2C20        | 1SYS652062R0204 | 216                   | 6                |
|                                                                                              |       |       | 25                         | BMSW2C25        | 1SYS652062R0254 | 216                   | 6                |
|                                                                                              |       |       | 32                         | BMSW2C32        | 1SYS652062R0324 | 216                   | 6                |
|                                                                                              |       |       | 40                         | BMSW2C40        | 1SYS652062R0404 | 231                   | 6                |
|                                                                                              |       |       | 50                         | BMSW2C50        | 1SYS652062R0504 | 231                   | 6                |
|                                                                                              |       |       | 63                         | BMSW2C63        | 1SYS652062R0634 | 231                   | 6                |
|                                                                                              | C     | 3     | 6                          | BMSW3C06        | 1SYS653062R0064 | 272                   | 4                |
|                                                                                              |       |       | 10                         | BMSW3C10        | 1SYS653062R0104 | 272                   | 4                |
|                                                                                              |       |       | 16                         | BMSW3C16        | 1SYS653062R0164 | 272                   | 4                |
|                                                                                              |       |       | 20                         | BMSW3C20        | 1SYS653062R0204 | 304                   | 4                |
|                                                                                              |       |       | 25                         | BMSW3C25        | 1SYS653062R0254 | 304                   | 4                |
|                                                                                              |       |       | 32                         | BMSW3C32        | 1SYS653062R0324 | 304                   | 4                |
| 40                                                                                           |       |       | BMSW3C40                   | 1SYS653062R0404 | 331             | 4                     |                  |
| 50                                                                                           |       |       | BMSW3C50                   | 1SYS653062R0504 | 331             | 4                     |                  |
| 63                                                                                           |       |       | BMSW3C63                   | 1SYS653062R0634 | 331             | 4                     |                  |
| C                                                                                            | 3     | 20    | BMSW3C20 - BULK            | 1SYS653062U0204 | -               | 24                    |                  |
|                                                                                              |       | 25    | BMSW3C25 - BULK            | 1SYS653062U0254 | -               | 24                    |                  |
|                                                                                              |       | 32    | BMSW3C32 - BULK            | 1SYS653062U0324 | -               | 24                    |                  |
|                                                                                              |       | 40    | BMSW3C40 - BULK            | 1SYS653062U0404 | -               | 24                    |                  |

# FORMULA BMSW

## Miniature circuit breakers

Ordering Codes - BMSW MCB, C Curve 6kA

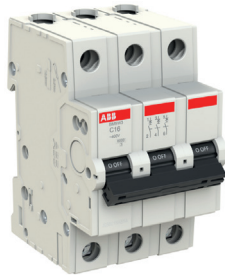
|                                                                                   | Curve | Poles | Rated<br>current<br>In (A) | Description | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|-----------------------------------------------------------------------------------|-------|-------|----------------------------|-------------|-----------------|-----------------------|------------------|
|  | C     | 4     | 6                          | BMSW4C06    | 1SYS654062R0064 | 392                   | 3                |
|                                                                                   |       |       | 10                         | BMSW4C10    | 1SYS654062R0104 | 392                   | 3                |
|                                                                                   |       |       | 16                         | BMSW4C16    | 1SYS654062R0164 | 392                   | 3                |
|                                                                                   |       |       | 20                         | BMSW4C20    | 1SYS654062R0204 | 430                   | 3                |
|                                                                                   |       |       | 25                         | BMSW4C25    | 1SYS654062R0254 | 430                   | 3                |
|                                                                                   |       |       | 32                         | BMSW4C32    | 1SYS654062R0324 | 430                   | 3                |
|                                                                                   |       |       | 40                         | BMSW4C40    | 1SYS654062R0404 | 466                   | 3                |
|                                                                                   |       |       | 50                         | BMSW4C50    | 1SYS654062R0504 | 466                   | 3                |
|                                                                                   |       |       | 63                         | BMSW4C63    | 1SYS654062R0634 | 466                   | 3                |
|                                                                                   |       |       |                            |             |                 |                       |                  |

