## MOULDED CASE CIRCUIT BREAKERS MSX

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MSX moulded case circuit breaker

## Technical data



## Key:

$\begin{array}{ll}\text { Csupplied as standard } & { }^{1} \text { max 225A } \\ { }^{2} \text { optional } & \text { max 536A }\end{array}$
-not available

For technical information contact the Technical Assistance Service or visit gewiss.com

| MSX 400 | MSXE 400 - MSXE 630 | MSXE 1000 |  | MSXE 1250 | MSXE 1600 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| IEC EN 60947-2 | IEC EN 60947-2 | IEC EN 60947-2 |  | IEC EN 60947-2 | IEC EN 60947-2 |
| 400 | 400,630 | 800 | 1000 | 1250 | 1600 |
| A | $\begin{aligned} & \text { B (MSXE 400) } \\ & \text { A (MSXE 630) } \end{aligned}$ | B | A | B | B |
| - | (for MSXE 400) | 10 | - | 15 | 20 |
| 3.3+N,4 | 3.3+N,4 | 3.4 |  | 3.4 | 3.4 |
| 50/60 | 50/60 | 50/60 |  | 50/60 | 50/60 |
| 690 AC-250 DC | 690 AC | 690 AC |  | 690 AC | 690 AC |
| 8 | 8 | 8 |  | 8 | 8 |
| IV | IV | IV |  | IV | IV |
| 800 | 800 | 800 |  | 800 | 800 |
|  |  |  |  |  |  |
| 50 85 | 50 85 | 85 | 85 | 85 | 85 |
| 36 | 36 50 | 50 | 50 | 50 | 50 |
| $30-45$ | $25 \quad 45$ | 50 | 45 | 45 | 45 |
| 22 30 | 15 30 | 30 | 30 | 30 | 30 |
| 15 20 | 10 20 | 20 | 20 | 20 | 20 |
| $40 \times 40$ | - - | - | - | - | - |
|  |  |  |  |  |  |
| 50 85 | 50 85 | 85 | 65 | 65 | 65 |
| 36 - 50 | 36 50 | 50 | 38 | 38 | 38 |
| $30-45$ | 25 45 | 50 | 34 | 34 | 34 |
| 22 30 | 15 30 | 30 | 23 | 23 | 23 |
| 15 15 | 10 15 | 20 | 15 | 15 | 15 |
| $40 \quad 40$ | - - | - | - | - | - |
| Adjustable thermal Adjustable magnetic | Electronic LSI <br> Electronic LSIG | Electronic LSI <br> Electronic LSIG |  | Electronic LSI <br> Electronic LSIG | Electronic LSI <br> Electronic LSIG |
| Fixed Plug-in | Fixed Plug-in ${ }^{2}$ | Fixed, Plug-in | Fixed | Fixed | Fixed |
| no | no | no |  | no | no |
| any | any | any |  | any | any |
| yes | yes | yes |  | yes | yes |
| - | - | - | - | - | - |
| - | $\square$ | - | - | - | - |
| $\square$ | $\square$ | $\square$ | - | - | - |
| $\square$ | $\square$ | - | - | - | - |
| $\square$ | $\square$ | $\square$ | $\square$ | - | - |
| 4,500 | 4,500 | 4,000 |  | 4,000 | 2,000 |
| 15,000 | 15,000 | 10,000 |  | 5,000 | 5,000 |
| yes | yes | yes |  | yes | yes |
| Lever / Cable | Lever / Cable | Lever / Cable |  | Cable | Cable |
| $-5+65$ | $-5+65$ | $-5+65$ |  | $-5+65$ | $-5+65$ |
| 50 | 40 | 40 |  | 40 | 40 |
| $-20+65$ | $-20+65$ | $-20+65$ |  | $-20+65$ | $-20+65$ |
| $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% |  | $65^{\circ} \mathrm{C}-\mathrm{RH} 95 \%$ | $65^{\circ} \mathrm{C}$ - RH 95\% |
| 140 / 185 | 140/185 | 210/280 |  | 210/280 | 210/280 |
| 260 | 260 | 273 |  | 370 | 370 |
| 103 | 103 | 103 |  | 120 | 140 |
| $4.3 / 5.6$ | $\begin{gathered} 4.3 \text { / } 5.7 \text { (MSXE 400) } \\ 5 / 6.5 \text { (MSXE } 630) \end{gathered}$ | $9.1 / 12.3$ | 11/14.8 | 19.8 / 25 | $27 / 35$ |

Switch disconnector MSXM

## Technical data

| TYPE | MSXM 160c | MSXM 250c | MSXM 400 - MSXM 630 |
| :---: | :---: | :---: | :---: |
|  |  |  |  |
| Standard | IEC EN 60947-3 | IEC EN 60947-3 | IEC EN 60947-3 |
| Rated uninterrupted current (lu) (A) | 160 | 250 | 400,630 |
| Utilization category | $\begin{aligned} & A C-23 A \\ & D C-22 A \end{aligned}$ | $\begin{aligned} & \text { AC-23A } \\ & D C-22 A \end{aligned}$ | $\begin{aligned} & A C-23 A \\ & D C-22 A \end{aligned}$ |
| Number of poles | 3.4 | 3.4 | 3.4 |
| Rated frequency (Hz) | 50/60 | 50/60 | 50/60 |
| Rated operating voltage (Ui) (V) | 690 AC-250 DC | 690 AC-250 DC | $690 \mathrm{AC}-250 \mathrm{DC}$ |
| Rated impulse withstand voltage (Uimp) (kV) | 8 | 8 | 8 |
| Overvoltage category | IV | IV | IV |
| Rated insulation voltage (Ui) (V) | 690 | 800 | 800 |
| Rated short-circuit making capacity (Icm) (kA) | 2.8 | 6 | 9 |
| Brief allowable rated current for 0.3s (lcw) (kA) | 2 | 3 | 5 |
| Versions (kA) | Fixed | Fixed | Fixed Plug-in ${ }^{1}$ |
| Mounting on DIN rail by means of the accessory | yes | yes | no |
| Mounting position | any | any | any |
| Upline/downline power supply | yes | yes | yes |
| Front for cables (FW) | - | - | - - |
| Front (FC) | - | - | - |
| Terminals Front extended (FB) | $\square$ | $\square$ | $\square$ |
| Front extended spread terminals (FB) | $\square$ | $\square$ | $\square$ |
| Rear (RC) | $\square$ | $\square$ | $\square$ |
| Electrical life (415 V AC) $\begin{array}{r}\text { (No. } \\ \text { cycles) }\end{array}$ | 10,000 | 6,000 | 4,500 |
| Mechanical life | 20,000 | 18,000 | 15,000 |
| Can be equipped with motor operator | no | yes | yes |
| Interlock type | - | Lever / Cable | Lever / Cable |
| Operating temperature ( ${ }^{\circ} \mathrm{C}$ ) | $-5+65$ | $-5+65$ | $-5+65$ |
| Reference temperature ( ${ }^{\circ} \mathrm{C}$ ) | 50 | 50 | 50 |
| Storage temperature ( ${ }^{\circ} \mathrm{C}$ ) | $-20+65$ | $-20+65$ | $-20+65$ |
| Tropicalization | $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% |
| Width (3P / 4P) (mm) | 75/100 | 105/140 | 140 / 185 |
| Dimensions $\quad$ Height (mm) | 130 | 165 | 260 |
| Depth <br> (mm) | 68 | 68 | 103 |
| Weight (3P / 4P) (kg) | $0.7 / 0.9$ | 1.5 / 1.9 | 4.2 / 5.6 (MSXM 400) <br> 4.4 / 5.8 (MSXM 630) |

Key:

- supplied as standard ${ }^{1}$ max 536A
- optional
-not available

For technical information contact the Technical Assistance Service or visit gewiss.com

| MSXM 1000 | MSXM 1250 | MSXM 1600 |
| :---: | :---: | :---: |
|  |  |  |
| IEC EN 60947-3 | IEC EN 60947-3 | IEC EN 60947-3 |
| 800 | 1250 | 1600 |
| $\begin{aligned} & \text { AC-23A } \\ & D C-22 A \end{aligned}$ | $\begin{aligned} & \text { AC-23A } \\ & D C-22 A \end{aligned}$ | $\begin{aligned} & \text { AC-23A } \\ & D C-22 A \end{aligned}$ |
| 3.4 | 3.4 | 3.4 |
| 50/60 | 50/60 | 50/60 |
| 690 AC - 250 DC | $690 \mathrm{AC}-250 \mathrm{DC}$ | $690 \mathrm{AC}-250 \mathrm{DC}$ |
|  | 8 | 8 |
| IV | IV | IV |
| 800 | 800 | 800 |
| 17 | 32 | 45 |
| 10 | 15 | 20 |
| Fixed, Plug-in | Fixed | Fixed |
| no | no | no |
| any | any | any |
| yes | yes | yes |
| - | - | - |
| - | - | - |
| $\square$ | $\square$ | $\square$ |
| - | - | - |
| $\square$ | - | $\square$ |
| 4,000 | 4,000 | 2,000 |
| 10,000 | 5,000 | 5,000 |
| yes | yes | yes |
| Lever / Cable | Cable | Cable |
| $-5+65$ | $-5+65$ | $-5+65$ |
| 50 | 50 | 50 |
| $-20+65$ | $-20+65$ | $-20+65$ |
| $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% |
| 210/280 | 210 / 280 | $210 / 280$ |
| 273 | 370 | 370 |
| 103 | 120 | 140 |
| 8.5 / 11.5 | 18.2 / 23.4 | 24.9 / 32.9 |

## Coordination between switch disconnectors and MCCB's - 400/415V AC

| SWITCH DISCONNECTORS |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CIRCUIT BREAKERS | RANGE | Icu (kA) | MSXM 160c | MSXM 250c | MSXM 400 | MSXM 630 | $\begin{aligned} & \text { MSXM } 1000 \\ & (800 \mathrm{~A}) \end{aligned}$ | $\begin{aligned} & \text { MSXM } 1000 \\ & (1000 \mathrm{~A}) \end{aligned}$ | MSXM 1250 | MSXM 1600 |
|  | M5X 160c | 16 | 16 |  |  |  |  |  |  |  |
|  |  | 25 | 25 |  |  |  |  |  |  |  |
|  |  | 16 |  | 16 |  |  |  |  |  |  |
|  | MSX 250c | 25 |  | 25 |  |  |  |  |  |  |
|  |  | 25 |  | 25 |  |  |  |  |  |  |
|  | MSX/E/D 160 | 36 |  | 36 |  |  |  |  |  |  |
|  |  | 65 |  | 36 |  |  |  |  |  |  |
|  |  | 25 |  | 25 |  |  |  |  |  |  |
|  | MSX/E/D 250 | 36 |  | 36 |  |  |  |  |  |  |
|  |  | 65 |  | 36 |  |  |  |  |  |  |
|  |  | 36 |  |  | 36 |  |  |  |  |  |
|  | MSX/E 400 | 50 |  |  | 50 |  |  |  |  |  |
|  |  | 36 |  |  |  | 36 |  |  |  |  |
|  | MSXE 630 | 50 |  |  |  | 50 |  |  |  |  |
|  | MSXE 1000 (800A) | 50 |  |  |  |  | 50 |  |  |  |
|  | MSXE 1000 (1000A) | 50 |  |  |  |  |  | 50 |  |  |
|  | MSXE 1250 | 50 |  |  |  |  |  |  | 50 |  |
|  | MSXE 1600 | 50 |  |  |  |  |  |  |  | 50 |

Thermal magnetic MCCB + RCD MSXD
Technical data

| TYPE | MSXD 125 | MSXD 160 - MSXD 250 |
| :---: | :---: | :---: |
|  |  |  |
| Standard | IEC 60947-1 <br> IEC 60947-2 <br> IEC 60755 | IEC 60947-1 <br> IEC 60947-2 <br> IEC 60755 |
| Rated current (In) (A) | 20, 32, 50, 63, 100, 125 | 160, 250 |
| Utilization category | A | A |
| Number of poles | $3 \mathrm{P}+\mathrm{N}$ | $3 \mathrm{P}+\mathrm{N}$ |
| Rated frequency (Hz) | 50/60 | 50/60 |
| Rated operating voltage (Ui) (V) | 525 AC | 525 AC |
| Rated impulse withstand voltage (Uimp) (kV) | 8 | 8 |
| Overvoltage category | IV | IV |
| Rated insulation voltage (Ui) (V) | 525 | 525 |
| Rated breaking capacity (Icu) |  |  |
| 220/240V (kA) | 35 年 50 | 35 年 65 |
| Alternating current 400/415V (kA) | 25 36 | 25 - 36 |
| Alternating current 440V (kA) | 15 25 | 15 25 |
| 525 V | 8 - 22 | 10 25 |
| Service breaking capacity (lcs) |  |  |
| 220/240V (kA) | 27 50 | 27 65 |
| Alternating current 400/415V (kA) | 19 36/30 | 19 36 |
| Alternating current 440V (kA) | 12 25 | 12 25 |
| 525 V (kA) | 6 - 22 | 7.5 25 |
| Type of protection | Adjustable thermal Fixed magnetic | Adjustable therma Fixed magnetic |
| Versions | Fixed | Fixed |
| Mounting on DIN rail by means of the accessory | yes | yes |
| Mounting position | any | any |
| Upline/downline power supply | yes | yes |
| Front for cables (FW) | $\square$ | - |
| Front (FC) | $\square$ | - |
| Terminals Front extended (FB) | $\square$ | $\square$ |
| Front extended spread terminals (FB) | - | - |
| Rear (RC) | $\square$ | $\square$ |
| Electrical life (415 V AC) (No. cycles) | 30,000 | 10,000 |
| Mechanical life (No. cycles) | 30,000 | 10,000 |
| Can be equipped with motor operator | yes | yes |
| Interlock type | - | - |
| Operating temperature ( ${ }^{\circ} \mathrm{C}$ ) | $-5+65$ | $-5+65$ |
| Reference temperature ( ${ }^{\circ} \mathrm{C}$ ) | 50 | 50 |
| Storage temperature ( ${ }^{\circ} \mathrm{C}$ ) | $-20+65$ | $-20+65$ |
| Tropicalization | $65^{\circ} \mathrm{C}$ - RH 95\% | $65^{\circ} \mathrm{C}$ - RH 95\% |
| Width (3P / 4P) (mm) | 120 | 140 |
| Dimensions Height (mm) | 155 | 165 |
| Depth (mm) | 68 | 68 |
| Weight (3P / 4P) (kg) | 1.4 | 1.9 |
| $\begin{array}{ll}\text { Key: } & \quad \text { optional } \\ \text { ■supplied as standard } & \text {-not available } \\ \text { For technical information contact the Technical Assistance Service or visit gewiss.com }\end{array}$ |  |  |

COMPACT MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 160c - msx 250c


3 Pole MCCB


MCCB Adjustment Dial

The MSXc range is available in 2 frame sizes, 160 A and 250 A . Interrupting capacities of 16 kA and 25 kA are offered in 3 and 4 pole versions.
160A MCCBs are extremely compact in size (W75 H130 D68) and offer space saving solutions for electrical power distribution where the installation size is critical. 160A models have adjustable thermal and fixed magnetic settings. 250A MCCBs have adjustable thermal and adjustable magnetic settings.

## COMPACT MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 160c-msx 250c

## ADJUSTMENT DIALS



- $I_{R}$ is the thermal element adjustment dial and is used to set the rated current to match the conductor rating. $I_{R}$ can be set between 0.63 and 1.0 times $I_{n}$.
- $I_{i}$ is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application. It is fixed on 160A frame.


## Models, ratings and settings

| Model | Breaking capacity | Rated current $\mathrm{I}_{\mathrm{n}}(\mathrm{A})$ | Magnetic trip current $\mathrm{I}_{\mathrm{i}}(\mathrm{A})$ |
| :---: | :---: | :---: | :---: |
| MSX 160c | 16 kA | 25,40 | 600 |
|  |  | 63, 80 | 1000 |
|  |  | 100, 125 | 1500 |
|  |  | 160 | 1600 |
|  | 25 kA | 25,40 | 600 |
|  |  | 63, 80 | 1000 |
|  |  | 100, 125 | 1500 |
|  |  | 160 | 1600 |
| MSX 250c | 16 kA | 160 | 5-8-10-13x In |
|  |  | 250 | 5-7-9-11x In |
|  | 25 kA | 160 | 5-8-10-13x In |
|  |  | 250 | 5-7-9-11x $\ln$ |

Magnetic trip tolerance $+/-20 \%$

COMPACT MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 160c - msx 250c

Time/Current Characteristics


MSX 250c (160A)


Percent Rated Current

MSX 250c (250A)


## Peak Current Characteristics



MSX 250c at 400/415V AC


MSX 250c at 440V AC


COMPACT MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 160с - msx 250c

## Specific Let-Through Energy Characteristics

MSX 160c at 400/415V AC


MSX 250c at 400/415V AC


## MSX 250c at 440V AC



MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160-msx 250 - msx 400


3 Pole MCCB


MCCB Adjustment Dial

All standard 3 pole and 4 pole thermal magnetic models have adjustable thermal and adjustable magnetic characteristics.
An adjustable magnetic characteristic allows short-circuit protection to be matched to the load and supply characteristics, for example motor inrush currents or generator short-circuit currents.
Lowering the short-circuit tripping threshold can allow a higher earth-loop impedance in an installation and provide end-of-cable protection with the correct disconnection times.

