

**TEMBREAK 2**  
MOULDED CASE CIRCUIT BREAKERS  
16A TO 630A

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**TEMBREAK 2**  
MINI MOULDED CASE CIRCUIT BREAKERS  
10A TO 100A

8.	TemBreak 2 MINI Moulded Case Circuit Breakers	
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**TEMBREAK**  
MOULDED CASE CIRCUIT BREAKERS  
630A TO 1600A

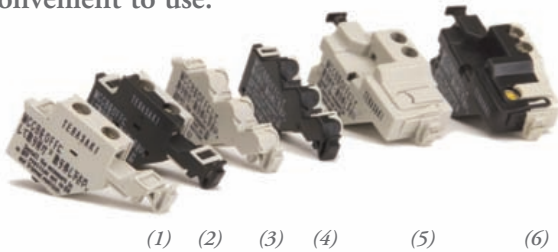
9.	TemBreak Moulded Case Circuit Breakers	
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# ACCESSORIES

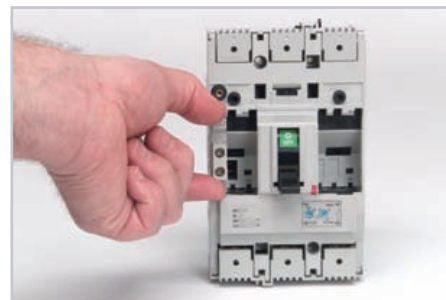
## ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Electrical control accessories for TemBreak 2 are designed with the installer in mind. Status and alarm contacts, remote tripping coils and undervoltage protection coils are of modular design and convenient to use.



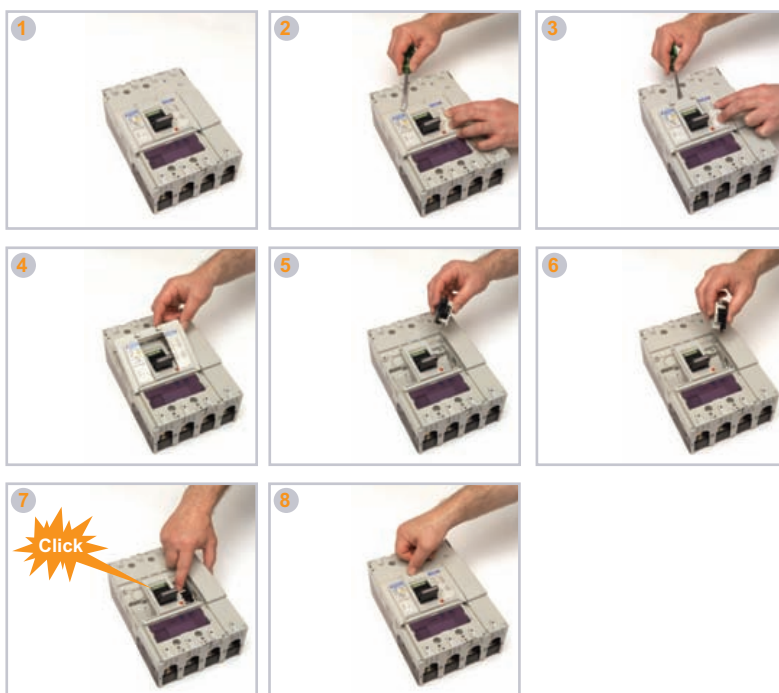
- 1) Heavy-duty auxiliary switch
- 2) Heavy-duty alarm switch
- 3) General-purpose auxiliary switch
- 4) General-purpose alarm switch
- 5) Shunt trip
- 6) Undervoltage trip

- Every accessory fits every MCCB and Switch-Disconnecter in the range.
- All accessories are endurance tested to the same level as MCCBs.
- TemBreak 2 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. Alternatively a terminal block which clips to the side of the MCCB is available.



### Installing Accessories in a 4 pole S400 model

The internal accessories can be easily installed in the field without special tools or product training.