BMSW4

# FORMULA BMSWM

## Miniature circuit breakers

Ordering Codes - BMSWM MCB, B Curve 10kA

|                                                                                     | Curve | Poles | Rated<br>current<br>In (A) | Description | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|-------------------------------------------------------------------------------------|-------|-------|----------------------------|-------------|-----------------|-----------------------|------------------|
|    | B     | 1     | 6                          | BMSW1MB06   | 1SYS671062R0065 | 104                   | 12               |
|                                                                                     |       |       | 10                         | BMSW1MB10   | 1SYS671062R0105 | 104                   | 12               |
|                                                                                     |       |       | 16                         | BMSW1MB16   | 1SYS671062R0165 | 104                   | 12               |
|                                                                                     |       |       | 20                         | BMSW1MB20   | 1SYS671062R0205 | 111                   | 12               |
|                                                                                     |       |       | 25                         | BMSW1MB25   | 1SYS671062R0255 | 111                   | 12               |
|                                                                                     |       |       | 32                         | BMSW1MB32   | 1SYS671062R0325 | 111                   | 12               |
|                                                                                     |       |       | 40                         | BMSW1MB40   | 1SYS671062R0405 | 119                   | 12               |
|                                                                                     |       |       | 50                         | BMSW1MB50   | 1SYS671062R0505 | 119                   | 12               |
| BMSWM1                                                                              |       |       | 63                         | BMSW1MB63   | 1SYS671062R0635 | 119                   | 12               |
|  | B     | 2     | 6                          | BMSW2MB06   | 1SYS672062R0065 | 192                   | 6                |
|                                                                                     |       |       | 10                         | BMSW2MB10   | 1SYS672062R0105 | 192                   | 6                |
|                                                                                     |       |       | 16                         | BMSW2MB16   | 1SYS672062R0165 | 192                   | 6                |
|                                                                                     |       |       | 20                         | BMSW2MB20   | 1SYS672062R0205 | 216                   | 6                |
|                                                                                     |       |       | 25                         | BMSW2MB25   | 1SYS672062R0255 | 216                   | 6                |
|                                                                                     |       |       | 32                         | BMSW2MB32   | 1SYS672062R0325 | 216                   | 6                |
|                                                                                     |       |       | 40                         | BMSW2MB40   | 1SYS672062R0405 | 231                   | 6                |
|                                                                                     |       |       | 50                         | BMSW2MB50   | 1SYS672062R0505 | 231                   | 6                |
| BMSWM2                                                                              |       |       | 63                         | BMSW2MB63   | 1SYS672062R0635 | 231                   | 6                |
|  | B     | 3     | 6                          | BMSW3MB06   | 1SYS673062R0065 | 272                   | 4                |
|                                                                                     |       |       | 10                         | BMSW3MB10   | 1SYS673062R0105 | 272                   | 4                |
|                                                                                     |       |       | 16                         | BMSW3MB16   | 1SYS673062R0165 | 272                   | 4                |
|                                                                                     |       |       | 20                         | BMSW3MB20   | 1SYS673062R0205 | 304                   | 4                |
|                                                                                     |       |       | 25                         | BMSW3MB25   | 1SYS673062R0255 | 304                   | 4                |
|                                                                                     |       |       | 32                         | BMSW3MB32   | 1SYS673062R0325 | 304                   | 4                |
|                                                                                     |       |       | 40                         | BMSW3MB40   | 1SYS673062R0405 | 331                   | 4                |
|                                                                                     |       |       | 50                         | BMSW3MB50   | 1SYS673062R0505 | 331                   | 4                |
| BMSWM3                                                                              |       |       | 63                         | BMSW3MB63   | 1SYS673062R0635 | 331                   | 4                |
|  | B     | 4     | 6                          | BMSW4MB06   | 1SYS674062R0065 | 368                   | 3                |
|                                                                                     |       |       | 10                         | BMSW4MB10   | 1SYS674062R0105 | 368                   | 3                |
|                                                                                     |       |       | 16                         | BMSW4MB16   | 1SYS674062R0165 | 368                   | 3                |
|                                                                                     |       |       | 20                         | BMSW4MB20   | 1SYS674062R0205 | 406                   | 3                |
|                                                                                     |       |       | 25                         | BMSW4MB25   | 1SYS674062R0255 | 406                   | 3                |
|                                                                                     |       |       | 32                         | BMSW4MB32   | 1SYS674062R0325 | 406                   | 3                |
|                                                                                     |       |       | 40                         | BMSW4MB40   | 1SYS674062R0405 | 442                   | 3                |
|                                                                                     |       |       | 50                         | BMSW4MB50   | 1SYS674062R0505 | 442                   | 3                |
| BMSWM4                                                                              |       |       | 63                         | BMSW4MB63   | 1SYS674062R0635 | 442                   | 3                |