## ADJUSTABLE DIALS



- $I_{R}$ is the thermal element adjustment dial and is used to set the rated current to match the conductor rating. $I_{R}$ can be set between 0.63 and 1.0 times $I_{n}$.
- $I_{i}$ is the magnetic element adjustment dial and is used to set the short circuit tripping threshold to suit the application.
$\mathrm{I}_{\mathrm{i}}$ Can be set to the values shown in the table below:


## Models, ratings and settings

| Model | Breaking capacity | Rated current $\mathrm{I}_{\mathrm{n}}(\mathrm{A})$ | Magnetic trip current $\mathrm{I}_{\mathrm{i}}(\mathrm{A})$ |
| :---: | :---: | :---: | :---: |
| MSX 125 | 36 kA | 20, 32, 50, 63, 100 | 6-8-10-12 x In |
|  |  | 125 | 6-8-10 x ln |
|  | 65 kA | 20,32,50,63, 100 | 6-8-10-12 x/n |
|  |  | 125 | 6-8-10 x ln |
| MSX 160 | 36 kA | 160 | 6-8-10-13 x/n |
|  | 65 kA | 160 | 6-8-10-13 x/n |
| MSX 250 | 36 kA | 250 | 6-8-10 x/n |
|  | 65 kA | 250 | 6-8-10x1n |
| MSX 400 | 36 kA | 400 | 6-7-8-9-10-11-12 x/n |
|  | 65 kA | 400 | 6-7-8-9-10-11-12xin |

## MOTOR PROTECTION

MCCBs feeding motors are often only required to provide protection from short-circuits. Overload protection is provided by a dedicated thermal or electronic overload relay. MCCBs without thermal protection elements are available for this application. Four pole MCCBs with magnetic trip only have protection on the neutral pole as standard.

MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160 - msx 250 - msx 400

## Time/Current Characteristics

MSX 125 (from 20A to 100A)


## MSX 125 (125A)



MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160 - msx 250 - msx 400

MSX 160


MSX 250


MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160-msx 250 - msx 400

MSX 400


MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160 - msx 250 - msx 400

## Peak Current Characteristics



MSX 160, MSX 250 at 400/415/440V AC


Prospective short circuit current in RMS sym. (kA)


MSX 160, MSX 250 at 690V AC


Prospective short circuit current in RMS sym. (kA)

MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160-msx 250 - msx 400


MSX 400 at 690 V AC


## MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160 - msx 250 - msx 400

## Specific Let-Through Energy Characteristics



MSX 160, MSX 250 at 400/415/440V AC


MSX 125 at 690V AC


Prospective short circuit current in RMS sym. (kA)

MSX 160, MSX 250 at 690V AC


MCCB WITH THERMAL AND MAGNETIC PROTECTION msx 125 - msx 160 - msx 250 - msx 400


MSX 400 at 690V AC


Prospective short circuit current in RMS sym. (kA)

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600
MSXE MCCBs from 250A frame to 1600A frame are available with electronic protection units. Current ratings, In, of 40A, 125A, 160A, 250A, 400A, 630A, 800A, 1000A, 1250 A and 1600 A are available. These offer great $f$ lexibility as their characteristics can be set to suit a wide range of application conditions.
Overload protection can be set between 0.4 and 1.0 times $I_{n}$.


Every electronic protection unit includes overload protection (L), delayed short-circuit protection (S) and instantaneous protection (I) as standard.

Electronic Protection Characteristic


## Ground Fault Trip (CF)

This function trips the MCCB after time delay, $\mathrm{t}_{\mathrm{g}}$, if the ground fault current exceeds the preset threshold, $\mathrm{I}_{\mathrm{g}}$.
Ground fault protection can be enabled and disabled by operating a DIP switch on the electronic protection unit. An external current transformer is necessary if the ground fault trip function is required on a 3 pole MCCB, in a 3 phase, 4 wire system.
The ground fault trip function is available from 400A to 1600A.

## Neutral Protection (NP)

Neutral protection (available only for 4P versions) can be adjusted at 100\% or 50\% from 400A frame to 1600 A frame.

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

## ADJUSTMENT DIALS



The left adjustment dial sets the rated current to match the conductor rating. The right adjustment dial selects one of seven preset characteristics on 400A, $800 \mathrm{~A}, 1250 \mathrm{~A}$ and 1600 A models, and one of six preset characteristics on 630 A and 1000 A models, and one of 5 preset characteristics on 250 A model.
The effects of the left adjustment dial (labelled $I_{\mathrm{R}}(\mathrm{A})$ ), and the right adjustment dial (labelled Characteristics) are detailed in the tables shown underneath each time / current graph.

Tolerances of Characteristics

| Characteristics |  | Tolerance |
| :---: | :---: | :---: |
| Long Time Delay (L) | $I_{R}$ | Tripping when ( $\left.\mathrm{I}_{\mathrm{R}} 1.05\right)$ < load current $(\cdot)\left(I_{\mathrm{R}} 1.25\right)$ |
|  | $\mathrm{t}_{\mathrm{R}}$ | $\pm 20 \%$ |
| Short Time Delay (S) | $\mathrm{I}_{\text {sd }}$ | $\pm 15 \%$ |
|  | $\mathrm{t}_{\text {sd }}$ | Total clearing time +50 ms , resettable time -20 ms |
| Instantaneous (1) | $l_{i}$ | $\pm 20 \%$ |
| Ground Fault Trip (GF) | $\mathrm{I}_{5}$ | $\pm 15 \%$ |
|  | $\mathrm{tg}_{5}$ | Total clearing time +50 ms , resettable time -20 ms |
| Neutral Protection (NP) | $I_{N}$ | Tripping when ( $1_{N} 1.05$ ) < load current $(\cdot)\left(1_{N} 1.3\right)$ |

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600
Time/Current Characteristics

MSXE 160, MSXE 250

$I_{n}=250 A ; 160 A ; 125 A ; 40 A^{(1)}$


## Note

${ }^{\text {(1) }}$ For Plug-in (PM), max. setting for $I_{R}$ should be less than 225A. When $I_{n}=250 \mathrm{~A}$, $I_{R}$ should be $I_{n} 0.9$ or less.
${ }^{(2)} \mathrm{I}_{\mathrm{i}}$ max. $=13 \mathrm{x} \mathrm{I}_{\mathrm{n}}$.
${ }^{(3)}$ Characteristic of neutral protection $\left(t_{N}\right.$ vs. $\left.I_{N}\right)$ is identical to characteristic of phase protection ( $t_{R}$ vs. $\left.I_{R}\right)$.

MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

$I_{n}=400 \mathrm{~A}$

| $\mathrm{I}_{\mathrm{R}}(\mathrm{A})$ |  | $x \mathrm{ln}$ | 0.4 | 0.5 | 0.63 | 0.8 | 0.9 | 0.95 | 1.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Characteristics |  | No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| L | $\mathrm{t}_{\mathrm{R}}(\mathrm{s})$ |  | 11 | 21 | 21 | 5 | 10 | 19 | 29 |
|  |  |  | at $200 \% \times \mathrm{I}_{\mathrm{R}}$ |  |  | at $600 \% \times \mathrm{I}_{\mathrm{R}}$ |  |  |  |
| 5 | $\mathrm{I}_{\text {sd }} \mathrm{X} \mathrm{I}_{\mathrm{R}}$ |  | 2.5 |  | 5 | 10 |  |  |  |
|  | $\mathrm{t}_{\text {sd }}(\mathrm{s})$ |  | 0.1 |  |  |  | 0.2 |  |  |
| I | $\left.l_{i x}\right\|_{\text {R }}$ |  | $14\left(\right.$ Max: $13 \times 1 \mathrm{I}^{(1)}$ |  |  |  |  |  |  |
| GF | $\mathrm{I}_{\mathrm{N} \times 1}$ |  | 0.2 |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | 0.2 |  |  |  |  |  |  |
| NP | $\mathrm{I}_{\mathrm{N} X} \mathrm{l} \mathrm{R}$ |  | 1.0/0.5 ${ }^{(2)}$ |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | $\mathrm{t}_{\mathrm{N}}=\mathrm{t}_{\mathrm{R}}$ |  |  |  |  |  |  |

## Note

${ }^{11} I_{i} \mathrm{I}_{\text {max. }}=13 \mathrm{x} \mathrm{I}_{n}$
${ }^{(2)} 1.0 \times I_{R}$ or $0.5 \times I_{R}$ can be selected. Characteristic of neutral protection ( $t_{N}$ Vs. $I_{n}$ ) is identical to characteristic of phase protection ( $t_{R}$ vs. $I_{R}$ ).

MSXE 630

$I_{n}=630 \mathrm{~A}$

| $\mathrm{I}_{\mathrm{R}}(\mathrm{A})$ |  | xIn | 0.4 | 0.5 | 0.63 | 0.8 | 0.85 | 0.9 | 0.95 | 1.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Characteristics |  | No. | 1 | 2 | 3 | 4 | 5 | 6 |  |  |
|  | $t_{R}(\mathrm{~s})$ |  | 11 | 21 | 21 | 5 | 10 | 16 |  |  |
| L |  |  | at $200 \% \mathrm{xIR}$ |  |  | at $600 \% \mathrm{x} \mathrm{I}_{\text {R }}$ |  |  |  |  |
| 5 | $\mathrm{I}_{\text {d }} \mathrm{X} \mathrm{l}_{\mathrm{R}}$ |  | 2.5 |  | 5 | 8 |  |  |  |  |
| 5 | $\mathrm{t}_{51}(\mathrm{~s})$ |  | 0.1 |  |  |  | 0.2 |  |  |  |
| 1 | $\mathrm{l}_{\mathrm{i}} \mathrm{X} \mathrm{l}_{\text {R }}$ |  | 14 (Max: $\left.10 \times \mathrm{I}_{\mathrm{n}}\right)^{(1)}$ |  |  |  |  |  |  |  |
| GF | $\mathrm{In}_{\mathrm{x}} \mathrm{I}_{n}$ |  | 0.2 |  |  |  |  |  |  |  |
| GF | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | 0.2 |  |  |  |  |  |  |  |
| NP | $\mathrm{I}_{\mathrm{N} \times 1 \mathrm{I}_{\mathrm{R}}}$ |  | 1.0/0.5 ${ }^{(2)}$ |  |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | $\mathrm{t}_{\mathrm{N}}=\mathrm{t}_{\mathrm{R}}$ |  |  |  |  |  |  |  |

## Note

${ }^{1(1)} I_{\text {i }}$ max. $=\left.10 \mathrm{x}\right|_{n}$
${ }^{(2)} 1.0 \times I_{R}$ or $0.5 \mathrm{x} \mathrm{I}_{\mathrm{R}}$ can be selected. Characteristic of neutral protection ( $\mathrm{t}_{\mathrm{N}} \mathrm{vs} . \mathrm{I}_{\mathrm{n}}$ ) is identical to characteristic of phase protection ( $\mathrm{t}_{\mathrm{R}} \mathrm{V}$. $\mathrm{I}_{\mathrm{R}}$ ).

MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

MSXE 1000 (800A)

$I_{n}=800 \mathrm{~A}$

| $\mathrm{I}_{\mathrm{R}}(\mathrm{A})$ |  | x In | 0.4 | 0.5 | 0.63 | 0.8 | 0.9 | 0.95 | 1.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Characteristics |  | No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| L | $t_{R}(\mathrm{~s})$ |  | 11 | 21 | 21 | 5 | 10 | 19 | 29 |
|  |  |  | at $200 \% \times \mathrm{I}_{\mathrm{R}}$ |  |  | at $600 \% \times \mathrm{l} \mathrm{I}_{\text {R }}$ |  |  |  |
| 5 |  |  | 2.5 |  | 5 | 10 |  |  |  |
|  | $\mathrm{t}_{\text {sd }}(\mathrm{s})$ |  | 0.1 |  |  |  | 0.2 |  |  |
| 1 | $\left.l_{i x}\right\|_{\text {R }}$ |  | $14\left(\right.$ Max: $12 \times 1 \mathrm{I}^{(1)}$ |  |  |  |  |  |  |
| GF | $\mathrm{In}_{\mathrm{X}} \mathrm{In}_{n}$ |  | 0.2 |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | 0.2 |  |  |  |  |  |  |
| NP | $\mathrm{IN}_{\mathrm{N}} \mathrm{I}_{\text {R }}$ |  | 1.0/0.5 ${ }^{(2)}$ |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | $\mathrm{t}_{\mathrm{N}}=\mathrm{t}_{\mathrm{R}}$ |  |  |  |  |  |  |

## Note

${ }^{(1)} I_{\text {i }}$ max. $=12 \times I_{n}$
${ }^{(2)} 1.0 \times I_{R}$ or $0.5 \times I_{R}$ can be selected. Characteristic of neutral protection ( $t_{N}$ vs. $I_{n}$ ) is identical to characteristic of phase protection ( $t_{R}$ vs. $I_{R}$ ).

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

## MSXE 1000 (1000A)


$I_{n}=1000 \mathrm{~A}$

| $\mathrm{I}_{\mathrm{R}}(\mathrm{A})$ |  | x In | 0.4 | 0.5 | 0.63 |  | 0.8 |  | 0.9 | 0.95 | 1.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Characteristics |  | No. | 1 | 2 |  | 3 |  | 4 |  | 5 | 6 |
| L | $\mathrm{t}_{\mathrm{R}}(\mathrm{s})$ |  | 11 | 21 |  | 21 |  | 5 |  | 10 | 16 |
|  |  |  | at $200 \% \times \mathrm{l}$ R |  |  |  |  |  | at $600 \% \times \mathrm{l}$ R |  |  |
| 5 | $\mathrm{I}_{\text {sd }} \times \mathrm{l}_{\text {R }}$ |  | 2.5 |  | 5 |  |  |  | 8 |  |  |
|  | $\mathrm{t}_{\text {sd }}(\mathrm{s})$ |  | 0.1 |  |  |  |  |  | 0.2 |  |  |
| 1 | $\mathrm{l}_{\mathrm{i}} \mathrm{Xl}_{\mathrm{R}}$ |  | $14\left(\text { Max: } 10 \times I_{n}\right)^{(1)}$ |  |  |  |  |  |  |  |  |
| GF | $\mathrm{IN}_{\mathrm{N}} \mathrm{In}_{n}$ |  | 0.2 |  |  |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | 0.2 |  |  |  |  |  |  |  |  |
| NP | $\mathrm{INXV}_{\mathrm{x}}$ |  | 1.0/0.5 ${ }^{(2)}$ |  |  |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | $\mathrm{t}_{\mathrm{N}}=\mathrm{t}_{\mathrm{R}}$ |  |  |  |  |  |  |  |  |

## Note

${ }^{1(1)} I_{\text {i }}$ max. $=\left.10 \mathrm{x}\right|_{n}$
${ }^{(2)} 1.0 \times I_{R}$ or $0.5 \mathrm{x} \mathrm{I}_{\mathrm{R}}$ can be selected. Characteristic of neutral protection ( $\mathrm{t}_{\mathrm{N}} \mathrm{vs} . \mathrm{I}_{\mathrm{n}}$ ) is identical to characteristic of phase protection ( $\mathrm{t}_{\mathrm{R}} \mathrm{V}$. $\mathrm{I}_{\mathrm{R}}$ ).

MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

$I_{n}=1250 \mathrm{~A}$


## Note

$\left.{ }^{(1)}\right)_{\text {I }}$ max. $=12 \times \mathrm{I}_{\mathrm{n}}$
${ }^{(2)} 1.0 \mathrm{X} \mathrm{I}_{\mathrm{R}}$ or $0.5 \times \mathrm{I}_{\mathrm{R}}$ can be selected. Characteristic of neutral protection $\left(\mathrm{t}_{\mathrm{N}} \mathrm{V}\right.$. $\left.\mathrm{I}_{\mathrm{n}}\right)$ is identical to characteristic of phase protection $\left(\mathrm{I}_{\mathrm{R}} \mathrm{VS} . \mathrm{I}_{\mathrm{R}}\right)$.