### 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

## ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

Valid Maximum Accessory Combinations

Frame size (A): 125	160 and 250	400 and 630

- Status indication switches mount in the left side of the MCCB. *General purpose and heavy duty status indication switches cannot be mixed in the same MCCB. Only one alarm switch can be fitted to an MCCB.*
- Shunt trips and undervoltage trips mount in the right side of the MCCB.
- It is not possible to install a shunt trip and an undervoltage trip in an MCCB as they occupy the same location. Undervoltage trips can provide remote tripping if necessary by wiring a normally closed contact or pushbutton in series with the protected supply.
- Undervoltage trips with time delays require an external time delay controller which clips to the side of the MCCB.

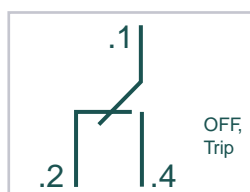
# ACCESSORIES

## ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

### Status Indication Switches



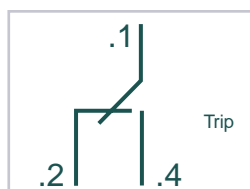
General Purpose Auxiliary Switch



Terminal Designations and Function of General Purpose Auxiliary Switch



General Purpose Alarm Switch



Terminal Designations and Function of General Purpose Alarm Switch

### General Purpose Auxiliary Switch (AX)

An auxiliary switch electrically indicates the ON or OFF status of the MCCB. The general purpose type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.

Auxiliary switches are colour coded grey. The cable capacity of the terminals is 0.5 to 1.25mm<sup>2</sup>.

The general purpose auxiliary switch meets the requirements of IEC 61058-1.

### General Purpose Alarm Switch (AL)

An alarm switch electrically indicates the TRIP status of the MCCB. The general purpose type is a changeover switch with 3 terminals.

A microcurrent version is available for switching currents as low as 1mA.

Alarm switches are colour coded grey and black. The cable capacity of the terminals is 0.5 to 1.25mm<sup>2</sup>.

The general purpose alarm switch meets the requirements of IEC 61058-1.

General purpose auxiliaries and alarm switch ratings						
Volts (V)	AC		Volts (V)	DC		Minimum Load
	Amperes (A)			Amperes (A)		
	Resistive Load	Inductive Load		Resistive Load	Inductive Load	
440	-	-	250	-	-	100mA at 15V DC.
240	3	2	125	0.4	0.05	
110	3	2	30	3	2	

Microcurrent versions		
Volts (V)	DC	
	Amperes (A)	
	Resistive Load	Minimum Load
30	0.1	1mA at 5V DC and 30V DC.

## ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

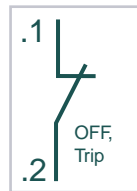
### Status Indication Switches



Heavy Duty Auxiliary Switch



*Terminal Designations and Function of Heavy Duty Auxiliary Switch, a contact*



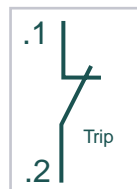
*Terminal Designations and Function of Heavy Duty Auxiliary Switch, b contact*



Heavy Duty Alarm Switch



*Terminal Designations and Function of Heavy Duty Alarm Switch, a contact*



*Terminal Designations and Function of Heavy Duty Alarm Switch, b contact*

### Heavy Duty Auxiliary Switch (AX)

The heavy duty auxiliary switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating safety circuits. The auxiliary switch electrically indicates the ON or OFF status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

Heavy duty auxiliary switches are colour coded grey. The cable capacity of the terminals is 1.25 to 2.5mm<sup>2</sup>.

The heavy duty auxiliary switch meets the requirements of IEC 60947-5-1.

It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.



### Heavy Duty Alarm Switch (AL)

The heavy duty alarm switch has an impulse withstand voltage (Uimp) of 6kV and is suitable for isolating control circuits. The alarm switch electrically indicates the TRIP status of the MCCB. The heavy duty type is a bridge switch with two terminals. It is available in either normally open or normally closed configurations.