# FORMULA BMSWM

## Miniature circuit breakers

Ordering Codes - BMSWM MCB, C Curve 10kA

|                                                                                               | Curve | Poles     | Rated current In (A) | Description      | Code            | Weight 1 piec gms. | Pack unit pc. |
|-----------------------------------------------------------------------------------------------|-------|-----------|----------------------|------------------|-----------------|--------------------|---------------|
| <br>BMSWM1  | C     | 1         | 6                    | BMSW1MC06        | 1SYS671062R0064 | 104                | 12            |
|                                                                                               |       |           | 10                   | BMSW1MC10        | 1SYS671062R0104 | 104                | 12            |
|                                                                                               |       |           | 16                   | BMSW1MC16        | 1SYS671062R0164 | 104                | 12            |
|                                                                                               |       |           | 20                   | BMSW1MC20        | 1SYS671062R0204 | 111                | 12            |
|                                                                                               |       |           | 25                   | BMSW1MC25        | 1SYS671062R0254 | 111                | 12            |
|                                                                                               |       |           | 32                   | BMSW1MC32        | 1SYS671062R0324 | 111                | 12            |
|                                                                                               |       |           | 40                   | BMSW1MC40        | 1SYS671062R0404 | 119                | 12            |
|                                                                                               |       |           | 50                   | BMSW1MC50        | 1SYS671062R0504 | 119                | 12            |
|                                                                                               |       |           | 63                   | BMSW1MC63        | 1SYS671062R0634 | 119                | 12            |
| <br>BMSWM2 | C     | 2         | 6                    | BMSW2MC06        | 1SYS672062R0064 | 192                | 6             |
|                                                                                               |       |           | 10                   | BMSW2MC10        | 1SYS672062R0104 | 192                | 6             |
|                                                                                               |       |           | 16                   | BMSW2MC16        | 1SYS672062R0164 | 192                | 6             |
|                                                                                               |       |           | 20                   | BMSW2MC20        | 1SYS672062R0204 | 216                | 6             |
|                                                                                               |       |           | 25                   | BMSW2MC25        | 1SYS672062R0254 | 216                | 6             |
|                                                                                               |       |           | 32                   | BMSW2MC32        | 1SYS672062R0324 | 216                | 6             |
| <br>BMSWM3 | C     | 3         | 6                    | BMSW3MC06        | 1SYS673062R0064 | 291                | 4             |
|                                                                                               |       |           | 10                   | BMSW3MC10        | 1SYS673062R0104 | 291                | 4             |
|                                                                                               |       |           | 16                   | BMSW3MC16        | 1SYS673062R0164 | 291                | 4             |
|                                                                                               |       |           | 20                   | BMSW3MC20        | 1SYS673062R0204 | 324                | 4             |
|                                                                                               |       |           | 25                   | BMSW3MC25        | 1SYS673062R0254 | 324                | 4             |
|                                                                                               |       |           | 32                   | BMSW3MC32        | 1SYS673062R0324 | 324                | 4             |
|                                                                                               |       |           | 40                   | BMSW3MC40        | 1SYS673062R0404 | 351                | 4             |
|                                                                                               |       |           | 50                   | BMSW3MC50        | 1SYS673062R0504 | 351                | 4             |
|                                                                                               | 63    | BMSW3MC63 | 1SYS673062R0634      | 351              | 4               |                    |               |
|                                                                                               | C     | 3         | 20                   | BMSW3MC20 - BULK | 1SYS673062U0204 | -                  | 24            |
| 25                                                                                            |       |           | BMSW3MC25 - BULK     | 1SYS673062U0254  | -               | 24                 |               |
| 32                                                                                            |       |           | BMSW3MC32 - BULK     | 1SYS673062U0324  | -               | 24                 |               |
| 40                                                                                            |       |           | BMSW3MC40 - BULK     | 1SYS673062U0404  | -               | 24                 |               |



# FORMULA BMSWM

## Miniature circuit breakers

Ordering Codes - BMSWM MCB, C Curve 10kA



BMSWM4

| Curve | Poles | Rated<br>current<br>In (A) | Description | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|-------|-------|----------------------------|-------------|-----------------|-----------------------|------------------|
| C     | 4     | 6                          | BMSW4MC06   | 1SYS674062R0064 | 392                   | 3                |
|       |       | 10                         | BMSW4MC10   | 1SYS674062R0104 | 392                   | 3                |
|       |       | 16                         | BMSW4MC16   | 1SYS674062R0164 | 392                   | 3                |
|       |       | 20                         | BMSW4MC20   | 1SYS674062R0204 | 430                   | 3                |
|       |       | 25                         | BMSW4MC25   | 1SYS674062R0254 | 430                   | 3                |
|       |       | 32                         | BMSW4MC32   | 1SYS674062R0324 | 430                   | 3                |
|       |       | 40                         | BMSW4MC40   | 1SYS674062R0404 | 466                   | 3                |
|       |       | 50                         | BMSW4MC50   | 1SYS674062R0504 | 466                   | 3                |
|       |       | 63                         | BMSW4MC63   | 1SYS674062R0634 | 466                   | 3                |

BMSWM4

## FORMULA BW portfolio

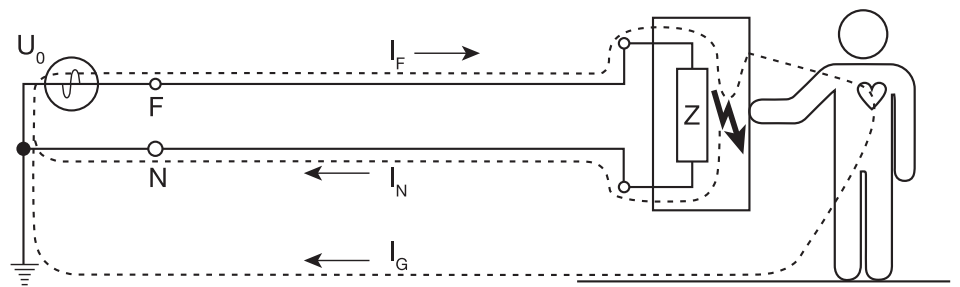
RCCB assures protection of people and installations against earth fault currents.



A residual current circuit-breaker is an amperometric protection device which trips when there is a leakage of current to earth.

Placing RCCB in the installation will help you to meet regulations which is mandatory to protect loads above 2kW and also safeguard the installation and user from electric shock and unwanted energy waste.