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600
MSXE 1600

$I_{n}=1600 \mathrm{~A}$

| $\mathrm{I}_{\mathrm{R}}(\mathrm{A})$ |  | $x \mathrm{ln}$ | 0.4 | 0.5 | 0.63 | 0.8 | 0.9 | 0.95 | 1.0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Characteristics |  | No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| L | $\mathrm{t}_{\mathrm{R}}(\mathrm{s})$ |  | 11 | 21 | 21 | 5 | 10 | 19 | 29 |
|  |  |  | at $200 \% \times \mathrm{I}_{\mathrm{R}}$ |  |  | at $600 \% \times \mathrm{I}_{\text {R }}$ |  |  |  |
| 5 | $\mathrm{I}_{\text {sd }} \times \mathrm{X}_{\mathrm{R}}$ |  | 2.5 |  | 5 | 10 |  |  |  |
|  | $\mathrm{t}_{\text {sd }}(\mathrm{s})$ |  | 0.1 |  |  |  | 0.2 |  |  |
| 1 | $\mathrm{l}_{\mathrm{i}} \mathrm{X} \mathrm{l}_{\text {R }}$ |  | 14 (Max: $\left.12 \times 1 I^{\prime}\right)^{(1)}$ |  |  |  |  |  |  |
| GF | $\mathrm{IN}_{\mathrm{N}} \mathrm{I}_{\mathrm{n}}$ |  | 0.2 |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | 0.2 |  |  |  |  |  |  |
| NP | $\mathrm{I}_{\mathrm{N}} \mathrm{II}_{\mathrm{R}}$ |  | 1.0/0.5 ${ }^{(2)}$ |  |  |  |  |  |  |
|  | $\mathrm{t}_{\mathrm{N}}(\mathrm{s})$ |  | $\mathrm{t}_{\mathrm{N}}=\mathrm{t}_{\mathrm{R}}$ |  |  |  |  |  |  |

## Note

${ }^{(1)} I_{i} \max =12 \times I_{n}$
${ }^{(2)} 1.0 \times I_{R}$ or $0.5 \times I_{R}$ can be selected. Characteristic of neutral protection $\left(t_{N} v s . I_{n}\right)$ is identical to characteristic of phase protection ( $t_{R}$ vs. $\left.I_{R}\right)$.

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600

## Peak Current Characteristics



MSXE 400 at 400/415/440V AC


MSXE 160, MSXE 250 at 690V AC


Prospective short circuit current in RMS sym. (kA)

MSXE 400 at 690V AC


## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600


MSXE 1000 (800A) at 400/415/440V AC


Prospective short circuit current in RMS sym. (kA)

MSXE 630 at 690V AC


Prospective short circuit current in RMS sym. (kA)

MSX 1000 (800A) at 690V AC


Prospective short circuit current in RMS sym. (kA)

MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600



MSXE 1000 (1000A) at 690V AC


Prospective short circuit current in RMS sym. (kA)

## MSX 1250 at 690V AC



Prospective short circuit current in RMS sym. (kA)

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600


MSXE 1600 at 690V AC


Prospective short circuit current in RMS sym. (kA)

## Specific Let-Through Energy Characteristics



MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600



MSXE 400 a 690V AC


Prospective short-circuit current in RMS sym. (kA)


Prospective short-circuit current in RMS sym. (kA)

## MCCB WITH ELECTRONIC PROTECTION

MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600


MSXE 1000 (1000A) at 400/415/440V AC


Prospective short-circuit current in RMS sym. (kA)

MSXE 1000 (800A) at 690V AC


Prospective short-circuit current in RMS sym. (kA)

MSXE 1000 (1000A) at 690V AC


Prospective short-circuit current in RMS sym. (kA)

MCCB WITH ELECTRONIC PROTECTION
MSXE 160 - MSXE 250 - MSXE 400 - MSXE 630 - MSXE 1000 - MSXE 1250 - MSXE 1600



MSXE 1250 at 690V AC


MSXE 1600 at 690V AC


Prospective short-circuit current in RMS sym. (kA)

## MCCB WITH RESIDUAL CURRENT PROTECTION msхD 125 - мsхD 160 - msхD 250



MSXD circuit breakers with residual current protection have the same dimensions, the same points for mounting and the same overload/short-circuit performances of equivalent frames MSX MCCBs.

MSXD range is available in two frame sizes with interrupting capacities of 25 kA and 36 kA ; the first size in available with rated current from 20A to 125A, the second size is available with rated current from 160A to 250A. Every size is offered with adjustable thermal and fixed magnetic protection characteristics.

MCCB WITH RESIDUAL CURRENT PROTECTION msхD 125 - msхD 160 - msхD 250

## ADJUSTMENT DIALS


$I \Delta_{n}(A)$ is the adjustable tripping threshold for residual current (earth leakage) protection.
It can be set between 30 mA and 3 A .
Available settings are shown below:
$\Delta_{\mathrm{t}}(\mathrm{ms})$ is a time delay which is introduced to the residual current (earth leakage) protection characteristic. Available settings are shown below. It can also be set to 0 (max. actual tripping time is 40ms) or NT (No Trip - tripping time $=\infty$ ). The maximum breaking time at each setting is shown in brackets.
Note that if $/ \Delta_{\mathrm{t}}$ is set at $30 \mathrm{~mA}, \Delta_{\mathrm{t}}$ defaults to 0 .

$/_{\mathrm{R}}(\mathrm{A})$ is the adjustable tripping threshold for overload protection. It can be set between 0.63 and 1.0 times /n. Available /n ratings are shown below:
$/_{i}$ is the tripping threshold for short-circuit protection.
It is fixed at the values shown below:

Models, ratings and settings

| Model | Breaking capacity | $l \Delta n(A)$ | $\Delta t(m s)$ | Rated current $I_{n}$ (A) | Magnetic trip current $\mathrm{I}_{\mathrm{i}}(\mathrm{A})$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| MSXD 125 | 25 kA | $0.03,0.1,0.3,0.5,1,3$ | 0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT $\infty$ | 20,32,50,63, 100 | $12 \times \mathrm{ln}$ |
|  |  |  |  | 125 | $10 \times \mathrm{ln}$ |
|  | 36 kA | $0.03,0.1,0.3,0.5,1,3$ | 0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT $\infty$ | 20, 32, 50, 63, 100 | $12 \times \mathrm{ln}$ |
|  |  |  |  | 125 | $10 \times \mathrm{ln}$ |
| $\begin{aligned} & \text { MSXD } 160 \\ & \text { MSXD } 250 \end{aligned}$ | 25 kA | $0.03,0.1,0.3,0.5,1,3$ | 0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT $\infty$ | 160 | $13 \times \mathrm{ln}$ |
|  |  |  |  | 250 | $10 \times \mathrm{ln}$ |
|  | 36 kA | $0.03,0.1,0.3,0.5,1,3$ | 0 (40), 60 (195), 200 (365), 400 (620), 700 (950), NT $\infty$ | 160 | $13 \times \mathrm{ln}$ |
|  |  |  |  | 250 | $10 \times \mathrm{ln}$ |

## MCCB WITH RESIDUAL CURRENT PROTECTION msхд 125 - м $5 \times \mathrm{X} 160$ - мsхо 250

## Time/Current Characteristics



MSXD 160


MSXD 125


MSXD 250


MCCB WITH RESIDUAL CURRENT PROTECTION msхD 125 - msхд 160 - msхD 250

## Peak Current Characteristics



## Specific Let-Through Energy Characteristics



MSXD 160, MSXD 250 at 400/415/440V AC


Prospective short circuit current in RMS sym. (kA)

MSXD 160, MSXD 250 at 400/415/440V AC


Prospective short-circuit current in RMS sym. (kA)

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION

AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Electrical control accessories for MSX 160c and MSX 250c range are designed with the installer in mind.
Auxiliary contacts of open/closed position, fault indicator switch, shunt trip and undervoltage releases are of modular design and convenient to use.



Undervoltage release UV


Shunt trip release SH


Auxiliary contact of open/closed position AX


Auxiliary contact of fault indicator switch AL

Valid/Maximum Accessory Combinations MSX/M 160c MSX/M 250c

] Auxiliary contact of open/closed position (AX)

- Auxiliary contact of fault indicator switch (AL)
$\square$ Shunt trip release (SH)
Undervoltage release (UV)

COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION
AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Rated values of auxiliary contact of open/closed postion (AX) and fault indicator switch (AL)

| Type of breaker | Rated value of voltage and current of auxiliary contacts |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | AC |  |  | DC |  |  | Minimum load |
|  | Voltage(V) | Current (A) |  | Voltage (V) | Current (A) |  |  |
|  |  | Resistive load | Inductive load (1) |  | Resistive load | Inductive load (1) |  |
| MSX/M 160c MSX/M 250c | 480 | - | - | 250 | - | - | 15V c.c. 100 mA |
|  | 250 | 3 | 2 | 125 | 0,5 | 0,05 |  |
|  | 125 | 3 | 2 | 30 | 3 | 2 |  |

NOTE:
(1) The inductive load means power factor of no smaller than 0.4 and time constant of no larger than 7 ms .

## Operation of auxiliary contacts

| Switch | Breaker status | [ON] | [OFF] | [TRIP] |
| :---: | :---: | :---: | :---: | :---: |
| Auxiliary contact of open/closed position AX | $\underbrace{12 / A x_{b}}_{91 / A x_{c}}$ | 11/AXc-14/AXa "Closed" 11/AXc-12/AXb "Open" | 11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed" | 11/AXc-14/AXa "Open" 11/AXc-12/AXb "Closed" |
| Auxiliary contact of fault indicator switch AL |  | 91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed" | 91/ALc-94/ALa "Open" 91/ALc-92/ALb "Closed" | 91/ALc-94/ALa "Closed" 91/ALc-92/ALb "Open" |

Rated values of shunt trip releases

| Type of breaker | Peak exciting current, A |  |  |
| :--- | :---: | :---: | :---: |
|  | AC voltage (V) |  |  |
|  | $\mathbf{2 0 0 - 2 4 0}$ | $\mathbf{3 8 0 - 4 5 0}$ | DC voltage (V) |
| MSX/M 250c | 0.014 | 0.0065 | $\mathbf{2 4}$ |

NOTE:
The permissible voltage range is from $85 \%$ to $110 \%$ of the rated voltage for AC or $75 \%$ to $125 \%$ thereof for DC .
Ensure that the voltage does not drop or exceed the permissible voltage range when SHT is actuated.
Breaker contacts usually start opening within 30 ms after the rated voltage is applied to the breaker.
Rated values of undervoltage releases (instantaneous type)

| Type of breaker | Power supply capacity, VA |  | Exciting current, $\mathbf{~ M A ~}$ |
| :--- | :---: | :---: | :---: |
|  | AC voltage (V) |  | DC voltage (V) |
|  | $\mathbf{2 0 0 - 2 4 0}$ | $\mathbf{3 8 0 - 4 5 0}$ | $\mathbf{2 4}$ |
| MSX/M 160c | 1.5 | 2.3 | 23 |
| MSX/M 250c |  |  |  |

## Rated values of undervoltage releases with time delay

Time delays: $500 \pm 300 \mathrm{msec}$.

| Type of breaker | Power supply capacity, VA | Exciting current, mA |
| :--- | :---: | :---: |
|  | AC voltage (V) | DC voltage (V) |
|  | $\mathbf{2 0 0 - 2 4 0}$ | $\mathbf{2 4}$ |
| MSX/M 160c | 2.5 | 22 |
| MSX/M 250c |  | 2 |

NOTE: UV releases are installed on the right hand side of the breaker.

For technical information contact the Technical Assistance Service or visit gewiss.com

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION

AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## MOTOR OPERATOR



| Features |  |
| :--- | :---: |
| Installation and Removal Ease | Simply rotate two knobs allows the motor operator to be installed on or removed from the breaker. |
| HIgh-speed, Stable Actuation | The quick operating time makes it possible to use the motor operators |
| for synchronized closing of breakers. |  |
| Silent Operation | Motor operator uses a direct drive system, providing operational silence. |
| "Lock-in Off" Capability | This capability allows the breaker to be padlocked in the OFF state. |



## Notes:

(1) Permissible operating range is 85 to $110 \%$.
(2) The currents shown are the maximum values at the maximum rated operational voltage.
(3) The operating time is the value when the rated operational voltage is supplied.

Allow a longer time for the motor operator to complete the operation.
(4) The motor operator is of a short time duty. Do not subject it to more than 10 continuous ON-OFF operations. If this occurs, allow the motor operator to cool for at least 15 minutes.
(5) When the rated operational voltage is DC24V the open voltage will be DC22V.

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## MOTOR OPERATOR

## Electrical Control Using Motorised Operation

## Motorized Operation

The motor operator has an input-signal self-hold circuit: closing the ON or OFF switch (see circuit diagrams shown below) momentarily allows activating the motor operator. To reset the tripped breaker to the OFF position, close the OFF (RESET) switch.
The voltage presence LED indication is on when the power is supplied to the motor operator.

## Manual Operation

Pull the operating handle out. Rotating the handle counter clockwise turns ON the breaker and clockwise turns OFF or resets the breaker.

## Operation Precaution

1. Ensure that the actual operation voltage ranges from $85 \%$ to $110 \%$ of the rated one.
2. Use operation switches whose ratings and power capacity is as specified in the "Ratings and Specifications" table on the previous page.
3. Use noise filters if the control power supply of the motor operator is shared by peripheral devices. Otherwise, power supply noise may cause malfunction of the peripheral devices.

## Control Circuit Diagrams of Motor Operators



## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION

AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## ROTARY HANDLES AND LOCKING DEVICES

## Direct rotary handle for MSX/M 160c and MSX/M 250c

This external operating handle is used to operate a circuit breaker mounted just behind a compartment door with the door closed. The operating mechanism and handle are mounted directly onto the circuit breaker. The handle protrudes through a cut-out in the door. A mould flange is supplied with the handle, covering panel cut-out from the front.


## Breaker Mounting Direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction. The upper supply type is standard.
Right power supply type

## Panel Lock Mechanism

This external operating handle keeps the panel door locked when in the 'ON' position.
The handle is turned to the 'RESET/OPEN COVER' position to open the panel door.
The release knob enables the panel door to be opened with the handle in the 'ON' position. To release: turn the release knob in the direction of anti-clockwise with a flat-bladed screwdriver.

## Safety interlock (Standard)

The safety interlock prevents the breaker from turning ON as long as the panel is open.
This interlock can be released using the hook lever.

## Handle Lock Mechanism

This Mechanism allows the breaker to be padlock in the OFF position.
Padlocks are not supplied.
Up to three padlocks can be installed.

## Padlock dimensions (mm)

| A | Diameter |
| :---: | :---: | :---: |
| 13 min | $\emptyset 5.5-8$ |
| $?$ |  |

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## ROTARY HANDLES AND LOCKING DEVICES

## Extended rotary handle for MSX/M 160c and MSX/M 250c

The door mounted operating handle allows breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 6020-1.
It consists of an operating mechanism that is mounted on the breaker, a handle that is mounted on the door and a shaft that transmits the turning force from the handle to the operating unit.
The shaft support acts as a guide when the panel door is being closed.


Handle cover


Shaft support


Square shaft


Operating unit


Operating handle

## Breaker Mounting Direction

The ON and OFF positions of the handle and the positions of drilled holes in the panel do not need to be changed depending on the breaker mounting direction.


## Operating Direction of Handles

Rotate the operating handle clockwise to turn the breaker on.


Rotate clockwise to turn the breaker ON

[^0]
## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## ROTARY HANDLES AND LOCKING DEVICES

## Panel Lock Mechanism

The external operating handle keeps the panel door locked when in the 'ON' position.
The handle is turned to the OFF position to open the panel door.
The release button enables the panel door to be opened with the handle in the "ON' position. To release: push the release button on the side of the operating handle with a flat-bladed screwdriver.

## Toggle Lock Mechanism

This Mechanism allows the breaker to be padlock in the OFF position.
Padlocks are not supplied.
Up to three padlocks can be installed.

Type 160A Frame

Type 250A Frame

Type 160A Frame


## Locking Devices

Toggle locking devices allow MCCB's to be locked ON or OFF using up to three padlocks. Locking devices for 160A and 250A frame models accept padlocks with a 5 mm hasp diameter.


## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## INSULATION ACCESSORIES

## Terminal Covers for Front Connection

Terminal covers for front connection are suitable for covering the exposed live parts of conductors terminated on the MCCB.


Terminal Cover for Front Connection

## Terminal covers for Rear Connection

Terminal covers for rear connection are available for 160A to 250A frame models and may be used on MCCBs fitted with rear connections (RC). They prevent access to the terminals from the front and top.


Terminal cover lock option is available to lock and seal front and rear terminal covers on to MCCB.

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## INSULATION ACCESSORIES

## Interpole Barriers

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers. Interpole barriers for use on one end of the MCCB are supplied as standard.
Additional interpole barriers can be ordered individually. All interpole barriers can easily be fitted to either end of an MCCB.


MCCB fitted with Interpole Barriers at both ends

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Electrical control accessories for MSX range are designed with the installer in mind.
Auxiliary contacts of open/closed position, fault indicator switch, shunt trip and undervoltage releases are of modular design and convenient to use.


1 Auxiliary contact of open/closed position (AX)
2 Auxiliary contact of fault indicator switch (AL)
3 Shunt trip release (SH)
4 Undervoltage release (UV)

- All auxiliary contacts are common up to 1600 A .

Shunt trip releases are split between two sizes: 125:1000A and 1250 $\div 1600 \mathrm{~A}$.
Undervoltage releases are split between two sizes: 125 $\div 630 \mathrm{~A}$ and $800 \div 1600 \mathrm{~A}$.

- All accessories are endurance tested to the same level as MCCBs.
- Internal accessories are easily field-installable.
- All accessories are individually packaged and are supplied with fitting instructions.
- Control wiring is terminated on the accessory screw terminal.



## Operations for the installation of internal accessories

(1)




## Easy field-Installation of Accessories

- Internal accessory can be simply plugged into position.
- No tools are required for this, except a screwdriver to lift the MCCB front cover clips.
- Accessories fit with a firm click when installed correctly.
- Colour coding of accessories helps identification and installation.


## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION

 AND SWITCH-DISCONNECTORSMSX - MSXD - MSXE - MSXM

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

Valid Maximum Accessory Combinations


Auxiliary contact of open/closed position (AX)

- Auxiliary contact of fault indicator switch (AL)
$\square$ Shunt trip release (SH)
Undervoltage release (UV)

NOTE

- It is not possible to install a shunt trip and an undervoltage release in an MCCB as they occupy the same location. Undervoltage release can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.
- Undervoltage releases with time delays require an external time delay controller which clips to the side of the MCCB.
* Shunt trip and undervoltage releases cannot be installed in this model.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

## Auxiliary contacts

## Auxiliary contact of open/closed position (AX)

Auxiliary contact of open/closed position indicates the ON or OFF status of circuit breaker when manually open or tripped by means a changeover switch with 3 terminals.

Auxiliary contacts of open/closed position are colour coded grey.
The cable capacity of the terminals is 0.5 to $1.25 \mathrm{~mm}^{2}$, bare cable.
Auxiliary contact of open/closed position meets the requirements of IEC 61058-1.

## Auxiliary contact of fault indicator switch (AL)

Auxiliary contact of fault indicator switch indicates the TRIP status of circuit breaker by means a changeover switch with 3 terminals.

Auxiliary contacts of fault indicator switch are colour coded grey and black.
The cable capacity of the terminals is 0.5 to $1.25 \mathrm{~mm}^{2}$, bare cable.
Auxiliary contact of fault indicator switch meets the requirements


Terminal Designations of IEC 61058-1.

| Rated value of voltage and current of auxiliary contacts |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Voltage (V) | AC |  | Voltage (V) | DC |  | Minimum Load |
|  | Current (A) |  |  | Current (A) |  |  |
|  | Resistive Load | Inductive Load |  | Resistive Load | Inductive Load |  |
| 440 | - | - | 250 | - | - |  |
| 240 | 3 | 2 | 125 | 0.4 | 0.05 | 100 mA at <br> 15V |
| 110 | 3 | 2 | 30 | 3 | 2 |  |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## SIGNALING AND CONTROL (INTERNAL ACCESSORIES)

## Opening releases

## Shunt trip release (SH)

Shunt trip release allows a circuit breaker to be tripped remotely on the application of the rated coil voltage across the shunt trip release terminals. Shunt trip releases have continuously rated coils and are suitable for use in electrical interlocking applications. The MCCB contacts and toggle will move to the tripped position when the shunt trip is operated.
The permissible voltage range is $85 \%$ to $110 \%$ for AC or $75 \%$ to $125 \%$ for DC .
The cable capacity of the terminals is 0.5 to $1.25 \mathrm{~mm}^{2}$, bare cable.


Terminal Designations

Shunt trip releases are colour coded grey.

| Rated values |  |  |  |
| :---: | :---: | :---: | :---: |
| Rated | Voltage AC |  | Voltage DC |
| Voltage (V) | 200-240 | 380-450 | 24 |
| Excitation Current (A) | 0.014 | 0.0065 | 0.03 |

Undervoltage release (UV)
Undervoltage release will trip the circuit breaker automatically when the voltage applied to the terminals of the undervoltage coil drops to between $70 \%$ and $35 \%$ of its voltage rating. The undervoltage release prevents the circuit breaker being closed unless a voltage corresponding to at least $85 \%$ of its voltage rating is applied across the terminals of the undervoltage coil.
The MCCB contacts and toggle will move to the tripped position when the under-voltage trip operates. Undervoltage releases with AC operating voltages are available with 500 ms time delays. Time-delay units are fitted to the
 outside of MCCBs.
The cable capacity of the terminals is 0.5 to $1.25 \mathrm{~mm}^{2}$, bare cable.
Undervoltage releases are colour coded grey and black.

| Rated values |  |  |  |
| :---: | :---: | :---: | :---: |
|  | Power supply capacity (VA) |  | Excitation current (mA) |
| MCCB Model | Voltage AC |  | Voltage DC |
|  | 200-240 | 380-450 | 24 |
| $\begin{aligned} & \text { MSX } 125 \\ & \text { MSX/E } 160 \end{aligned}$ |  |  |  |
| $\begin{aligned} & \text { MSX/E } 250 \\ & \text { MSX/E/M } 400 \\ & \text { MSXE/M } 630 \end{aligned}$ | 2.8 | 2.3 | 23 |
|  | Voltage AC |  | Voltage DC |
| M | 200-240 | 380-415 | 24 |
| MSXE/M 1000 MSXE/M 1250 MSXE/M 1600 | 2.9 | 2.1 | 29 |

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## TERMINAL BLOCK (FOR INTERNAL ACCESSORIES)

## Terminal Block for Plug-in MCCBs

The terminal block for a plug-in MCCB consists of:

- a male section pre-fitted with 3 cables with which clips easily to the back of the MCCB
- a female section with 3 user terminals which clips easily into the plug-in base.

Up to 4 terminal blocks can be installed on a 125A, 160A or 250A frame MCCB. Up to 5 terminal blocks can be installed on a 400A to 800A frame MCCB.


Terminal Block for Plug-in MCCBs

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## MOTOR OPERATOR

Motor operators for MCCBs up 1000A


Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals.
Motor operators are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

- Easy field-installation.
- Fast operation ( 100 ms ).
- Positive contact indication.
- Padlocking facility as standard (Maximum 3, hasp diameter 8mm).
- Versions available with automatic reset function.
- Voltage presence indication.


Motor operators for 125A and 250A frame are mounted on the front of the breaker. They can be rapidly fitted by locating the round pegs and square pegs on the motor into corresponding round and square holes on the breaker. It takes less than 10 seconds to secure the motor to the MCCB. Two levers securely lock the motor into position. No tools are needed to fit the motor operator.
400A frame to 1000A frame motor operators are held in place with mounting screws. They can be installed easily in the field.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## MOTOR OPERATOR

## Indication of ON, OFF or TRIPPED Status

The handle of 125A and 250A frame motor operators has dual functions:

1. Indication of ON, OFF or TRIPPED status as shown in the photographs below;
2. Manual operation when handle is pulled out. The supply to electrical control circuits inside the motor operator is cut when the handle is pulled out.


MCCB on




Motor operators from 400 A to 1000 A frame MCCBs incorporate a mechanical flag which indicates the ON, OFF and TRIPPED status of the MCCB. They can be manually charged using the lever provided.

## Ratings and Specifications

| MCCB frame |  | 125A | 160A-250A | 400A-630A | 800A-1000A |
| :---: | :---: | :---: | :---: | :---: | :---: |
| MCCB model |  | MSX/D 125 | MSX/E/D 160 | MSX/E 400 | MSXE 1000 |
|  |  | - | MSX/E/D 250 | MSXE 630 | - |
| Operating current/ <br> Starting current <br> Peak value (A) | 100-110 V AC | - |  | ON ---/2.3 OFF, RESET 1.4/3.7 | ON ---/2.2 OFF, RESET 1.7/3.5 |
|  | 200-220 V AC | 3.5/7 |  | ON ---/2.3 OFF, RESET 1.1/3.5 | ON ---/2.2 OFF, RESET 1.3/3.5 |
|  | 230-240 V AC | 18/26 |  | ON ---/7.2 OFF, RESET 3.9/8.1 | ON ---/12 OFF, RESET 6.0/11.5 |
|  | 24V DC | - |  | ON ---/7.2 OFF/RESET 2.0/5.1 | ON ---/7 OFF, RESET 3.2/6.5 |
| Operating method |  | Direct drive |  | Spring charging | Spring charging |
| Operating time (s) | ON | 0.1 |  | 0.1 | 0.1 |
|  | OFF | 0.1 |  | 1.5 | 1.5 |
|  | RESET | 0.1 |  | 1.5 | 1.5 |
| Operating switch rating |  | $\begin{array}{r} 100 \mathrm{~V}, 0.1 \mathrm{~A}, \\ 44 \mathrm{~V}, \mathrm{c} \end{array}$ | ning voltage nt 4 mA | $100 \mathrm{~V}, 0.1 \mathrm{~A}$, Opening voltage 48 V , current 1 mA |  |
| Power supply required |  | 300VA | nimum | 300VA minimum | 300VA minimum |
| Dielectric properties (1 min) |  | 1500 V AC (1000V AC for 24V DC and 48V DC motors) |  |  |  |
| Weight |  | 1.4 kg |  | 3.5 kg | 3.5 kg |

Note: Operating times shown in the above table apply only when the rated operational voltage is supplied to the motor operator.
The voltage supplied to the motor operator must be within the range of $85 \%$ and $110 \%$ of the rated operating voltage.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

## MOTOR OPERATOR

Motor Operator Control Circuits


The motor operator incorporates a self-hold circuit for the closing and opening signals. Therefore a momentary (over 50 msec .) open or close signal will ensure a complete operation. When the breaker trips, the breaker is reset by applying a signal to the OFF terminals of the motor.
When an undervoltage release UV is used with a motor operator, design the control circuit so that the undervoltage release UV is energised before a reset or close signal is sent to the motor operator. A 40 ms time delay in the reset and close signals is sufficient to allow the undervoltage release UV to energise. When a shunt trip release is used with a motor operator, design the control circuit so that the shunt trip release is de-energised before a reset or close signal is sent to the motor operator.
When a mechanical interlock is used with motor operators, design the control circuit to provide electrical interlocking between the motor operators. The electrical interlocking should prevent a close signal being sent to a motor operator unless the other motor operator and circuit breaker are in the OFF position.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## MOTOR OPERATOR

Motor operators for MCCBs 1250A and 1600A



The breaker can be padlocked in the "OFF" position by pulling out the lock plate, and locking it with a padlock. When the breaker is "ON", the lock plate cannot be pulled out. Up to three lock can be used. Padlock not supplied.

Positive Contact Indication

- Colour coding indicates the true position of the contacts clearly: ON (red), OFF (green), TRIP (white).

Easy Maintenance

- Breaker mounting, removal, and even setting changes can be done without removing the motor operator.

Manual ON/OFF Operation with One Stroke
Fast Closing Operation

- Closing in 60 ms or less.

The closing time remains constant over repeated operations.

## Ratings and Specifications

| MCCB frame |  |  | 1250A-1600A |
| :---: | :---: | :---: | :---: |
| MCCB model |  |  | MSXE/M 1250 |
|  |  |  | MSXE/M 1600 |
| Lock in "OFF" position (standard) |  |  | $\square$ |
| Manual Trip Button |  |  | $\square$ |
| Operating current/ <br> Inrush current (A) | 230-240V c.a. | ON (1) | -/1.2 |
|  |  | OFF, RESET (1) | 1.0/3.2 |
|  | 24V c.c. | ON | -/4.5 |
|  |  | OFF, RESET | 4.0/12.0 |
| Type of operation |  |  | Spring Charged |
| Operating Time(s) | ON (Maximum values) |  | 0.06 |
|  | OFF, RESET ${ }^{(2)}$ |  | 3 |
| Control Switch Ratings |  |  | 250V, 5A |
| Power Source Capacity (VA) |  |  | 300VA |
| Dielectric withstand voltage The value in brackets for 24V DC |  |  | AC1500V <br> (AC500V) |
| Weight (kg) |  |  | 6.4 |

## NOTE

(1) Maximum values at $\mathrm{AC} 230 \mathrm{~V}, 50 \mathrm{~Hz}$
(2) Maximum values at the rated operating voltages

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## MOTOR OPERATOR

## Motorised Operation

## ON CONTROL

When the ON switch is closed, the latch release coil (LRC) is excited and the closing spring is released. The breaker quickly closes and goes into ON status.
When the closing spring is released, the limit switch (LS) is opened and the LRC is de-excited.

## OFF CONTROL

When the off switch is closed, self-hold control relay $(\mathrm{Y})$ is activated and motor (M) operates to charge the closing spring.
The breaker changes to OFF status.

## RESET CONTROL

When the breaker is in TRIP status, closing the OFF switch activates self-hold control relay $(\mathrm{Y})$ and starts motor $(\mathrm{M})$. Motor $(\mathrm{M})$ charges the closing spring and resets the breaker.

## Manual Operation

## ON, OFF (RESET)

The breaker can be opened (OFF or reset) and closed (ON) alternately by pulling theoperating lever down in one fullstroke. ON/OFF operation ofthe breaker is possible withoutcharging or releasing theclosing spring.

## EMERCENCY TRIP

Opening the breaker (OFF) using the motor operator takes up to 3 seconds. If a remote emergency off function is necessary, incorporate the shunt trip device (SHT) or the undervoltage trip device (UVT) into the breaker.

## PRECAUTIONS RECARDING USAGE

- If using the UVT option, be sure to reset the UVT before closing the breaker.
- The motor operator must be supplied with voltage within the following range:

DC: 75-110\% of rated voltage
AC: 85-100\% of rated voltage
Operation at low voltage may burn out the motor.

## Anti-pumping Function

When the breaker is turned ON and the closing spring is released, self-hold control relay X is active. Xa -contact is held closed, and Xb -contact is opened. While the ON switch is closed, latch release coil (LRC) will not be excited even if the OFF switch is closed or an automatic reset circuit is being used. Pumping is thus prevented.

## Automatic Charge/discharge Function

If the breaker is closed manually (ON) while the power source is on, the handle switch (HS) induces automatic release of the closing spring. Likewise, if the breaker is opened manually (OFF), the springs are automatically charged. If the breaker is opened or closed while the power source is off, later when the power source is turned on, the closing spring will automatically be charged or discharged to match the ON/OFF status of the breaker.
This automatic charge/discharge function is necessary to prepare the closing mechanism for the next ON/OFF operation.
The sound of the charging or discharging of the spring should not be mistaken for a malfunction.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## ROTARY HANDLES AND LOCKING DEVICES

Direct and extended rotary handles are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

## Safety Features

- Door interlock mechanism with override facility included as standard
- Degree of protection: IP55
- Locks OFF with up to 3 padlocks (8mm hasps)
- Available in red for extended rotary handles
- A trip can be performed with the external operating handle fitted to the MCCB


## Orientation

To switch the breaker from OFF to ON the external operating handle is rotated through 90 degrees in a clockwise direction.
The ON (I) and OFF ( 0 ) indication of the external operating handle can be re-oriented in steps of 90 degrees with respect to the operating mechanism.
This allows the indication position to remain the same whether the breaker is mounted vertically (right side up or upside down) or horizontally (on its left side or on its right side). The hole cut-out dimensions for a panel or door will remain unchanged if the external operating handle is re-oriented. The external operating handle's axis of rotation is on the intersection of the centre lines of a 3 P MCCB.
This means that the positioning of the door cutouts is symmetrical for breakers mounted horizontally on either side of a vertical busbar system.