Heavy duty auxiliary switches are colour coded grey and black. The cable capacity of the terminals is 1.25 to 2.5mm<sup>2</sup>.

The heavy duty alarm switch meets the requirements of IEC 60947-5-1.

It has direct opening action, recommended by IEC 60204-1 Safety of Machinery - Electrical Equipment for Machines.



Ratings of Heavy Duty Auxiliary and Alarm Switches					
AC			DC		
Volts (V)	Amperes (A)		Volts (V)	Amperes (A)	
	Resistive Load	Inductive Load		Resistive Load	Inductive Load
500	1	1	-		
440	3	3	250	0.5	0.5
240	4	4	125	1	1
110	5	5	48	3	2.5
48	6	6	24	6	2.5

# ACCESSORIES

## ELECTRICAL CONTROL USING INTERNALLY MOUNTED ACCESSORIES

### Remote Tripping Devices

#### Shunt Trip (SHT)

A shunt trip allows an MCCB to be tripped remotely on the application of the rated coil voltage across the shunt trip terminals. TemBreak 2 shunt trips have **continuously rated coils** and are suitable for use in electrical interlocking applications.

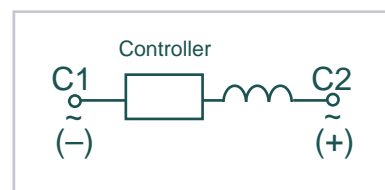
The MCCB contacts and toggle will move to the tripped position when the shunt trip is operated.

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 1.25mm<sup>2</sup>. Shunt trips are colour coded grey.



Shunt Trips



Terminal Designations of Shunt Trips

Ratings of Shunt Trips							
Rated Voltage	Voltage AC			Voltage DC			
	100-120	200-240	380-450	24	48	100-120	200-240
Excitation Current (A)	0.014	0.014	0.0065	0.03	0.03	0.011	0.011

#### Under Voltage Trip (UVT)

An undervoltage trip will trip the 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 trip 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.

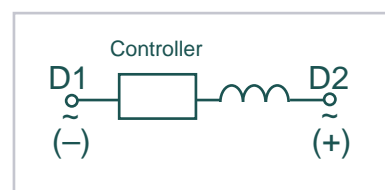
The MCCB contacts and toggle will move to the tripped position when the under-voltage trip operates.

Undervoltage trips with AC operating voltages are available with 500ms time delays. Time-delay units are fitted to the outside of MCCBs.

The cable capacity of the terminals is 0.5 to 1.25mm<sup>2</sup>. Undervoltage trips are colour coded grey and black.



Undervoltage Trips



Terminal Designations of Undervoltage Trips

Ratings of Undervoltage Trips						
Rated Voltage	Power supply capacity (VA)			Excitation current (mA)		
	Voltage AC			Voltage DC		
	100-120	200-240	380-450	24	100-120	200-240
Power Supply Capacity (VA)	1.4	1.4	2.28	23	10	10



## TERMINATION OF CONTROL WIRING

Terminal blocks are for optional use with all types of internally mounted accessory.

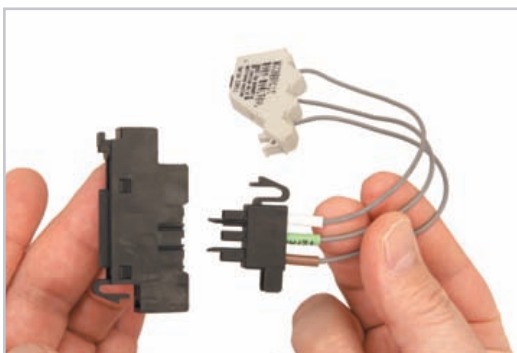


### Terminal Block for Plug-in MCCBs

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 or 630A frame MCCB.