- Protect persons against electric shock by direct contact (30mA)
- Protect persons against electric shock by indirect contact (100mA or 300mA)
- Protect installations against the risk of fire (300mA)



# FORMULA BMFW

## Residual current circuit breakers

### Technical details



#### General Data

|                                                                          |                                  |
|--------------------------------------------------------------------------|----------------------------------|
| Standards                                                                | IEC/ EN 61008-1                  |
| Poles                                                                    | 2P, 4P                           |
| Rated current I <sub>n</sub>                                             | 25 A, 40 A, 63 A                 |
| Rated residual operating current I <sub>Δn</sub>                         | 30 mA, 100 mA, 300 mA            |
| Rated voltage U <sub>e</sub>                                             | 2P : 230V AC, 4P : 230/ 400 V AC |
| Rated frequency                                                          | 50 Hz                            |
| Rated conditional short-circuit current I <sub>nc</sub> =I <sub>δc</sub> | 10 kA (with a SCPD)              |
| Electrical endurance                                                     | 10,000 operations                |
| Rated residual breaking capacity I <sub>Δm</sub> =I <sub>m</sub>         | 1000 A                           |
| Rated impulse withstand voltage (1.2/50) U <sub>imp</sub>                | 4 kV                             |
| Dielectric test voltage                                                  | 2,5 kV                           |
| Surge current resistance (wave 8/20)                                     | 250 A                            |
| Max. operating voltage of circuit test                                   | 254 V AC                         |
| Min. operating voltage of circuit test                                   | 110 V AC                         |
| Rated insulation voltage U <sub>i</sub> acc. to IEC/EN 60664-1           | 500 V AC                         |

#### Mechanical Data

|                                                  |                                                          |
|--------------------------------------------------|----------------------------------------------------------|
| Housing                                          | Insulation group II                                      |
| Toggle                                           | Black sealable in ON-OFF position                        |
| Contact position indication                      | White Marking on toggle ( I ON / O OFF )                 |
| Protection degree acc. to EN 60529               | IP20, IP40 in enclosure with cover                       |
| Mechanical endurance                             | 10,000 operations                                        |
| Tropicalisation acc. to IEC/EN 60068-2-30        | Severity 2 Cyclic test with 55°C/90-96% and 25°C/95-100% |
| Ambient temperature (with daily average ≤ +35°C) | -25...+55°C                                              |
| Storage temperature                              | -40...+70°C                                              |

#### Installation

|                                                            |                                         |
|------------------------------------------------------------|-----------------------------------------|
| Terminal                                                   | Cage terminal                           |
| Cross-section of conductors (top / bottom) Solid, Stranded | 35 mm <sup>2</sup> / 35 mm <sup>2</sup> |
| Flexible                                                   | 25 mm <sup>2</sup> / 25 mm <sup>2</sup> |
| Busbars type                                               | Pin and Fork Type Busbar provision      |
| Cross-section of busbars (top / bottom)                    | 10 mm <sup>2</sup> / 10 mm <sup>2</sup> |
| Tightening Torque                                          | 2.0 Nm                                  |
| Screwdriver                                                | No. 2 Pozidrive                         |
| Mounting                                                   | On DIN rail 35 mm                       |
| Mounting position                                          | Any                                     |
| Mechanical Accessories mountable                           | Padlock                                 |
| Supply                                                     | Any                                     |

#### Dimensions and weight

|                             |                                                 |
|-----------------------------|-------------------------------------------------|
| Pole dimensions (H x D x W) | 2P: 88 x 69.2 x 35 mm;<br>4P: 88 x 69.2 x 70 mm |
| Pole weight                 | 2P. ~200 g; 4P: ~350 g                          |

#### Approvals

|                          |     |
|--------------------------|-----|
| CE marking approved      | Yes |
| MolAT RoHS Certification | Yes |