MCCB ON


MCCB ON

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MEX - MSXD - MSXE - MSXM

## ROTARY HANDLES AND LOCKING DEVICES

## Extended rotary handle

The door mounted handles allow breakers installed in control centers or switchboards to be manually operated from outside and complies with IEC 60204-1. It consists of an operating mechanism that is mounted on the breaker, an operating handle that is mounted on the door, and a shaft that transmits the turning force from the handle to the operating unit.
The shaft can be cut to the required length.
The shaft support makes easy to insert to the operating handle when the panel door is being closed.


Handle cover


Operating handle


Shaft support


Square shaft


MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## ROTARY HANDLES AND LOCKING DEVICES

## Direct rotary handle



This external operating handle is used to operate a circuit breaker mounted just behind a compartment door with the door closed. The operating unit and the handle itself are mounted directly onto the circuit breaker. The handle protrudes through a cutout in the door. A moulded door flange is supplied with the external operating handle which covers the cutout from the front.
Padlocking and keylocking is possible in the OFF position.

## Locking Devices



Toggle locking devices allow MCCBs to be locked ON or OFF using up to three padlocks. Locking devices for 125A to 160A and 250A frame models accept padlocks with 5mm hasp diameter. Locking devices for 400A to 1600A frame models accept padlock with 8 mm hasp diameter.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## INSULATION ACCESSORIES

## Terminal covers

Terminal covers are used to prevent direct contact with live MCCB terminations.
They also provide additional insulation to reduce the possibility of a short circuit between phases or to earth when large conductors are used.



Terminal Cover Lock with Lead Seal

## General features

- Terminal covers for 125A to 630A frame models require no tools for installation.
- Terminal covers for 800A to 1250A are fixed using self-tapping screws.
- Terminal covers for 125A to 1250A frame models have an IP20 ingress protection.
- Terminal covers are ordered individually. Two terminal covers are required to cover both the line and load terminals of an MCCB.

Each cover can either be fitted to the top or bottom of the MCCB.

- Terminal covers have a megger measurement hole of 4 mm diameter on each phase.


## Options

- A terminal cover for 125A to 630A frame models include facility for an anti-tampering seal to be added.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## INSULATION ACCESSORIES

## Terminal Covers for Front Connections

Terminal covers for front connection are suitable for covering the exposed live parts of conductors terminated on the MCCB.


Terminal Covers for Front Connection


Terminal Covers for Front Connection with copper cables

## Terminal Covers for Front Connections with copper cables

Terminal covers for front connection with copper cables, available only for 125A frame models, are useful for increasing the ingress protection rating at the terminals without increasing the overall length. They can be used for direct entry of stranded cable with cable clamp terminals (FW).
Flush terminal covers are identical to rear terminal covers for 400A and 630A frame models.
The user can remove a section of the rear terminal cover using a tool to allow entry of the conductor.

## Terminal Covers for Rear Connections

Terminal covers for rear connection are available for 125A to 1000A frame models and may be used on MCCBs fitted with rear connections (RC) or plug-in connections. They prevent access to the terminals from the front and top.


Terminal Covers for Rear Connection

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## INSULATION ACCESSORIES

## Interpole Barriers

Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers. Interpole barriers for use on one end of the MCCB are supplied as standard. Additional interpole barriers can be ordered individually. All interpole barriers can easily be fitted to either end of an MCCB.
MCCB have been designed to accept an additional interpole barrier between two adjacent MCCBs.


MCCB Fitted with Interpole Barriers on Both Ends


Interpole Barriers between Adjacent MCCBs

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES FOR CHANGEOVER SYSTEM

Where more than one AC voltage source is available to a distribution system it is often necessary to prevent multiple sources supplying the system at one time. Interlocking accessories are used together with two MCCBs to prevent both being in the ON state simultaneously. This provides a secure mechanical means of preventing the connection of two supply sources.
An automatic changeover controller can monitor the status of two supplies and control the switching of two MCCBs according to pre-programmed parameters. When an automatic changeover controller is interfaced to a pair of interlocked MCCBs fitted with remote control accessories, a secure, fully automatic changeover system is achieved.

## Link Interlock

Link interlocks are available for 125 A to 1000A frame models and consist of a mechanism mounted to each MCCB in an adjacently mounted pair.
The link between each mechanism inhibits the closure of one MCCB unless the other is in the OFF position.
Link interlocks can be used on a mixture of 3 and 4 pole breakers of the same frame size. Link interlock is an innovative design which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Link interlocks are field-installable and only require a screwdriver to fit.
- Link interlocks replace the accessory cover on the front of the breaker.
- Motor operators and operating handles are compatible with link interlocks.
- The interlock is installed on the front of the MCCB and does not therefore interfere with copperwork or cables.
- No need to buy factory-built backplates with MCCBs and interlocks pre-fitted.


An important safety feature is that the interlocks do not allow a control system to close a second power supply on to a fault. If a breaker has tripped its partner is mechanically prevented from closing. This differs from other interlocks you may be familiar with, which allow a breaker to be closed while its partner is in the tripped position.
Link interlock operates according to the following table:

|  | STATUS OF MCCB 1 | STATUS OF MCCB 2 |
| :--- | :--- | :---: |
| ON | ON | VALIDITY OF COMBINATION |
| ON | TRIP | NOT ALLOWED |
| TRIP | ON | NOT ALLOWED |
| TRIP | TRIP | NOT ALLOWED |
| OFF | OFF | NOT ALLOWED |
| ON | OFF | ALLOWED |
| OFF | ON | ALLOWED |
| TRIP | OFF | ALLOWED |
| OFF | TRIP | ALLOWED |

The electrical control system of an automatic changeover scheme which uses these interlocks should not attempt to switch the MCCBs to a combination indicated as "NOT ALLOWED" in the above table otherwise damage to the motor operations will occur.

For technical information contact the Technical Assistance Service or visit gewiss.com

# MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS 

MSX - MSXD - MSXE - MSXM

## ACCESSORIES FOR CHANGEOVER SYSTEM

## Wire Interlock

Wire interlocks for 125A to 1000A frame models consist of two mechanisms connected by a cable. The mechanisms are mounted on two MCCBs located at a distance from each other which is limited by the length and bend radius of the cable. The mechanisms and cable inhibit the closure of one MCCB unless the other is in the OFF position. Each mechanism is ordered separately. Cables of 1.0 m or 1.5 m length are also ordered as separate items.
Wire interlocks can be used on a mixture of 3 and 4 pole MCCBs of different frame sizes. This allows potential cost savings by using lower rated MCCBs for the alternative power supply. MCCBs can be mounted in different switchboard compartments or on different planes.
Wire interlock is an innovative design which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Wire interlocks are field-installable up to 1000A models.
- Wire interlocks replace the accessory cover on the front of the breaker.
- Motor operators and operating handles are compatible with wire interlocks.
- Interlocking of MCCBs mounted in different compartments is possible.
- No need to buy factory-built backplates with MCCBs and interlocks pre-fitted.

Wire interlocks are available also for 1250A and 1600A frame models.
The mechanisms are mounted on the back of two MCCBs. MCCBs cannot be mounted directly to a flat plate, but are installed on a frame to ensure space for the interlock mechanism. (Factory Fit).
An important safety feature is that the interlocks do not allow a control system to close a second power supply on to a fault. If a breaker has tripped its partner is mechanically prevented from closing. This differs from other interlocks you may be familiar with, which allow a breaker to be closed while its partner is in the tripped position.


Wire interlock operates according to the following table:

|  | STATUS OF MCCB 1 | STATUS OF MCCB 2 |
| :--- | :--- | :---: |
| ON | ON | VALIDITY OF COMBINATION |
| ON | TRIP | NOT ALLOWED |
| TRIP | ON | NOT ALLOWED |
| TRIP | TRIP | NOT ALLOWED |
| OFF | OFF | NOT ALLOWED |
| ON | OFF | ALLOWED |
| OFF | ON | ALLOWED |
| TRIP | OFF | ALLOWED |
| OFF | TRIP | ALLOWED |

The electrical control system of an automatic changeover scheme which uses these interlocks should not attempt to switch the MCCBs to a combination indicated as "NOT ALLOWED" in the above table otherwise damage to the motor operations will occur.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES FOR CHANGEOVER SYSTEM

## Automatic Transfer Switch

Automatic Transfer Switch is used in standby power applications.
ATS will monitor the voltage and frequency of the incoming AC mains (utility) supply and in the event of a failure will issue a start command to the generator control system.
ATS is designed to monitor the incoming AC mains supply (1 or 3 phases) for under/over voltage and under/over frequency. Should any of the parameters fall out of limit, ATS will issue a command to the generating set controller.
Once the generator set is available and producing an output within limits, ATS will control the transfer device and switch the load from the mains (utility) to the generating set.
When the mains (utility) supply returns to within limits, the module will command a return to the mains (utility) supply and shut down the generator after a suitable cooling run. Various timing sequences are available to prevent nuisance starting or unnecessary supply breaks.


## Product Features

ATS has back-lit LCD with 4 line text display which shows system status and indicates any system warnings.
Red and green LEDs indicate the operational status of the network. Moreover ATS has USB, RS232 e RS485 outputs.
ATS is supplied pre-configured with default values which, if necessary, can be easily modified directly from the front panel.
In the absence of DC power supply, a power supply unit is available to be ordered separately (CWD8887).

- Back-lit LCD with 4 line text display
- Front panel configuration with protection PIN code
- Configurable timers and alarms
- 12 configurable inputs
- 6 configurable volt-free outputs
- 6 configurable DC outputs
- Power and energy monitoring (kW, kWh, kVAr, kVAh, kVArh)
- Event log
- Auto start inhibit
- Load inhibition


## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES FOR CHANGEOVER SYSTEM

| Technical data |  |
| :---: | :---: |
| Operating voltage | from 8V to 35V DC |
| Cranking dropouts | Able to survive OV for 50 mS , providing supply was at least 10 V before dropout and supply recovers to 5 V . This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking. |
| Maximum operating current | $\begin{aligned} & 480 \mathrm{~mA} \text { to } 12 \mathrm{~V} \\ & 360 \mathrm{~mA} \text { to } 24 \mathrm{~V} \end{aligned}$ |
| Maximum standby current | 126 mA to 12 V 96 mA to 24 V |
| Mains (utility) voltage range | 15 V to 333V AC (L-N) |
| Outputs A and E | Normally closed volt-free output 8A AC at 250V AC |
| Outputs B and F | Normally open volt-free output 8A AC at 250V AC |
| Outputs C and D | Changeover volt-free output $8 \mathrm{~A} A C$ at 250 V AC |
| Outputs G, H, I, J, K and L | 2 A at supply voltage |
| Frequency range | 3.5 Hz to 75 Hz |
| Dimensions overall | $240 \mathrm{~mm} \times 181 \mathrm{~mm} \times 42 \mathrm{~mm}$ |
| Panel cut-out | $220 \mathrm{~mm} \times 160 \mathrm{~mm}$ |
| Maximum panel thickness | 8 mm |
| Operating temperature | $-30^{\circ} \mathrm{C} . . .+70^{\circ} \mathrm{C}$ |
| Stocking temperature | $-40^{\circ} \mathrm{C} . . .+85^{\circ} \mathrm{C}$ |
| Degree of protection | IP65 (front of the device with the special gasket supplied) |
| Communication ports |  |
| USB |  |
| Port to be used only to configure ATS via PC and specific software. <br> Maximum connection distance 6 m . <br> pe B cable required (this is the type of cable used to connect a PC to the USB printer) |  |

RS232
Modbus RTU protocol
Non-insulated port
Max Baud rate 115200 baud subject to S/W
TX, RX, RTS, CTS, DSR, DTR, DCD
9-pin D-type male connector
Maximum distance 15 m
It is typically used to connect to a telephone or GSM modem for remote communications.
RS485
Modbus RTU protocol
Insulated port
2 cables for data communication + common
Half Duplex
Data direction control for transmission (via s/w protocol)
Max Baud Rate 115200
Required external termination resistance (120@)
Maximum common mode offset 70V (on-board protection via surge arrester)
Maximum distance 1.2 km


For technical information contact the Technical Assistance Service or visit gewiss.com

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES FOR CHANGEOVER SYSTEM

## Power Supply Module for ATS

Supplied as a separate unit, the power supply module for the Automatic Transfer Switch is self-seeking. The module will provide DC power output to the ATS whens mains power is lost, this is achieved by automatically switching between either generator or battery supply.
Housed within a strong plastic casing the module can be either DIN or chassis mounted and has 3 red LEDs which provide system status.


| Technical data |  |
| :---: | :---: |
| Voltage input | from 90V to 305V AC |
| Current output | $1 \mathrm{~A} D C$ at 24V DC |
| Current max | 1,5A DC |
| Operating frequency | from 48 Hz to 64 Hz |
| Rise time | $<20 \mathrm{~ms}$ |
| Ripple and noise | <1\% |
| Efficiency | >80\% |
| Regulation line | <0.1\% Vo |
| Load | <5\% Vo |
| Protections | Internal 250V 2A Anti Surge fuses ( $20 \mathrm{~mm} \times 5 \mathrm{~mm}$ ceramic type) at mains input and generator power supply. <br> PTC input for battery power supply. <br> External fuses are recommended to protect the power supply input connection cables |
| Dimensions overall | $136 \mathrm{~mm} \times 140 \mathrm{~mm} \times 63 \mathrm{~mm}$ |
| Weight | 0.5 kg |
| Section of connection cable | 0,6 $\div 1,5 \mathrm{~mm}^{2}$ |
| Rated tightening torque | $0,8 \mathrm{Nm}$ |
| Operating temperature | $-30^{\circ} \mathrm{C} . . .+60^{\circ} \mathrm{C}$ |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS <br> MSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSX/M250c

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| MSX/M250c | Circuit breaker for the protection of mains power supply S1 | 1 |
| GWD8501 | Auxiliary contact of open/closed position MSX/M160c-250c |  |
| GWD8502 | Auxiliary contact of fault indicator switch SX MSX/M160c-250c | 2 |
| GWD8661 | Wire mechanical interlock MSX/M250c | 1 |
| GWD8581 | Motor operator MSX/M250c 240VAC | 1 |


| MCCB OF GENERATOR S2 |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| MSX/M250c | Circuit breaker for the protection of generator S2 |  |
| CWD8501 | Auxiliary contact of open/closed position MSX/M160c-250c | 1 |
| GWD8502 | Auxiliary contact of fault indicator switch SX MSX/M160c-250c | 2 |
| GWD8661 | Wire mechanical interlock MSX/M250c | 1 |
| CWD8581 | Motor operator MSX/M250c 240VAC | 1 |


| AUTOMATIC TRANSFER SWITCH |  |  |
| :--- | :--- | :--- | :---: |
| Code | Description | Quantity |
| CWD8886 | Automatic transfer switch MSX | 1 |
| CWD8887 | Power supply module for ATS MSX | 1 |

## ACCESSORIES

| Code | Description | Quantity |
| :--- | :---: | :---: |
| CWD8666 | Cable for wire interlock MSX/D/E/M/c125-1000 |  |
| GW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 |  |
| GW74504 | Contact 1 N.O. -1 N.C. 10A 250V | 1 |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION

 AND SWITCH-DISCONNECTORSMSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSX125

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :---: | :---: | :---: |
| Code | Description | Quantity |
| MSX125 | Circuit breaker for the protection of mains power supply S1 | 1 |
| CWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 2 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 1 |
| GWD8662 | Wire mechanical interlock MSX125 | 1 |
| GWD8584 | Motor operator MSX/D125 240VAC | 1 |
| MCCB OF GENERATOR S2 |  |  |
| Code | Description | Quantity |
| MSX125 | Circuit breaker for the protection of generator S2 | 1 |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 2 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 1 |
| GWD8662 | Wire mechanical interlock MSX125 | 1 |
| GWD8584 | Motor operator MSX/D125 240VAC | 1 |
| AUTOMATIC TRANSFER SWITCH |  |  |
| Code | Description | Quantity |
| GWD8886 | Automatic transfer switch MSX | 1 |
| GWD8887 | Power supply module for ATS MSX | 1 |

## ACCESSORIES

| Code | Description | Quantity |
| :--- | :---: | :---: |
| GWD8666 | Cable for wire interlock MSX/D/E/M/c125-1000 |  |
| GW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 |  |
| GW74504 | Contact 1N.O. -1 N.C. 10A 250V | 1 |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSX/E160-250