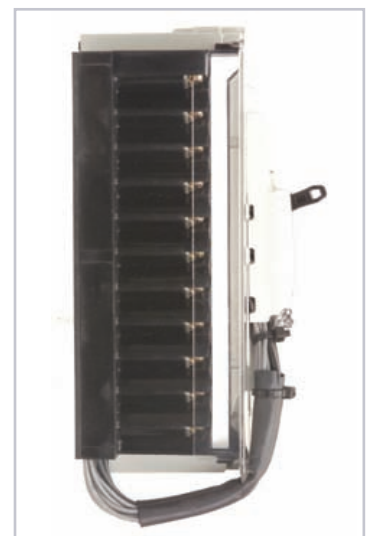
*Terminal Block for Plug-in MCCBs*

### Terminal Block for Front-Connected and Rear-Connected MCCBs (TF)

A terminal block facilitates convenient and accessible control wiring to internally mounted accessories. It allows the use of control wiring cables with larger cross-sectional area than permitted by the internal accessories themselves.

This terminal block can be clipped to either side of the MCCB. If mounted on the left incoming wiring will be fed vertically up to the terminals. If mounted on the right, the incoming wiring will be fed vertically down to the terminals. Terminal blocks are pre-fitted with outgoing wiring which can be terminated directly on each internal accessory.

The maximum incoming cable size to the terminal block is 2.0mm<sup>2</sup>. Terminal blocks have 11 terminals.