# FORMULA BMFW

## Residual current circuit breakers

Ordering Codes - BMFW RCCB, Type AC

| RCCB                                                                                        | Type | Poles | Sensitivity<br>mA | Rated<br>current<br>In (A) | Description          | Code            | Weight<br>1 piec gms. | Pack<br>unit pc. |
|---------------------------------------------------------------------------------------------|------|-------|-------------------|----------------------------|----------------------|-----------------|-----------------------|------------------|
| <br>BMFW2  | AC   | 2     | 30                | 25                         | BMFW225/AC30         | 1SYF602062R1250 | 159                   | 1                |
|                                                                                             |      |       | 30                | 40                         | BMFW240/AC30         | 1SYF602062R1400 | 159                   | 1                |
|                                                                                             |      |       | 30                | 40                         | BMFW240/AC30 - BULK  | 1SYF602062U1400 | -                     | 36               |
|                                                                                             |      |       | 30                | 63                         | BMFW263/AC30         | 1SYF602062R1630 | 159                   | 1                |
|                                                                                             |      |       | 100               | 25                         | BMFW225/AC100        | 1SYF602062R2250 | 159                   | 1                |
|                                                                                             |      |       | 100               | 40                         | BMFW240/AC100 - BULK | 1SYF602062U2400 | -                     | 36               |
|                                                                                             |      |       | 100               | 40                         | BMFW240/AC100        | 1SYF602062R2400 | 159                   | 1                |
|                                                                                             |      |       | 100               | 63                         | BMFW263/AC100        | 1SYF602062R2630 | 159                   | 1                |
|                                                                                             |      |       | 300               | 25                         | BMFW225/AC300        | 1SYF602062R3250 | 159                   | 1                |
|                                                                                             |      |       | 300               | 40                         | BMFW240/AC300        | 1SYF602062R3400 | 159                   | 1                |
|                                                                                             |      |       | 300               | 63                         | BMFW263/AC300        | 1SYF602062R3630 | 159                   | 1                |
| <br>BMFW4 | AC   | 4     | 30                | 25                         | BMFW425/AC30         | 1SYF604062R1250 | 273                   | 1                |
|                                                                                             |      |       | 30                | 40                         | BMFW440/AC30 - BULK  | 1SYF604062U1400 | -                     | 18               |
|                                                                                             |      |       | 30                | 40                         | BMFW440/AC30         | 1SYF604062R1400 | 273                   | 1                |
|                                                                                             |      |       | 30                | 63                         | BMFW463/AC30         | 1SYF604062R1630 | 273                   | 1                |
|                                                                                             |      |       | 100               | 25                         | BMFW425/AC100        | 1SYF604062R2250 | 273                   | 1                |
|                                                                                             |      |       | 100               | 40                         | BMFW440/AC100 - BULK | 1SYF604062U2400 | -                     | 18               |
|                                                                                             |      |       | 100               | 40                         | BMFW440/AC100        | 1SYF604062R2400 | 273                   | 1                |
|                                                                                             |      |       | 100               | 63                         | BMFW463/AC100        | 1SYF604062R2630 | 273                   | 1                |
|                                                                                             |      |       | 300               | 25                         | BMFW425/AC300        | 1SYF604062R3250 | 273                   | 1                |
|                                                                                             |      |       | 300               | 40                         | BMFW440/AC300        | 1SYF604062R3400 | 273                   | 1                |
|                                                                                             |      |       | 300               | 63                         | BMFW463/AC300        | 1SYF604062R3630 | 273                   | 1                |

# FORMULA BMSDW

## Isolators

### Technical details



#### General Data

|                                                  |                                                          |
|--------------------------------------------------|----------------------------------------------------------|
| Standards                                        | IEC/EN 60947-3                                           |
| Poles                                            | 2P, 3P, 4P                                               |
| Rated current In                                 | 40, 63 A                                                 |
| Utilization category                             | AC-22A                                                   |
| Rated voltage Ue                                 | 2P, 3P, 4P : 400 V AC                                    |
| Insulation voltage Ui                            | 250V AC (Phase to Phase) 440 V AC (Phase to Ground)      |
| Rated frequency f                                | 50/60 Hz                                                 |
| Suitable for isolation                           | yes                                                      |
| Rated conditional short-circuit current          | 10 kA in series with NH 00 ≤ 63 A gG                     |
| Electrical endurance                             | Ie < 32 A: 20,000 ops. (AC), Ie ≥ 32 A: 10,000 ops. (AC) |
| Rated impulse withstand voltage Uimp. (1.2/50μs) | 4 kV (Test voltage 6.2kV at sea level, 5kV at 2000m)     |
| Dielectric test voltage                          | 2 kV (50Hz, 1 min.)                                      |
| Max. power frequency recovery voltage (Umax)     | 2P, 3P, 4P : 457 V AC                                    |
| Min operating Voltage                            | 12V AC                                                   |
| Overvoltage category                             | III                                                      |
| Pollution degree                                 | 2                                                        |

#### Mechanical Data

|                                           |                                                          |
|-------------------------------------------|----------------------------------------------------------|
| Housing                                   | Insulation group II                                      |
| Toggle                                    | Insulation group II, black, sealable                     |
| Contact position indication               | White Marking on toggle ('I' ON / 'O' OFF )              |
| Protection degree acc. to EN 60529        | IP20, IP40 in enclosure with cover                       |
| Mechanical endurance                      | Ie < 32 A: 20,000 ops. (AC), Ie ≥ 32 A: 10,000 ops. (AC) |
| Tropicalisation acc. to IEC/EN 60068-2-30 | Severity 2 Cyclic test with 55°C/90-96% and 25°C/95-100% |
| Ambient temperature                       | -25 ... +55°C                                            |
| Storage temperature                       | -40 ... +70°C                                            |
| Housing                                   | Insulation group II                                      |

#### Installation

|                                                            |                                         |
|------------------------------------------------------------|-----------------------------------------|
| Terminal                                                   | Cage terminal                           |
| Cross-section of conductors (top / bottom) Solid, Stranded | 35 mm <sup>2</sup> / 35 mm <sup>2</sup> |
| Flexible                                                   | 25 mm <sup>2</sup> / 25 mm <sup>2</sup> |
| Cross-section of busbars (top / bottom)                    | 10 mm <sup>2</sup>                      |
| Busbars type                                               | Pin and Fork Type Busbar provision      |
| Tightening Torque                                          | 2 Nm                                    |
| Screwdriver                                                | No. 2 Pozidrive                         |
| Mounting                                                   | On DIN rail 35 mm                       |
| Mounting position                                          | Any                                     |
| Supply                                                     | Any                                     |
| Cable Length                                               | 12.5mm                                  |