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :--- | :--- | :--- | :--- |
| Code | Description | Quantity |
| MSX/E160-250 | Circuit breaker for the protection of mains power supply S1 |  |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 1 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| GWD8663 | Wire mechanical interlock MSX/E160-250 |  |
| GWD8590 | Motor operator MSX/D/E160-250 240VAC | 1 |


| MCCB OF GENERATOR S2 |  |  |
| :--- | :--- | :--- |
| Code | Description | Quantity |
| MSX/E160-250 | Circuit breaker for the protection of generator S2 |  |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 1 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| GWD8663 | Wire mechanical interlock MSX/E160-250 |  |
| GWD8590 | Motor operator MSX/D/E160-250 240VAC | 1 |


| AUTOMATIC TRANSFER SWITCH |  |  |  |
| :--- | :--- | :--- | :---: |
| Code | Description | Quantity |  |
| CWD8886 |  | Automatic transfer switch MSX | 1 |
| CWD8887 | Power supply module for ATS MSX | 1 |  |

## ACCESSORIES

| Code | Description | Quantity |
| :--- | :---: | :---: |
| CWD8666 | Cable for wire interlock MSX/D/E/M/c125-1000 |  |
| GW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 |  |
| GW74504 | Contact 1 N.O. -1 N.C. 10 A 250V | 1 |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION

 AND SWITCH-DISCONNECTORSMSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSX/E/M400-630

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :--- | :--- | :--- | :--- |
| Code | Description | Quantity |
| MSX/E/M400-630 | Circuit breaker for the protection of mains power supply S1 |  |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 1 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| GWD8664 | Wire mechanical interlock MSX/E/M400-630 |  |
| GWD8595 | Motor operator MSX/E/M400-630 240VAC | 1 |


| MCCB OF GENERATOR S2 |  |  |
| :--- | :--- | :--- | :--- |
| Code | Description | Quantity |
| MSX/E/M400-630 | Circuit breaker for the protection of generator S2 | 1 |
| CWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 |  |
| CWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| CWD8664 | Wire mechanical interlock MSX/E/M400-630 | 1 |
| GWD8595 | Motor operator MSX/E/M400-630 240VAC | 1 |


| AUTOMATIC TRANSFER SWITCH |  |  |
| :--- | :--- | :--- | :---: |
| Code | Description | Quantity |
| GWD8886 | Automatic transfer switch MSX | 1 |
| CWD8887 | Power supply module for ATS MSX | 1 |

## ACCESSORIES

| Code | Description | Quantity |
| :--- | :---: | :---: |
| GWD8666 | Cable for wire interlock MSX/D/E/M/c125-1000 |  |
| GW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 |  |
| GW74504 | Contact 1 N.0. -1 N.C. 10A 250V | 1 |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSX/E/M1000

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :--- | :---: | :---: |
| Code |  | Description |
| MSX/E/M1000 | Circuit breaker for the protection of mains power supply S1 | Quantity |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 1 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| GWD8665 | Wire mechanical interlock MSXE/M1000 |  |
| GWD8598 | Motor operator MSX/E/M1000 240VAC | 1 |


| MCCB OF GENERATOR S2 |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| MSX/E/M1000 | Circuit breaker for the protection of generator S2 |  |
| CWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 1 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 2 |
| GWD8665 | Wire mechanical interlock MSXE/M1000 | 1 |
| CWD8598 | Motor operator MSX/E/M1000 240VAC | 1 |


| AUTOMATIC TRANSFER SWITCH |  |  |  |
| :--- | :--- | :--- | :---: |
| Code | Description | Quantity |  |
| CWD8886 |  | Automatic transfer switch MSX | 1 |
| CWD8887 | Power supply module for ATS MSX | 1 |  |

## ACCESSORIES

| Code | Description | Quantity |
| :--- | :---: | :---: |
| CWD8666 | Cable for wire interlock MSX/D/E/M/c125-1000 |  |
| GW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 |  |
| GW74504 | Contact 1 N.O. -1 N.C. 10 A 250V | 1 |

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## AUTOMATIC CHANGEOVER WITH TWO MSXE/M1250-1600

| MCCB OF MAINS POWER SUPPLY S1 |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| MSXE/M1250-1600 with mechanical interlock (es. CWD9426B) | Circuit breaker for the protection of mains power supply S1 | 1 |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 2 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 1 |
| GWD8602 | Motor operator MSX/E/M1250-1600 230VAC |  |


| MCCB OF GENERATOR S2 |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| MSXE/M1250-1600 with mechanical interlock (es. CWD9426B) | Circuit breaker for the protection of generator S2 | 1 |
| GWD8504 | Auxiliary contact of open/closed position MSX/D/E/M125-1600 | 2 |
| GWD8505 | Auxiliary contact of fault indicator switch MSX/D/E/M125-1600 | 1 |
| GWD8602 | Motor operator MSX/E/M1250-1600 230VAC | 1 |


| AUTOMATIC TRANSFER SWITCH |  |  |  |
| :--- | :---: | :---: | :---: |
| Code | Description | Quantity |  |
| CWD8886 |  | Automatic transfer switch MSX | 1 |
| CWD8887 | Power supply module for ATS MSX | 1 |  |


| ACCESSORIES |  |  |
| :--- | :---: | :---: |
| Code | Description | Quantity |
| CWD8668 | Cable for wire interlock MSXE/M1250-1600 |  |
| CW96220 | Compact fuses holder 1P+N 10,3X38 690VAC 32A | 1 |
| GW96312 | Fuses holder 3P+N 10,3X38 690VAC 32A | 4 |
| GWD6725 | Contactor 40A 2NO+2NC 230V | 2 |
| GW74411 | Fixed key selector 0-1 | 2 |
| GW74504 | Contact 1 N.0. -1 N.C. 10A 250V | 1 |

COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION
AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

| Connection type | Front connection |  |  | Rear connection |
| :---: | :---: | :---: | :---: | :---: |
|  | With front terminals FC | With front extended or spread terminals FB | With front terminals for copper cables FW | With rear terminals RC |
| Outer view <br> Breaker |  |  |  |  |
| MSX/M 160c | (from 125A to 160A) | $\bigcirc$ | (from 20A to 100A) | $\bigcirc$ |
| MSX/M 250c | - | - | X | - |
|  | - Connect cables with crimp lugs or flat bars directly to breaker terminals. | - Front extended or spread terminals must be connected to breaker front terminals. Connect cables with crimp lugs or flat bars to front extended or spread terminals. | - Front terminals for copper cables are mounted on breaker and they cannot be removed and replaced with other types of terminals. Connect wires without crimp lug directly to breaker terminals. | - Rear terminals can be rotated in steps of 45 degrees or 90 degrees. |

Note:

- Standard. This configuration used unless otherwise specified.
- Optional standard. Specify when ordering.

X "no" or "not available".

Terminal Screws Sizes and Standard Torques

|  |  | Front connection |  |  | Rear connection |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |
| Frame | Breaker | Front terminals FC | Front extended or spread terminals FB |  | Rear terminals |  | Pan head |
|  |  | Screw size (A) Torque (N.m) | Screw size (B) <br> Torque (N.m) | Screw size (C) <br> Torque (N.m) | Screw size (D) <br> Torque (N.m) | Screw size (E) <br> Torque (N.m) | $3$ |
| 160 | $\begin{aligned} & \text { MSX/M 160c } \\ & (20-100 A) \end{aligned}$ | Breakers with front terminals for copper cables FW |  |  |  |  | $5$ |
|  | MSX/M 160c (125-160A) | $\begin{gathered} \text { Pan head M8x14 } \\ 4.9 \sim 6.9 \end{gathered}$ | $\begin{gathered} \text { Pan head M8x14 } \\ 4.9 \sim 6.9 \end{gathered}$ | $\begin{gathered} \text { Hex head } \\ \text { M8x30 } \\ 11.8 \sim 18.6 \end{gathered}$ | Hex head M6x14 7.8~11.8 | $\begin{gathered} \text { Hex head } \\ \text { M8x23 } \\ 11.8 \sim 18.6 \end{gathered}$ | Hex socket head bolt |
| 250 | MSX/M 250c | $\begin{gathered} \text { Hex head } \\ \text { M8x18 } \\ 7.8 \sim 12.7 \end{gathered}$ | $\begin{gathered} \text { Hex head } \\ \text { M8x18 } \\ 7.8 \sim 12.7 \end{gathered}$ | Hex head M10×25 22.5~37.2 | $\begin{gathered} \text { Hex head } \\ \text { M6x18 } \\ 7.8 \sim 11.8 \end{gathered}$ | $\begin{gathered} \text { Hex head } \\ \text { M8x25 } \\ 11.8 \sim 18.6 \end{gathered}$ |  |

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

## Connection of cables terminated with crimp lugs




## Crimp lugs types

Each terminal on 250A models has a serrated surface. This provides excellent grip for heavy cables terminated with crimp lug terminals, thereby preventing sideways rotation of the lug.

| Maximum dimensions of crimp lug |  |  |
| :--- | :---: | :---: |
| Frame Size (A) | 160 | 250 |
| Width, W (mm) | 17.2 | 25 |
| Diameter, d (mm) | 8.5 | 9 |
| Maximum from centre to tip, e(mm) | 9.5 | 11 |



## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION

AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## INSULATION DISTANCE

The insulation distance between the breaker and earthed metal parts and insulators shown in the table on the next page must be maintained to prevent arcing faults occurring due to conductive ionised gas. In addition, completely cover exposed conductors, to their roots at the breaker or to below the height protected by interpole barriers, on the line side of the breaker using insulation tube or tape, in order to provide positive protection against short circuit or ground fault due to the metal chipping, surge voltage, dust particles or salt. Be sure to install the interpole barriers supplied with the breaker.


A Distance from lower breaker to exposed live part of upper breaker terminal (front connection) or distance from lower breaker to end face of upper breaker (rear connection).
B1 Distance from end face of breaker to top plate.
B2 Distance from end face of breaker to insulation plate.
C Gap between breakers.
D Distance from side of breaker to side plate (earthed metal).
E Dimension of insulation over exposed conductors.

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION <br> AND COMPACT SWITCH-DISCONNECTORS

MSX/M 160c - MSX/M 250c

## INSULATION DISTANCE

Tables of insulation distances

| Breaker | A <br> Note (1) | B1 | B2 | C | D | E |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MSX/M 160c | 50 | 50 | 10 | * Possible to set close | 25 | Not less than the length of the bare live part Note (2) |
| MSX/M 250c | 50 | 40 | 40 | * Possible to set close | 50 | Not less than the length of the bare live part Note (2) |

Notes:
(1) The figures are for lower breakers.
(2) For front connection breakers, insulate all exposed conductors of the line side until the breaker end. If interpole barriers are packed, be sure to use the barriers; more over, insulate all exposed conductors by insulating tape or the like so that the tape overlaps with the barriers.

* If using extension bars (optional), ensure the insulation distance specified for the application.


## DIRECTION OF POWER SUPPLY

The breakers are available for normal connection by default. Reverse connection is optional.
See tables below.


Normal
connection


Reverse
connection

## COMPACT MCCB WITH THERMAL-MAGNETIC PROTECTION

AND COMPACT SWITCH-DISCONNECTORS
MSX/M 160c - MSX/M 250c

## TEMPERATURE RATINGS

Rated currents depending on ambient temperature for compact MCCBs

| Breaker | Connection Type | Rating at Calibration temperature $\left(50^{\circ} \mathrm{C}\right)$ | Rated current (A) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\left(55^{\circ} \mathrm{C}\right)$ | $\left(60^{\circ} \mathrm{C}\right)$ | $\left(65^{\circ} \mathrm{C}\right)$ |
| MSX/M 160c | Front Rear | 25A | 24 | 24 | 23 |
|  |  | 40A | 39 | 37 | 36 |
|  |  | 63A | 61 | 59 | 57 |
|  |  | 80A | 77 | 73 | 70 |
|  |  | 100A | 97 | 94 | 91 |
|  |  | 125A | 122 | 118 | 115 |
|  |  | 160A | 156 | 152 | 149 |
| MSX/M 250c | Front Rear | 160A | 156 | 152 | 148 |
|  |  | 250A | 243 | 236 | 229 |

Note:
Supplied with terminal bars fitted as standard. Temperature ratings are not valid if the terminal bars are removed.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

MSX MCCBs connection and mounting accessories facilitate easy installation in any arrangement. Breakers and accessories are easy to fit. They are designed to provide safe and secure termination and mounting points.

Connection and mounting options overview diagram


The MSX/D 125, MSX/D 160 and MSX/D 250 models can be mounted on 35 mm DIN rail along side the modular devices by means of a fixing bracket. In addition, 45 mm high window panels can be used.
The MSXE 160 and MSXE 250 models cannot be installed on DIN rail.


## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

## Connection of Busbars and Terminated Cables

The front terminals FC are supplied for all MSX range circuit breakers from frame size 125A up to 630A. Solid conductors or cables terminated with crimp lug terminals can be used.

## Connection with front terminals FC

Each terminal on 160A and 250A models has a serrated surface. This provides excellent grip for heavy cables terminated with crimp lug terminals, thereby preventing sideways rotation of the lug.


| Maximum dimensions of crimp lug |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Frame Size (A) | 125 | $160-250$ | $400-630$ |  |  |
| Width, $\mathbf{W}(\mathbf{m m})$ | 17 | 25 | 25 |  |  |
| Diameter, d (mm) | 9 | 9 | 11 |  |  |
| Maximum from centre to tip, dim e (mm) | 8.5 | 10 | 12 |  |  |

## Connection with extended or spread front terminals FB

Extended or spread front terminals FB are an extension of front terminal FC which can be fitted to line or load side terminals of circuit breaker. They are used to connect multiple conductors or large conductors.


MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

## Direct Entry of Stranded Cable

## Connection with front terminals for copper cables FW

Front terminals for copper cables FW can be used to connect stranded cables without crimp lug directly to the MCCB.

| Model | Cable Capacity (mm²) |
| :---: | :---: |
| MSX/D 125 | $\min : 1,5$ |
|  | $\max : 50$ |



## Connection of Busbars

## Connection with rear terminals RC

Rear terminals RC allow connection of conductors in a different switchboard compartment to the MCCB body.

The rear terminal can be rotated in steps of 45 degrees on a 125 A to 630A frame MCCBs and 90 degrees on a 800A and 1250A frame MCCBs.


## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## ACCESSORIES AND CONNECTION/MOUNTING OPTIONS

## Plug-in Mounting

The plug in mounting system allows fast replacement of the MCCB body without the need to disturb the terminations. Solid conductors or cables terminated with compression terminals can be used.

## Plug-In Safety Lock

The plug-in MCCB body is automatically locked to the base when the contacts are closed (toggle ON). It cannot be removed unless the contacts are in the open position (toggle OFF or TRIPPED). This system ensures safe removal of the MCCB from the base.


The connection bars for plug-in bases are optional and can be configured in the field either for front or rear access. The illustrations below show possible mounting and connection options for plug in bases. These mounting and connection options are available from 125A to 800A frame models.


1. Mounted on base plate with connection bars mounted for front access. Insulation plates are supplied as standard and must be fitted.

2. Terminations in separate compartment. Connection bars are mounted for top access at the top and rear access at the bottom.

3. Mounted on angle bars. Connection bars are mounted for rear access.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## INSULATION DISTANCES

The insulation distances between the MCCB and earthed metal parts and insulators shown in this section must be maintained to prevent arcing faults occurring due to conductive ionised gas.

In cases where other specifications require different insulation distances to those shown here, the greater distance must be maintained. In cases where two different models are installed one above the other, the insulation distance between the two models should be as for the lower model.

## ATTENTION

Exposed conductors must be insulated up to the breaker terminals. Interpole barriers or optional terminal covers are recommended.
If optional terminal covers are used, insulate the exposed conductor until it overlaps the terminal cover.