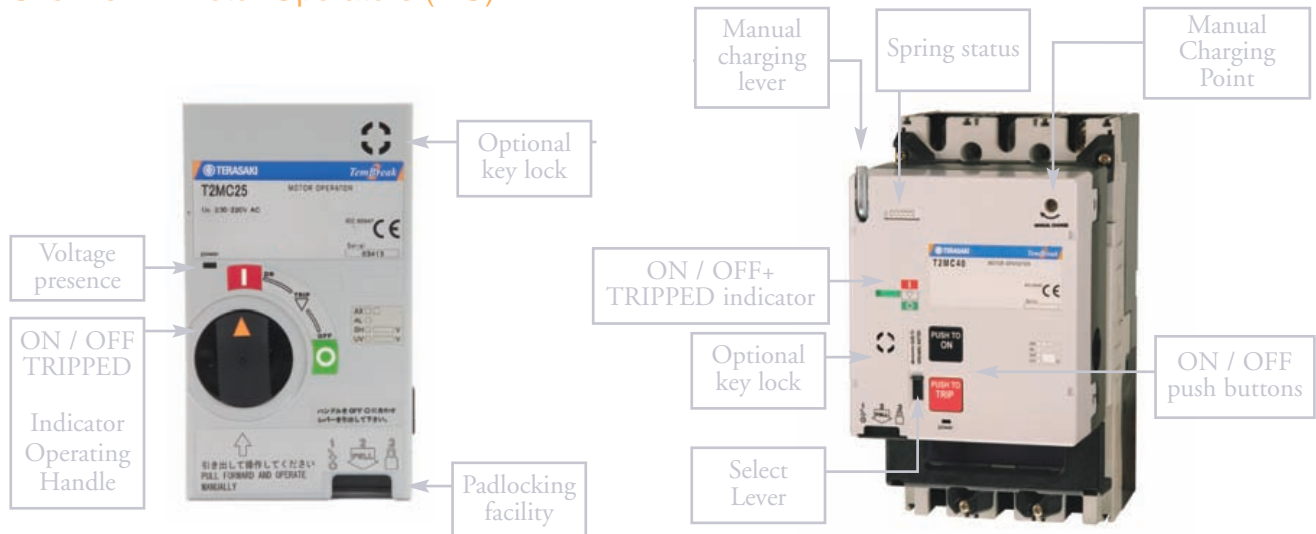


*Terminal Block for Front-Connected and Rear-Connected MCCBs*

# ACCESSORIES

## ELECTRICAL CONTROL USING MOTORISED OPERATION

### Overview – Motor Operators (MC)

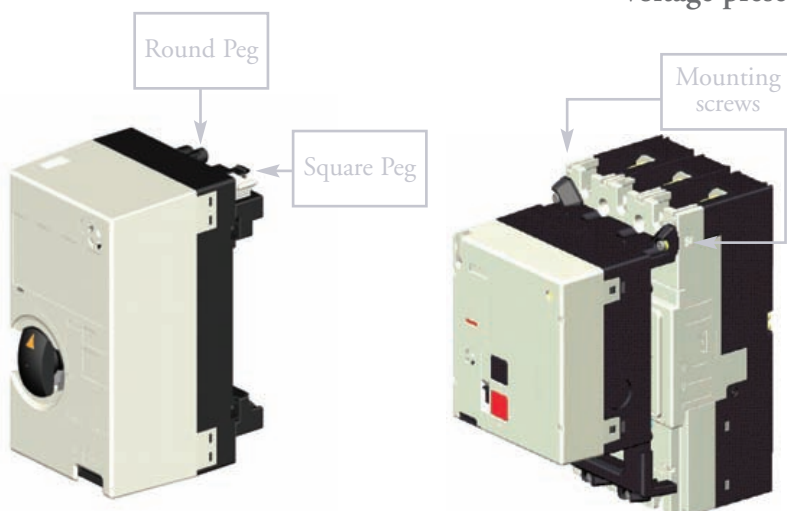


Motor Operator for 125A and 250A Frame MCCB's

Motor Operator for 400A and 630A Frame MCCB's

Motor operators provide the possibility of opening and closing an MCCB on application of electrical control signals. TemBreak 2 motor operators are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

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



Motor Operator for 125A and 250A frame MCCB's

Motor Operator for 400A and 630A frame MCCB's

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 and 630A frame motor operators are held in place with mounting screws. They can be installed easily in the field.



## ELECTRICAL CONTROL USING MOTORISED OPERATION

### 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



MCCB off



MCCB tripped



*Motor operators for 400A and 630A 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

Frame size of host MCCB (A)		125, 160, 250	400, 630
Rated operating voltage	100-110 V AC	■	■
	200-220 V AC	■	■
	230-240 V AC	■	■
	24 V DC	■	■
	48 V DC	■	■
	100-110 V DC	■	■
Operating current/ Starting current Peak value (A)	100-110 V AC	3 / 7.8	ON ---/1.9; OFF, RESET 1.4/4.6
	200-220 V AC	1.5 / 4.8	ON ---/3.3; OFF, RESET 1.0/3.8
	230-240 V AC	1.3 / 4.3	ON ---/3.3; OFF, RESET 1.0/3.8
	24 V DC	TBA	TBA
	48 V DC	TBA	TBA
	100-110 V DC	1.3 / 4.3	ON ---/1.3; OFF/RESET 1.2/2.9
Operating method		Direct drive	Spring charging
Operating time (s)	ON	0.1	0.1
	OFF	0.09	1.5
	RESET	0.09	1.5
Operating switch rating	100V, 0.1 A, Opening voltage: 44V, current 4mA		
Power supply required	300 VA minimum		300VA minimum
Dielectric properties (1 min)	1500 V AC (1000V AC for 24V DC and 48V DC motors)		
Weight	1.4 kg		3.5kg

■ = Available

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.