#### Dimensions and weight

|                                        |                      |
|----------------------------------------|----------------------|
| Mounting dimensions acc. to DIN 43880  | Mounting dimension 1 |
| Pole dimensions (H x D x W) (per pole) | 88 x 69.2 x 17.5 mm  |
| Pole weight (per pole)                 | 70gms                |

#### Approvals

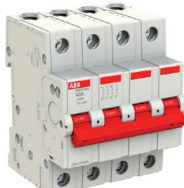
|                          |     |
|--------------------------|-----|
| CE Marking approved      | Yes |
| MolAT RoHS Certification | Yes |



# FORMULA BMSDW

## Isolators

### Ordering Codes - BMSDW Isolators

|                                                                                               | Poles | Rated current In (A) | Description     | Code            | Weight 1 piec gms. | Pack unit pc. |
|-----------------------------------------------------------------------------------------------|-------|----------------------|-----------------|-----------------|--------------------|---------------|
| <br>BMSDW2   | 2     | 40                   | BMSDW240        | 1SYD672062R0040 | 139                | 6             |
|                                                                                               |       | 63                   | BMSDW263        | 1SYD672062R0063 | 139                | 6             |
| <br>BMSDW3  | 3     | 40                   | BMSDW340        | 1SYD673062R0040 | 210                | 4             |
|                                                                                               |       | 40                   | BMSDW340 - BULK | 1SYD673062U0040 | -                  | 24            |
|                                                                                               |       | 63                   | BMSDW363        | 1SYD673062R0063 | 210                | 4             |
| <br>BMSDW4 | 4     | 40                   | BMSDW440        | 1SYD674062R0040 | 277                | 3             |
|                                                                                               |       | 40                   | BMSDW440 - BULK | 1SYD674062U0040 | -                  | 18            |
|                                                                                               |       | 63                   | BMSDW463        | 1SYD674062R0063 | 277                | 3             |
|                                                                                               |       | 63                   | BMSDW463 - BULK | 1SYD674062U0063 | -                  | 18            |

# FORMULA BW - Selection table

## BMSW & BMSWM

### Miniature circuit breakers

Selection details

| B M S W X \$ Y Z Z |          |                      |           |                    |
|--------------------|----------|----------------------|-----------|--------------------|
| Product Type       | Pole (X) | Breaking capacity \$ | Curve (Y) | Rated Current (ZZ) |
| BMSW=MCB           | 1=1P     | Blank: 6kA           | B=B curve | 06=6A              |
| 2=2P               | 2=2P     | M: 10kA              | C=C Curve |                    |
| 3=3P               | 3=3P     |                      |           |                    |
| 4=4P               | 4=4P     |                      |           |                    |

## BMFW

### Residual current circuit breakers

Selection details

| B M F W X Y Y / A C Z Z Z |           |                    |  |  |                      |  |  |                                  |  |
|---------------------------|-----------|--------------------|--|--|----------------------|--|--|----------------------------------|--|
| Product Type              | Poles (X) | Rated Current (YY) |  |  | Type of current (AC) |  |  | Rated residual operating current |  |
| BMFW=RCCB                 | 2= 2P     | 25A, 40A, 30A      |  |  | AC Type              |  |  | 30mA, 100mA, 300mA               |  |
|                           | 4= 4P     |                    |  |  |                      |  |  |                                  |  |