Insulation distances


1. Insulation plate
2. Top plate (earthed metal)
3. Interpole barrier
4. Front-connected type
5. Front-connected type with extension bar
6. Rear-connected type, plug-in type
7. Side panel
8. A. Distance from lower breaker to exposed live part of upper breaker terminal (front-connected type) or distance from lower breaker to end face of upper breaker (rear-connected type or plug-in type)
B1. Distance from end face of breaker to top plate
B2. Distance from end face of breaker to insulation plate
C. Gap between breakers
D. Distance from side of breaker to side panel (earthed metal)
E. Dimensions of insulation over exposed conductors

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM
INSULATION DISTANCE IN mm (AT 690V AC Maximum)

| Model | Breaking capacity | A | B1 | B2 | C ${ }^{(4)}$ | D | E |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MSX/D 125 | 25 kA | 50 | 40 | 10 | 0 | 25 | *(1) |
|  | 36 kA | 50 | $40^{(2)}$ | 10 | 0 | 25 | *(1) |
|  | 65 kA | 75 | 45 | 25 | 0 | 25 | *(1) |
| MSX/D 160 | 25 kA | 50 | 40 | 30 | 0 | 25 | *(1) |
|  | 36 kA | 50 | 40 | 30 | 0 | 25 | *(1) |
|  | 65 kA | 100 | 80 | 60 | 0 | 50 | *(1) |
| MSX/D 250 | 25 kA | 50 | 40 | 30 | 0 | 25 | *(1) |
|  | 36 kA | 50 | 40 | 30 | 0 | 25 | *(1) |
|  | 65 kA | 100 | 80 | 30 | 0 | 25 | *(1) |
| MSXE 160 MSXE 250 | 36 kA | 50 | 40 | 30 | 0 | 25 | *(1) |
|  | 65 kA | 100 | 80 | 30 | 0 | 25 | *(1) |
| MSX 400 | 36 kA | 100 | 80 | 40 | 0 | 30 | *(1) |
|  | 50 kA | 100 | 80 | 40 | 0 | 30 | *(1) |
| MSXE 400 MSXE 630 | 36 kA | 120 | 100 | 80 | 0 | 80 | *(1) |
|  | 50 kA | 120 | 100 | 80 | 0 | 80 | *(1) |
| MSXE 1000 (800A) | 50 kA | 120 | 100 | 80 | 0 | 80 | *(1) |
| MSXE 1000 (1000A) | 50 kA | 150 | 120 | 80 | 0 | 80 | *(1) |
| MSXE 1250 | 50 kA | 150 | 120 | 80 | 0 | 80 | *(1) |
| MSXE 1600 | 50 kA | 150 | 150 | 100 | 0 | 100 | *(1) |

## *Note:

${ }^{(1)}$ Insulate the exposed conductor until it overlaps the moulded case at the terminal, or the terminal cover.
${ }^{(2)} 10 \mathrm{~mm}$ at 440 V AC Maximum.
${ }^{(3)}$ Take care that arc gases are emitted to both line and load sides.
${ }^{(4)}$ If using extension bars (optional), ensure the insulation distance for the application.

MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS
MSX - MSXD - MSXE - MSXM

## MOUNTING ANGLE

MSX MCCBs may be mounted at any angle without affecting performance.


Mounting angle does not affect performance.

## Direction of Power Supply



Power can be supplied through MSX MCCBs in either direction without loss of performance.

## MCCB WITH THERMAL-MAGNETIC, ELECTRONIC, RESIDUAL CURRENT PROTECTION AND SWITCH-DISCONNECTORS

MSX - MSXD - MSXE - MSXM

## STANDARD INSTALLATION ENVIRONMENT

MSX MCCBs are intended for installation in the following conditions as standard:

- Operating ambient temperature -10 degrees C to 50 degrees C .

Refer to the tables below for thermal derating information above this temperature.

- Relative humidity of up to $85 \%$.
- Altitude up to 2000 m .
- Atmospheres free from dust, smoke, corrosive gases, inflammable gases, moisture and salt.


## TEMPERATURE RATINGS

Rated currents depending on ambient temperature for MSX MCCBs and MSXD RCBOs.

| MCCB Type | Connection Type | Rating at calibration temperature $\left(50^{\circ} \mathrm{C}\right)$ | Rated Current (A) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $50^{\circ} \mathrm{C}$ | 55 ${ }^{\circ} \mathrm{C}$ | $60^{\circ} \mathrm{C}$ | $65^{\circ} \mathrm{C}$ |
| MSX/D 125 | Front <br> Rear <br> Plug-in | 20A | 20 | 18.5 | 18 | 17.5 |
|  |  | 32A | 32 | 30.5 | 30 | 29 |
|  |  | 50A | 50 | 45 | 43 | 41 |
|  |  | 63A | 63 | 57 | 55 | 52 |
|  |  | 100A | 100 | 94 | 90 | 87 |
|  |  | 125A | 125 | 117 | 113 | 109 |
| MSX/D 160 | Front <br> Rear Plug-in | 160A | 160 | 151 | 146 | 141 |
| MSX/D 250 | Front <br> Rear Plug-in | 250A | 250 | 235 | 227 | 219 |
| MSX 400 | Front <br> Rear <br> Plug-in | 400A | 400 | 380 | 369 | 358 |

Rated currents depending on ambient temperature for MSXE electronic MCCBs

| Electronic Models |  |  | Rated Current (A) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MCCB Type | Connection Type | Rating at calibration temperature ( $40^{\circ} \mathrm{C}$ ) | $30^{\circ} \mathrm{C}$ | $40^{\circ} \mathrm{C}$ | $50^{\circ} \mathrm{C}$ | $55^{\circ} \mathrm{C}$ | $60^{\circ} \mathrm{C}$ | $65^{\circ} \mathrm{C}$ |
| MSXE 160 <br> MSXE 250 | Front Rear Plug-in | 40 A | 40A | 40A | 40A | 40A | 40A | 40A |
|  |  | 125A | 125A | 125A | 125A | 125A | 125A | 125A |
|  |  | 160A | 160A | 160A | 160A | 160A | 160A | 160A |
|  | Front Rear | 250A | 250 | 250 | 237.5 | 225 | 200 | 200 |
|  | Plug-in | 250A | 250 | 225 | 200 | 200 | 157.5 | 157.5 |
| MSXE 400 | Front Rear Plug-in | 400A | 400 | 400 | 400 | 380 | 360 | 320 |
| MSXE 630 | Front <br> Rear | 630A | 630 | 630 | 630 | 598.5 | 567 | 504 |
|  | Plug-in | 630A | 536 | 536 | 504 | 397 | 397 | 397 |
| MSXE 1000 (800A) | Front | 800A | 800 | 800 | 800 | 720 | 640 | 504 |
|  | Rear, Plug-in | 800A | 800 | 800 | 760 | 720 | 640 | 504 |
| MSXE 1000 (1000A) ${ }^{(1)}$ | Front Rear | 1000A | 1000 | 1000 | 900 | 800 | 630 | 630 |
| MSXE 1250 ${ }^{(1)}$ | Front | 1250A | 1250 | 1250 | 1250 | 1000 | 787 | 787 |
|  | Rear | 1250A | 1250 | 1250 | 1125 | 1000 | 787 | 787 |
| MSXE 1600 ${ }^{(1)}$ | Front | 1600A | 1600 | 1600 | 1600 | 1440 | 1280 | 1008 |
|  | Rear | 1600A | 1600 | 1600 | 1520 | 1440 | 1280 | 1008 |

Note:
${ }^{11}$ Supplied with terminal bars fitted as standard. Temperature ratings are not valid if the terminal bars are removed.

## COMPACT MCCB AND SWITCH DISCONNECTORS

MSX 160c, MSXM 160c

## FRONT TERMINALS



Front extended and spread terminals FB


## E: Handle Centre Line

L: Handle Frame Centre Line

## COMPACT MCCB AND SWITCH DISCONNECTORS

MSX 160c, MSXM 160c
REAR TERMINALS

Rear terminals RC


| Rated current (A) | A | B | C | D | E | F |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1 2 5 - 1 6 0}$ | 12.5 | 8.5 | 4 | 13 | 16 | 5 |

PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm or more around the handle escutcheon.

DRILLIN PLAN
(front view)




## COMPACT MCCB AND SWITCH DISCONNECTORS

MSX 250c, MSXM 250c
FRONT TERMINALS

Front terminals FC


Front extended and spread terminals FB


## E: Handle Centre Line th: Handle Frame Centre Line

## COMPACT MCCB AND SWITCH DISCONNECTORS

MSX 250c, MSXM 250c
REAR TERMINALS

## Rear terminals RC



PANEL CUTOUT
(front view)


Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon.

DRILLIN PLAN


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION

MSX 125 fixed version, MSXD 125

## FRONT TERMINALS

Front terminals for cables FW and front terminals FC
$3 P$


Front extended terminals FB

Preparation of conductor



4P


E: Handle Centre Line

## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 125 fixed version, MSXD 125

## REAR TERMINALS

## Rear terminals RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm or more around the handle escutcheon.

DRILLIN PLAN


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 125 fixed version, MSXD 125

FRONT TERMINALS WITH MOTOR OPERATOR


PANEL HINGE POSITION

Panel hinge position (hatching area) bottom view


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 125 fixed version, MSXD 125

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT

Panel cutout (Front view)


Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon.

DRILLIN PLAN


MCCB msx 125 plug-in version

DIMENSIONS

Outline


## TERMINATION OF BUSBAR

Preperation of conductor


## E: Handle Centre Line

MCCB MSx 125 plug-in version


Drilling plan (front view)
$\begin{array}{ll}3 P & 4 P \\ H & H\end{array}$


Detail of connecting part
Oriented for rear access

MCCB msx 125 plug-in version

## MOUNTING ON THE BACK OF FIXING PLATE

(rear view)


Drilling plan (front view)


MCCB MSx 125 plug-in version

MOUNTING ON THE FRONT OF FIXING PLATE


Drilling plan (front view)

$$
\begin{array}{ll}
3 P & 4 P \\
\text { H } & \text { H }
\end{array}
$$



Detail of connecting part
Oriented for front access


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

FRONT TERMINALS FC


Preparation of conductor


Front extended terminals FB


E: Handle Centre Line L: Handle Frame Centre Line

## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

## REAR TERMINALS RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm or more around the handle escutcheon.

DRILLIN PLAN


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

FRONT TERMINALS WITH MOTOR OPERATOR


PANEL HINGE POSITION
(hatching area)
bottomview


## MCCB AND MCCB WITH RESIDUAL CURRENT PROTECTION <br> MSX 160, MSX 250 fixed version, MSXD 160, MSXD 250

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon

DRILLIN PLAN


MCCB MsX 160, MSX 250 plug-in version

DIMENSIONS


TERMINATION OF BUSBAR


## MOUNTING ON A SUPPORT OR RAILS



Drilling plan(front view)


Detail of connecting part
Oriented for rear access


Terminal bars should be connected altemately on adjacent poles.

MCCB MSX 160, MSX 250 plug-in version

## MOUNTING ON THE BACK OF FIXING PLATE



Drilling plan (front view)


Terminal bars should be connected alternately on adjacent poles.

MCCB Msx 160, Msx 250 plug-in version

## MOUNTING ON THE FRONT OF FIXING PLATE



Drilling plan (front view)


## ELECTRONIC MCCB мsXe 160, msxe 250 fixed version

## FRONT TERMINALS FC



Front extended terminals FB


ELECTRONIC MCCB мsXe 160, msXe 250 fixed version

## REAR TERMINALS RC



PANEL CUTOUT
(front view)


Panel cutout dimensions shown give an allowance of 1.0 mm or more around the handle escutcheon.

DRILLIN PLAN
(front view)


## ELECTRONIC MCCB msXe 160, msXe 250 fixed version

FRONT TERMINALS WITH MOTOR OPERATOR


PANEL HINGE POSITION
(hatching area)
bottom view


ELECTRONIC MCCB мsXe 160, msXe 250 fixed version

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon.

DRILLIN PLAN
(front view)



## ELECTRONIC MCCB msxe 160, msXe 250 plug-in version

## DIMENSIONS



TERMINATION OF BUSBAR
Preperation of conductor


## E: Handle Centre Line

ELECTRONIC MCCB msxe 160, msxe 250 plug-in version

## MOUNTING ON A SUPPORT OR RAILS

(rear view)


Drilling plan (front view)



Drilling plan (front view)
Oriented for rear access


Terminal bars should be connected altemately on adjacent poles

## ELECTRONIC MCCB msxe 160, msXe 250 plug-in version

MOUNTING ON THE BACK OF FIXING PLATE


Drilling plan (front view)



Detail of connecting part
Oriented for rear access


Terminal bars should be connected alternately on adjacent poles

ELECTRONIC MCCB msxe 160, msxe 250 plug-in version

MOUNTING ON THE FRONT OF FIXING PLATE


Drilling plan (front view)
$3 P$
H


Detail of connecting part Oriented for front access


## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version
FRONT TERMINALS FC


## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version
REAR TERMINALS RC


PANEL CUTOUT
(front view)


Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon.

DRILLIN PLAN
(frontview)



MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS
MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version
FRONT TERMINALS WITH MOTOR OPERATOR


Preparation of 400A
conductor On side 36


PANEL HINGE POSITION


## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

## FRONT TERMINALS WITH EXTENSION BARS



PANEL CUTOUT
(front view)


Panel cutout dimensions shown give an allowance of 1.5 mm around motor operator

## DRILLIN PLAN

(front view)


MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS
MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version
REAR TERMINALS WITH MOTOR OPERATOR


Drilling pian
(front view)


## E: Handle Centre Line

## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSX 400, MSXE 400, MSXM 400 plug-in version, MSXE 630, MSXM 630 plug-in version

## DIMENSIONS

Outline


Preperation of conductor


## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version

## MOUNTING ON A SUPPORT OR RAILS



Detail of connecting part
Oriented far rear access


Terminal bars should be connected
alternately on adjacent poles.

## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 plug-in version, MSXE 630, MSXM 630 plug-in version

## MOUNTING ON THE BACK OF FIXING PLATE

(rear view)


Drilling plan (front view)
3P
4P
H
H


Detail of connecting part
Oriented far rear access


Teminal bars should be connected alternately on adjacent poles.

## MCCB, ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSX 400, MSXE 400, MSXM 400 fixed version, MSXE 630, MSXM 630 fixed version
MOUNTING ON THE FRONT OF FIXING PLATE


Drilling plan (front view)


Detail of connecting part Oriented far front access


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

## FRONT EXTENDED TERMINALS FB


(front view)


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSXE 1000 (800A), MSXM 1000 (800A) fixed version

FRONT TERMINALS FC


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

## REAR TERMINALS RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon.


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSXE 1000 (800A), MSXM 1000 (800A) fixed version

FRONT TERMINALS WITH MOTOR OPERATOR


REAR TERMINALS WITH MOTOR OPERATOR
(hatching area)
(bottom view)


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) fixed version

## FRONT TERMINALS WITH EXTENSION BARS



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.5 mm around motor operator.


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version
DIMENSIONS


TERMINATION OF BUSBAR

Preperation of conductor


## E: Arrangement Standard Line L: Handle Frame Centre Line

## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

Mounting base
(rear view)


Detail of connecting part Oriented for rear access

Drilling plan (front view)


Terminal bars should be connected
alternately on adjacent poles.

## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

## MOUNTING ON THE BACK OF FIXING PLATE


(rear view)


Drilling plan
(front view)

Detail of connecting part


Oriented for rear access


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000 (800A), MSXM 1000 (800A) plug-in version

## MOUNTING ON THE FRONT OF FIXING PLATE



## ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSXE 1000, MSXM 1000 (1000A)

FRONT EXTENDED TERMINALS FB


## E: Arrangement Standard Line $\quad$ Lt: Handle Frame Centre Line

## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)

## REAR TERMINALS RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm around the handle escutcheon.

DRILLIN PLAN


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)
FRONT TERMINALS WITH MOTOR OPERATOR


PANEL HINGE POSITION
(hatching area)
(bottom view)


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1000, MSXM 1000 (1000A)

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT


Panel cutout dimensions shown give
an allowance of 1.5 mm around moto operator.

DRILLIN PLAN


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1250, MSXM 1250
FRONT EXTENDED TERMINALS FB


## E: Arrangement Standard Line L: Handle Frame Centre Line

## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1250, MSXM 1250

## REAR TERMINALS RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon.

## DRILLIN PLAN



## ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSXE 1250, MSXM 1250

FRONT TERMINALS WITH MOTOR OPERATOR


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1250, MSXM 1250

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm around motor operator.

## DRILLIN PLAN



## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600
FRONT EXTENDED TERMINALS FB


## E: Arrangement Standard Line L: Handle Frame Centre Line

## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600

## REAR TERMINALS RC



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.5 mm around the handle escutcheon.

DRILLIN PLAN
(front view)



## ELECTRONIC MCCB AND SWITCH DISCONNECTORS

MSXE 1600, MSXM 1600
FRONT TERMINALS WITH MOTOR OPERATOR


## ELECTRONIC MCCB AND SWITCH DISCONNECTORS <br> MSXE 1600, MSXM 1600

## REAR TERMINALS WITH MOTOR OPERATOR



PANEL CUTOUT


Panel cutout dimensions shown give an allowance of 1.0 mm around motor operator.