# ACCESSORIES

## ELECTRICAL CONTROL USING MOTORISED OPERATION

### Motor Operator Control Circuits

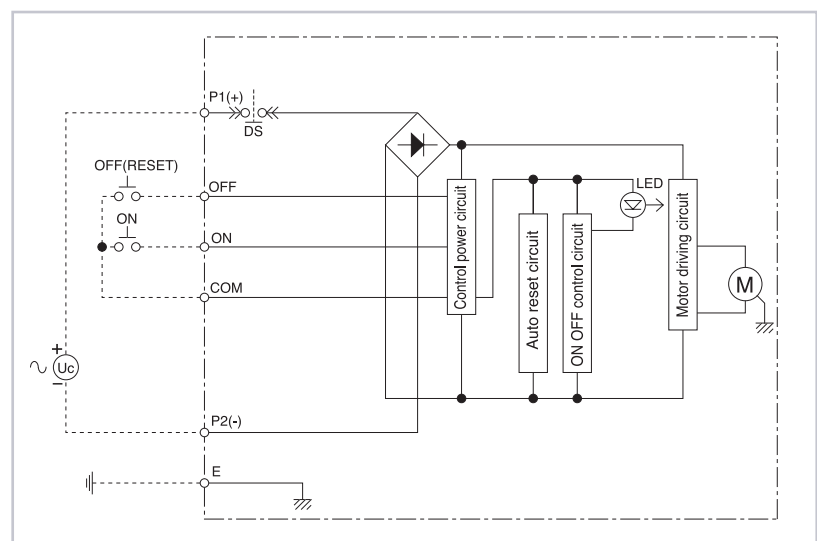


MCCB and Motor Operator Showing Control Wiring Socket



Control Wiring Plug

*The Control circuits for Motor Operators are connected using a simple plug and socket system.*



Control circuit for Motor Operators

### Operation

The motor operator incorporates a self-hold circuit for the closing and opening signals. Therefore a momentary 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 a UVT is used with a motor operator, design the control circuit so that the UVT is energised **before** a reset or close signal is sent to the motor operator. A 40ms time delay in the reset and close signals is sufficient to allow the UVT to energise.

When a shunt trip is used with a motor operator, design the control circuit so that the shunt trip 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.

### Auto- reset

Two types of motor operator are available: motor operators without auto-reset and motor operators with auto-reset. The correct type of motor operator should be selected for the application. MCCB auxiliary and alarm switches do not have to be used in the control circuits for motor operators whether they have auto-reset or not, saving cost and space.

## OPERATING HANDLES & LOCKING DEVICES

TemBreak 2 handles are extremely reliable, having been designed to endure the same switching duty as the host MCCB.

It is easy to fit the operating unit to the MCCB. Fitting involves three easy steps:

1. Align breaker toggle with operating mechanism
2. Push handle into position (the handle's round pegs locate securely in the breaker's round holes and the handle's\* square pegs in the breaker's square holes).
3. Twist locking screws through 45 degrees.\*

### Safety Features

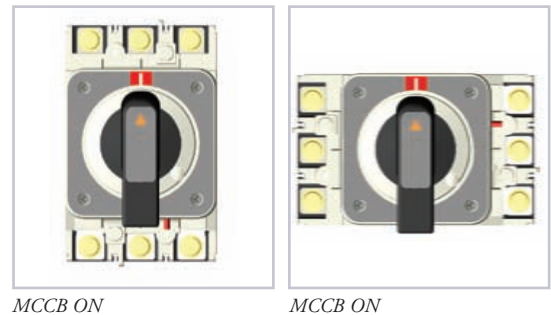
- Door interlock mechanism with override facility included as standard
- IP54 as standard (door mounted version), IP3X as standard (breaker mounted version)
- IP65 optional (door mounted version), IP5X optional (breaker mounted version)
- Locks OFF with up to 3 padlocks (8mm hasps)
- Optional keylock in OFF position
- Available in black or red and yellow
- A trip test can be performed with the handle fitted to the MCCB

### Orientation

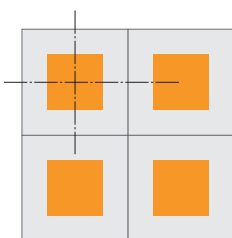
To switch the breaker from OFF to ON the handle is rotated through 90 degrees in a clockwise direction.

The ON (I) and OFF (O) indication of the 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 handle is re-oriented. The handle's axis of rotation is on the intersection of the centre lines of a 3P MCCB.

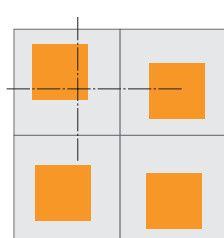
This means that the positioning of the door cutouts is symmetrical for breakers mounted horizontally on either side of a vertical busbar system.