## BMSDW

### Isolators

Selection details

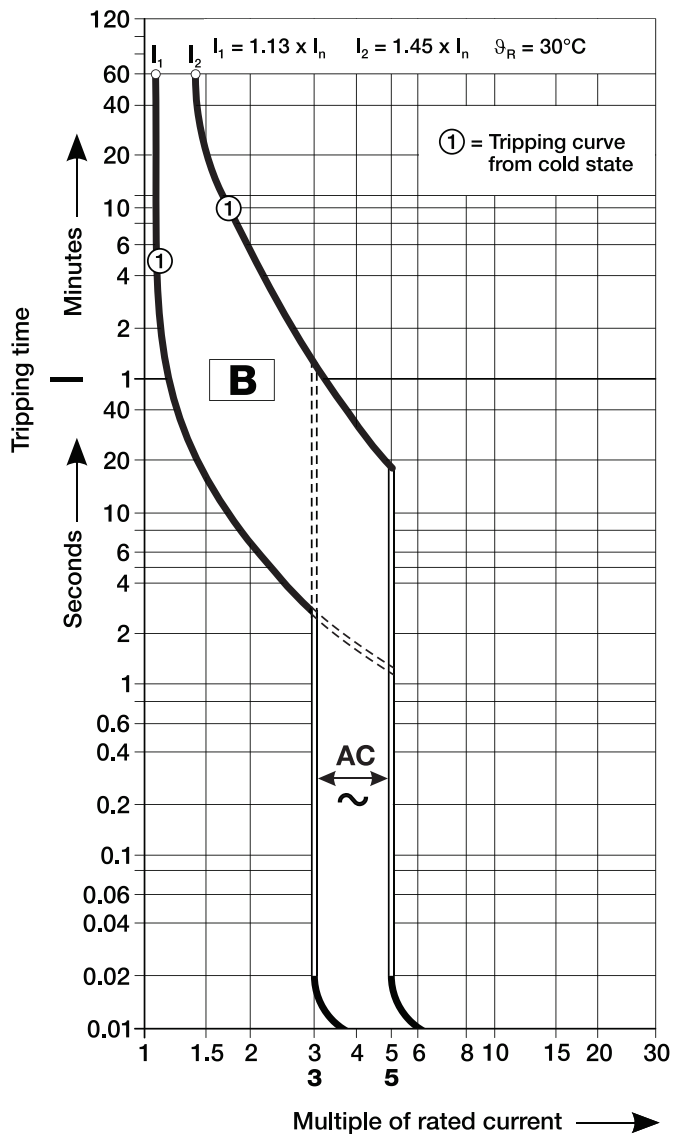
|                            | B                   | M | S | D | W                  | X | Y | Y |
|----------------------------|---------------------|---|---|---|--------------------|---|---|---|
| Product Type               | Poles (X)           |   |   |   | Rated current (YY) |   |   |   |
| BMSDW= Switch disconnecter | 2= 2P, 3= 3P, 4= 4P |   |   |   | 25A, 40A, 30A      |   |   |   |

# FORMULA BW portfolio

## Tripping diagrams (MCB)

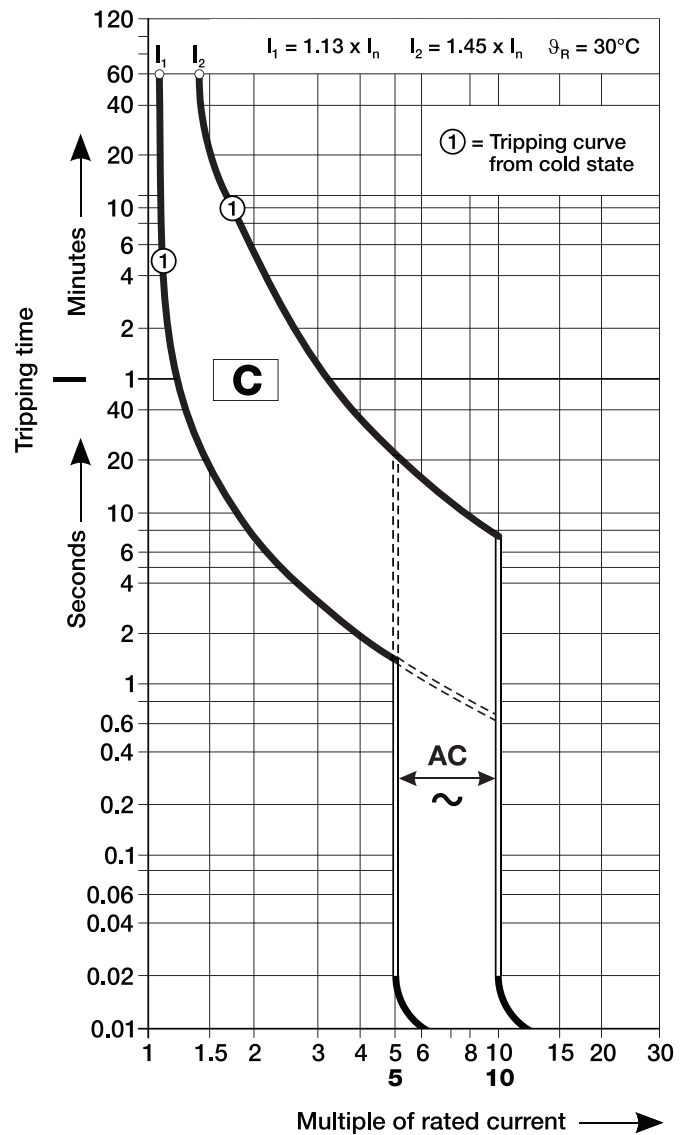
### B curve

For overload and short-circuit protection of cables.  
Suitable for households and similar installations.  
Protection against electric shock thanks to automatic disconnection.