DRILLIN PLAN
(front view)



## DIRECT ROTARY HANDLES

## MSX/M 160c - MSX/M 250c

## Applicable breaker types

MSX 160c, MSXM 160c
MSX 250c, MSXM 250c

## Outline dimensions




## DIRECT ROTARY HANDLES

## MSX/D 125 -MSX/D/E 160 - MSX/D/E 250

| Applicable MCCB | A |
| :--- | :---: |
| MSX 125, MSX 160, MSX 250 | $106 \pm 2$ |
| MSXD 125, MSXD 160, MSXD 250 |  |
| MSXE 160, MSXE 250 | $141 \pm 2$ |



## DIRECT ROTARY HANDLES

## MSX/E/M 400 - MSXE/M 630

| Applicable MCCB | A | B |
| :--- | :---: | :---: |
| MSXE 630, MSXM 630 | $150 \pm 2$ | 97 |
| MSX 400, MSXE 400, MSXM 400 |  |  |



Positional relationship between the hinge and handle as viewed from the load side of the breaker


MSXE/M 1000

| Applicable MCCB | A |
| :--- | :---: |
| MSXE 1000, MSXM $\mathbf{1 0 0 0}$ | $150 \pm 2$ |



 from the load side of the breaker.


## ASL: Arrangement Standard Line ©: Arrangement Standard Line L: Handle Frame Centre Line

## DIRECT ROTARY HANDLES

## MSXE/M 1250 - MSXE/M 1600

| Applicable MCCB | A | Mounting screw* |
| :--- | :---: | :---: |
| MSXE 1250, MSXM 1250 | $197 \pm 2$ | M6 x 110, 4pcs |
| MSXE 1600, MSXM 1600 | $217 \pm 2$ |  |

*Secured to breaker cover


## TRANSMITTED ROTARY HANDLES

| MSX/M 160c |  |  |
| :--- | :---: | :---: |
|  |  |  |
| Applicable breaker types | $\mathbf{A} \pm 2$ | $\mathbf{B} \pm \mathbf{0 . 5}$ |
| M5X 160c, M5XM 160c | 175 min. | 80 |
|  | 453 max. | 358 |

Note
"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

Outline dimensions


Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the $\square / \square \backslash$ area.


MSX/M 250c

| Applicable breaker types | $\mathbf{A} \pm \mathbf{2}$ | $\mathbf{B} \pm \mathbf{0 . 5}$ |
| :--- | :---: | :---: |
| MSX 160c, MSXM 160c | 175 min. | 80 |
|  | 453 max. | 358 |

## Note

"Min (minimum)" means the minimum possible distance from the panel surface to the breaker mounting surface, which can be formed by cutting the square shaft.
"Max (maximum)" means the maximum distance of the same section, which is formed with no cutting of the square shaft.
A: Distance from the panel surface to the breaker mounting surface
B: Length of the square shaft used

Panel cutout dimensions



- Positions of the hinge and handle as seen from the load side of the breaker. Ensure that the hinge is positioned in the $\square / \square \backslash$ area.



## E: Handle Centre Line L: Handle Frame Centre Line

## TRANSMITTED ROTARY HANDLES

MSX/D 125 -MSX/D/E 160 - MSX/D/E 250

| Applicable MCCB | A $^{* 1}$ | B | C |
| :--- | :---: | :---: | :---: |
| MSX 125, MSX 160, MSX 250 | 175 min | 80 | 144 |
| MSXD 125, MSXD 160, MSXD 250 | 453 max. | 358 | 144 |
| MSXE 160, MSXE 250 | 210 min | 80 | 144 |
|  | 488 max | 358 | 179 |

Min means the length for A . by cutting the shaft.
${ }^{*}:$ : Max. means the maximum length fot $A$ without cutting the shaft.
The shaft can be cut to the required length.

A: Distance from the panel surface to the breaker mounting surface B: Length of the square shaft used



Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.


## TRANSMITTED ROTARY HANDLES

MSX/E/M 400 - MSXE/M 630

| Applicable MCCB | A $^{* 1}$ | B | C |
| :--- | :---: | :---: | :---: |
| MSX 400, MSXE 400, MSXM 400 | 220 min. | 86 | 188.5 |
| MSXE 630, MSXM 630 | 456 max. | 322 | 188.5 |

${ }^{*}$ : Min. means the minimum length for $A$ by cutting the shaft.
Max. means the maximum length fot $A$ without cutting the shaft.
Max. means the maximum length fot $A$ without cutting the shaft.

## A: Distance from the panel surface to the breaker mounting surface

B: Length of the square shaft used


## E: Handle Centre Line

## TRANSMITTED ROTARY HANDLES

## MSXE/M 1000

| Applicable MCCB | A*1 $^{* 1}$ | B | C |
| :--- | :---: | :---: | :---: |
| MSXE 1000, MSXM 1000 | 220 min. | 86 | 188.5 |
|  | 456 max. | 322 | 188.5 |

${ }^{*}$ : Min. means the minimum length for $A$ by cutting the shaft.
Max. means the maximum length fot $A$ without cutting the shaft.
The shaft can be cut to the required length.

## A: Distance from the panel surface to the breaker mounting surface

## B: Length of the square shaft used



## TRANSMITTED ROTARY HANDLES

## MSXE/M 1250 - MSXE/M 1600

| Applicable MCCB | A $^{* 1}$ | B | C |
| :--- | :---: | :---: | :---: |
| MSXE 1250, MSXM 1250 | 276.5 min. | 86 | 245 |
|  | 512.5 max. | 322 | 245 |
| MSXE 1600, MSXM 1600 | 296.5 min. | 86 | 265 |
|  | 532.5 max. | 322 | 265 |

*1: Min. means the minimum length for $A$ by cutting the shaft
Max. means the maximum length fot $A$ without cutting the shaft.
The shaft can be cut to the required length.

## A: Distance from the panel surface to the breaker mounting surface B: Length of the square shaft used



Positional relationship between the hinge and handle as viewed from the load side of the breaker. The hinge must be inside the hatched area.



Plug-in mounted version
This version can be mounted simply by being plugged in the breaker body.

To be stated when ordering.

- Please state the arder codes in the table below. Covers should be ordered individually far Line and Load side.

Types and dimensions of terminal covers, units in mm
for front-connected breakers with extended and spread terminals

| Types of breakers | Terminal cover | A |  | B |  | C |  | D |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Type | 3P | 4P | 3P | 4P | 3P | 4P | 3P | 4P |
| MSX 160c, MSXM 160c | Front terminals FC and extended FB | 75 | 100 | 50 | 50 | 61 | 61 | 60.3 | 60.3 |
|  | Front terminals spread FB | 105 | 140 | 60 | 60 | 61 | 61 | 60.3 | 60.3 |
| MSX 250c, MSXM 250c | Front terminals FC and extended FB | 105 | 140 | 55 | 55 | 59 | 59 | 57.5 | 57.5 |
|  | Front terminals spread FB | 147.5 | 196 | 55 | 55 | 59 | 59 | 57.5 | 57.5 |

## TERMINAL COVERS



To be stated when ordering

- Please state "with CR" if ordering along with the breaker.
- Covers should be ordered individually for Line and Load side.


## Types and dimensions of terminal covers, units in mm

for rear-connected

| Types of breakers | A |  | B |  | B' | C |  | D |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 3P | 4P | 3P | 4P |  | 3P | 4P | 3P | 4P |
| MSX 160c, MSXM 160c | 75 | 100 | 5.5 | 5 | - | 61 | 61 | 60.3 | 60.3 |
| MSX 250c, MSXM 250c | 105 | 140 | 2.3 | 2.3 | 5.3 | 58.6 | 58.6 | 57.1 | 57.1 |

for front-connected breakers with terminals for cables (In up to 100A)

| Types of breakers | A |  | B | C | D |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 3P | 4P |  |  |  |
| MSX 160c, MSXM 160c | 75 | 100 | 55 | 61 | 60.3 |

## TERMINAL COVERS

Terminal covers for front terminals FC, extended and spread terminals FB


## Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.


## Screw-mounted version

The terminal covers for 800A are mounted to the breakers using tapping screws.

The terminal cover for 1250 AF is mounted using insert nuts on the breaker cover using screws.
The insert nuts do not come standard with the breaker.

Please be sure to state "with terminal cover (CF)" when ordering the breaker.


## TERMINAL COVERS

Terminal covers for front terminals for cables FW


| MCCB type | Connection | A |  | B |  | $\begin{gathered} \mathbf{B}^{\prime} \\ \hline \mathbf{3 P - 4 P} \end{gathered}$ | C |  | D |  | Mounting version |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 3P | 4P | 3P | 4P |  | 3P | 4P | 3P | 4P | Plug-in mounted | Screw mounted |
| MSX 125 | Front conn. | 90 | 120 | 40 | 40 | - | 48 | 48 | 46 | 46 | 0 | - |
| MSXD 125 | Cable clamp | 90 | 120 | 2.5 | 2.5 | 6 | 61 | 61 | 59.5 | 59.5 | 0 | - |
| MSX 160, MSX 250 MSXD 160, MSXD 250 | Front conn. (1) | 105 | 140 | 55 | 55 | - | 54 | 54 | 52 | 52 | 0 | - |
| MSXE 160, MSXE 250 | Front conn. (1) | 105 | 140 | 55 | 55 | - | 89 | 89 | 87 | 87 | 0 | - |
| MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630 | Front conn. Wide type | 140 | 185 | 85 | 85 | - | 97 | 97 | 94.5 | 94.5 | 0 | - |
|  | Front conn. Straight type | 180 | 240 | 110 | 114 | - | 97 | 98 | 96 | 98 | 0 | - |
| MSXE 1000, MSXM 1000 | Front conn. | 215 | 285 | 130 | 130 | - | 99.5 | 99.5 | 9 | 9 | - | 0 |
| MSXE 1250, MSXM 1250 | Front conn. | 215 | 285 | 130 | 130 | - | 115 | 115 | 9 | 9 | - | 0 |

## TERMINAL COVERS

Terminal covers for rear terminals RC and plug-in MCCBs


## Plug-in mounted version

This version can be mounted simply by being plugged in the breaker body.


## Screw-mounted version

The terminal covers for 630 to 1000AF are mounted to the breakers using tapping screws.


| MCCB type | A |  | B |  | B' | C |  | D |  | Mounting version |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 3P | 4P | 3P | 4P |  | 3P | 4P | 3P | 4P | Plug-in mounted | Screw mounted |
| $\begin{aligned} & \text { MSX } 125 \\ & \text { MSXD } 125 \end{aligned}$ | 90 | 120 | 2 | 2 | 6 | 41.5 | 41.5 | 40.5 | 40.5 | 0 | - |
| MSX 160, MSX 250 MSXD 160, MSXD 250 | 105 | 140 | 2 | 2 | 6 | 42.5 | 42.5 | 39.5 | 39.5 | 0 | - |
| MSXE 160, MSXE 250 | 105 | 140 | 2 | 2 | 6 | 77.5 | 77.5 | 39.5 | 39.5 | 0 | - |
| MSX 400, MSXE 400, MSXM 400 MSXE 630, MSXM 630 | 140 | 185 | 3 | 3 | 5 | 97 | 97 | 93 | 93 | 0 | - |
| MSXE 1000, MSXM 1000 | 206 | 280 | 14 | 18 | - | 101 | 99 | 100.5 | 98 | - | 0 |

## INTERPOLE BARRIERS

Interpole barriers serve to enhance electrical insulation between pole and prevent short-circuit due to electrically conductive foreign matter. Combined use of interpole barriers and terminal covers (standard type) is not possible.


Dimension (mm)

| Types of breakers | A | B |
| :--- | :---: | :---: |
| MSX 160c, MSXM 160c | 50 | 55 |
| MSX 250c, MSXM 250c | 101 | 53 |

Note: Line side interpole barriers are supplied as standard for all front connected breakres.

DIMENSION


## LINK MECHANICAL INTERLOCIKS

MSX 125


| MCCB Type | A |
| :--- | :---: |
| MSX 125 | 81.7 |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock


## LINK MECHANICAL INTERLOCIKS

MSX/M 250c - MSX/E 160 - MSX/E 250


| MCCB Type | A |
| :--- | :---: |
| MSX 250c, MSXM 250c <br> MSX 160, MSX 250 | 81.7 |
| MSXE 160, MSXE 250 | 116.7 |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.


## ASL: Arrangement Standard Line E: Handle Centre Line L: Handle Frame Centre Line

## LINK MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

## MSX/E/M 400 - MSXE/M 630



| MCCB Type | A |
| :--- | :---: |
| MSX 400, MSXE 400, MSXM 400 <br> MSXE 630, MSXM 630 | 213 |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.


## LINK MECHANICAL INTERLOCIKS WITH DIRECT ROTARY HANDLE

MSX/E/M 400 - MSXE/M 630


| MCCB Type | A | B |
| :--- | :---: | :---: |
| MSX 400, MSXE 400, MSXM 400 <br> MSXE 630, MSXM 630 | 200 | $150 \pm 2$ |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.


## ASL: Arrangement Standard Line E: Handle Centre Line L: Handle Frame Centre Line

## LINK MECHANICAL INTERLOCIKS WITH MOTOR OPERATOR

## MSXE/M 1000



| MCCB Type | A |
| :--- | :---: |
| MSXE 1000, MSXM 1000 | 213 |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.


## LINK MECHANICAL INTERLOCIKS WITH DIRECT ROTARY HANDLE

MSXE/M 1000


| MCCB Type | A | B |
| :--- | :---: | :---: |
| MSXE 1000, M5XM 1000 | 200 | 150 |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.


## ASL: Arrangement Standard Line E: Handle Centre Line L: Handle Frame Centre Line

## WIRE MECHANICAL INTERLOCKS

MSX 125







| MCCB Type | A |
| :--- | :---: |
| M5X 125 | 81.7 |


| Cable length | B | C |
| :--- | :---: | :---: |
| $1 \mathbf{m}$ | $130 \min -480 \max$ | $160 \min -480 \max$ |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

WIRE MECHANICAL INTERLOCKS

MSX/M 250c - MSX/E 160 - MSX/E 250


| MCCB Type | A | B |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| MSX 250c, MSXM 250 c MSX 160, MSX 250 | 81.7 | 64 | Cable length | C | D |
| MSXE 160, MSXE 250 | 116.7 | 99 | 1m | 155min - 480max | 180min - 480max |

[^1]
## ASL: Arrangement Standard Line E: Asse di simmetria orizzontale L: Asse di manovra

## WIRE MECHANICAL INTERLOCIKS WITH MOTOR OPERATOR

MSX/E/M 400 - MSXE/M 630


Mounting hol


| MCCB Type | A | B |
| :--- | :---: | :---: |
| MSX 400, MSXE 400, MSXM 400 | 213 | 105.4 |
| MSXE 630, MSXM 630 |  |  |


| Cable length | C | D |
| :--- | :---: | :---: |
| $\mathbf{1 m}$ | $180 \min -480 \max$ | $225 \min -480 \max$ |

[^2]
## WIRE MECHANICAL INTERLOCIKS WITH DIRECT ROTARY HANDLE

MSX/E/M 400 - MSXE/M 630



The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

## ASL: Arrangement Standard Line E: Asse di simmetria orizzontale L: Asse di manovra

## WIRE MECHANICAL INTERLOCKS WITH MOTOR OPERATOR

MSXE/M 1000


Mechanical Interlock
cable ø5


| MCCB Type | A |  |  | Cable length | C | D |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MSXE 1000, MSXM 1000 | 213 |  | $1 m$ | $250 \mathrm{~min}-430 \mathrm{max}$ | $320 \mathrm{~min}-430 \mathrm{max}$ |  |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

## WIRE MECHANICAL INTERLOCIKS WITH DIRECT ROTARY HANDLE

## MSXE/M 1000



| MCCB Type | A | B | Cable length | C | D |
| :---: | :---: | :---: | :---: | :---: | :---: |
| MSXE 1000, MSXM 1000 | 200 | $150 \pm 2$ | 1m | 250min - 430max | $320 \min -430 \max$ |

The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

## ASL: Arrangement Standard Line E: Asse di simmetria orizzontale L: Asse di manovra

## WIRE MECHANICAL INTERLOCKS

## MSXE/M 1250 - MSXE/M 1600



Drilling plan (front view)


Vertical installation


Horizontal installation $\quad 13$


| MCCB Type | A | Cable length | P | L |
| :---: | :---: | :---: | :---: | :---: |
| MSXE 1250, MSXM 1250 | 120 | 1m | 650-500-350 | 450-500-530 $\pm 30$ |
| MSXE 1600, MSXM 1600 | 140 |  |  |  |


[^0]:    For technical information contact the Technical Assistance Service or visit gewiss.com

[^1]:    The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

[^2]:    The use of rotary handles or motor operator is recommended in the case of link mechanical interlock.