### Cubicle Door Cutouts



Using TemBreak 2 Operating Handles



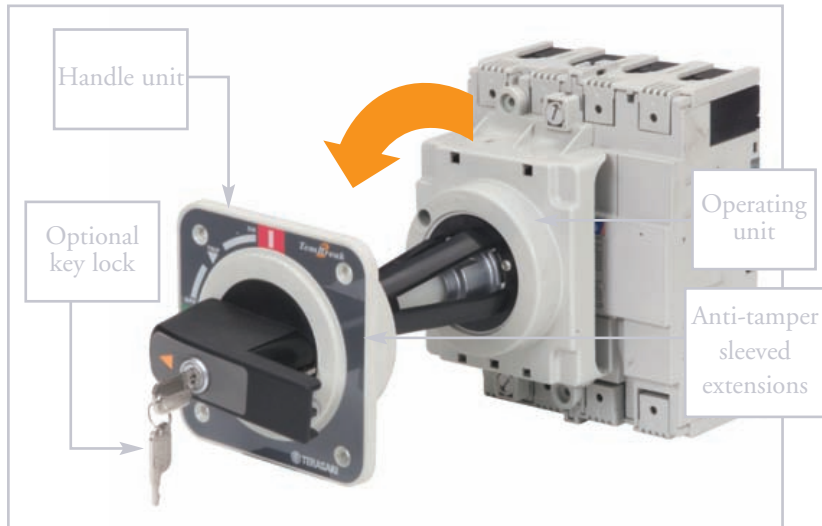
Using other MCCB Operating Handles

\*handles for 400A and 630A Frame models are secured with four screws.

# ACCESSORIES

## OPERATING HANDLES & LOCKING DEVICES

### Door Mounted Handle (HP)



Door Mounted Handle with Optional Keylock

The door mounted operating handle is used to operate a circuit breaker mounted inside a cubicle from outside the door. 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.

### Breaker Mounted Handle (HB)



Breaker Mounted Handle Padlocked in the OFF Position

This 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 handle which covers the cutout from the front.

Padlocking and keylocking is possible in the OFF position or both the ON and OFF position depending on the mounting direction.

### Locking Devices

Toggle locking devices allow MCCBs to be locked ON or OFF using up to three padlocks. Locking devices for 125A, 160A and 250A frame models accept padlocks with 5mm hasp diameter. Locking devices for 400A and 630A frame models accept padlocks with 8mm hasp diameter.



S250 Locked OFF



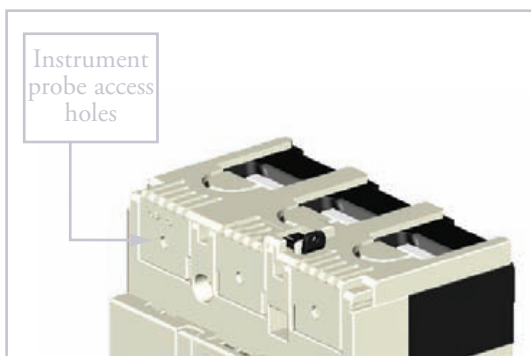
S400 Locked OFF

Fittings for Castell and Fortress locks are available. They are suitable for use on toggle-operated MCCBs, or on door mounted handles (HP) for MCCBs.

## INSULATION ACCESSORIES

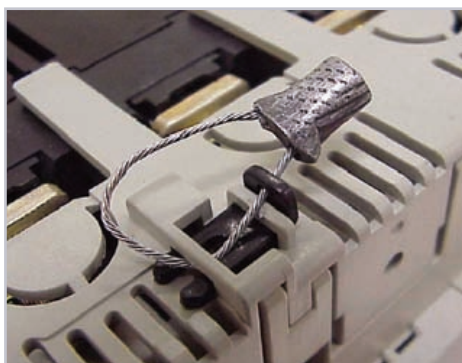
### Terminal Covers

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.