### C curve

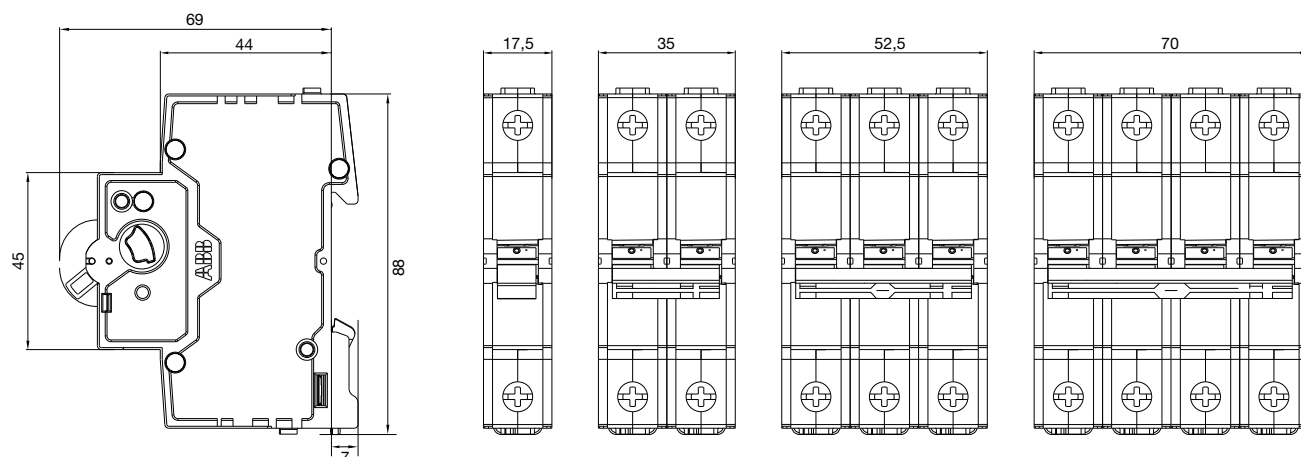
For overload and short-circuit protection of cables.  
Suitable for households and similar installation where inrush currents can occur. Protection against electric shock thanks to automatic disconnection.



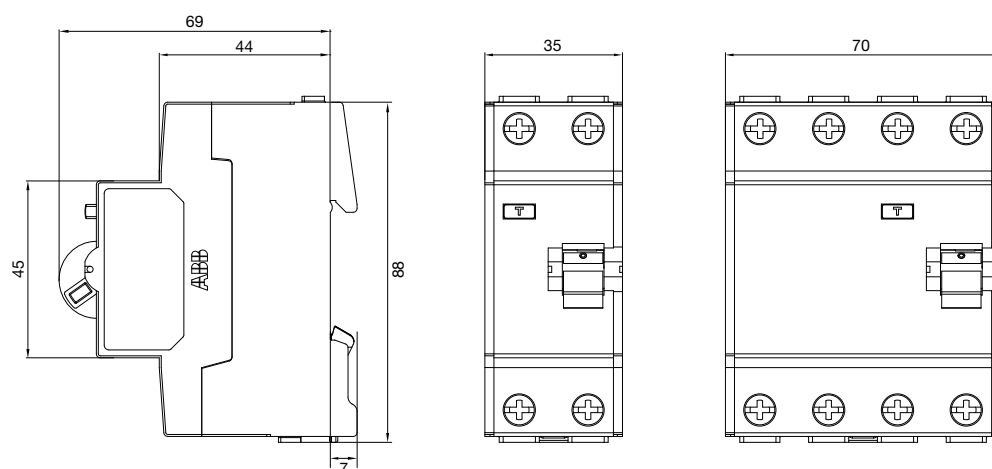
# FORMULA BW portfolio

## Overall dimensions

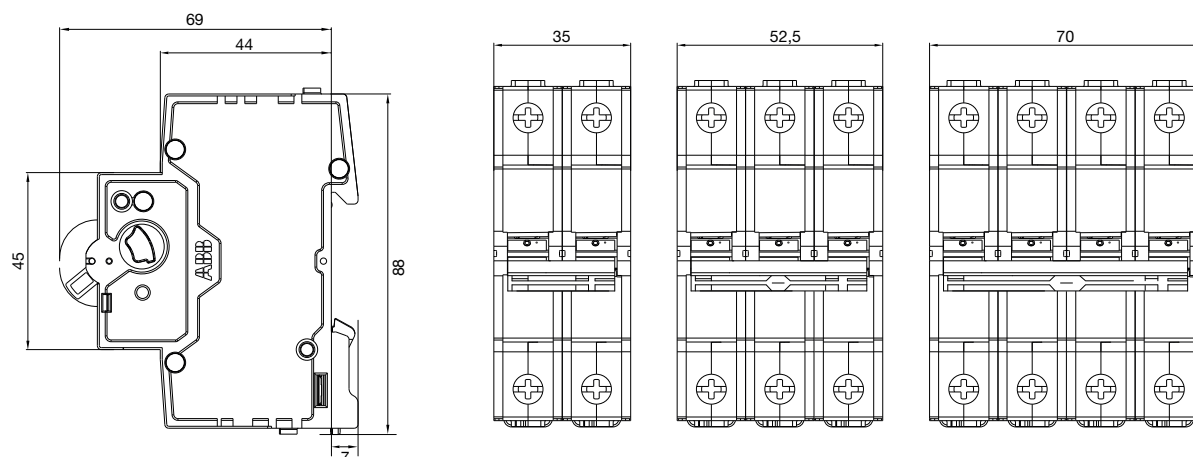
### MCBs dimensions (mm)



### RCCBs dimensions (mm)



### Isolators dimensions (mm)



## Notes



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**ABB India Ltd.**

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