### General features

- Terminal covers require no tools for installation
- All terminal covers have an IP20 ingress protection rating
- 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 an instrument probe access hole of 4mm diameter on each phase.



*Terminal Cover Lock with Lead Seal*

### Options

- A terminal cover lock allows an anti-tampering seal to be added.
- An earth barrier can be added to terminal covers for front connection. The earth barrier provides insulation at the rear of the terminations.



*Earth Barrier Fitted to Rear of Terminal Cover*

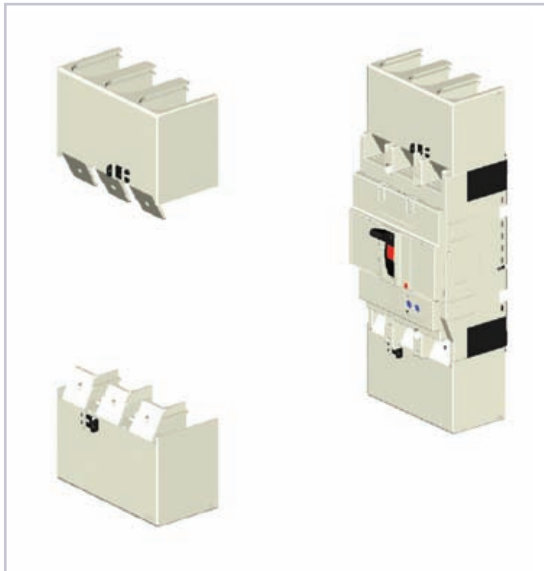


# ACCESSORIES

## INSULATION ACCESSORIES

### Terminal Covers for Front Connection (CF)

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



*Terminal Covers for Front Connection*



*Flush Terminal Covers*

### Flush Terminal Covers (CS)

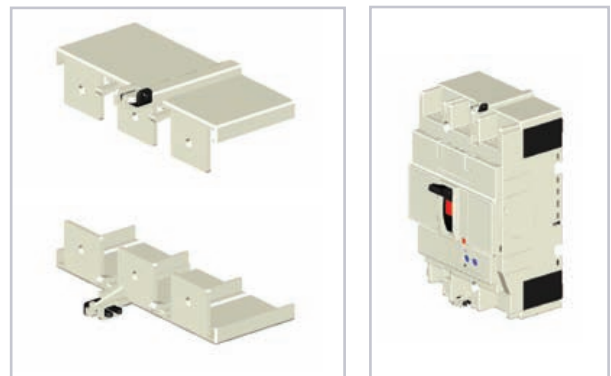
Flush terminal covers are useful for increasing the ingress protection rating at the terminals without increasing the overall length. They can be used with busbar and for direct entry of stranded cable (with solderless cable clamp terminals (FW), refer to Section 6, Installation).

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 Connection (CR)

Terminal covers for rear connection may be used on MCCBs fitted with rear connections (RP) or plug-in connections (PM). They prevent access to the terminals from the front and top.



*Terminal Covers for Rear Connection*

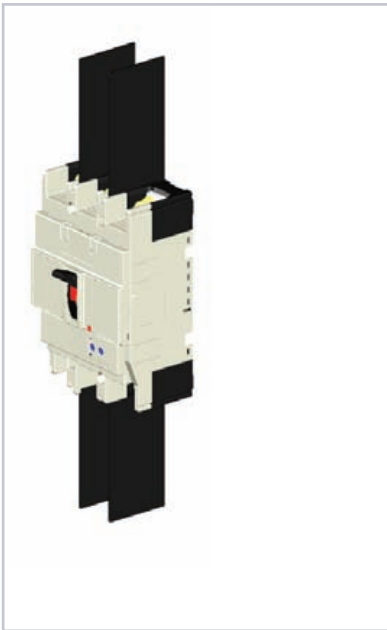
## INSULATION ACCESSORIES

### Interpole Barriers (BA)

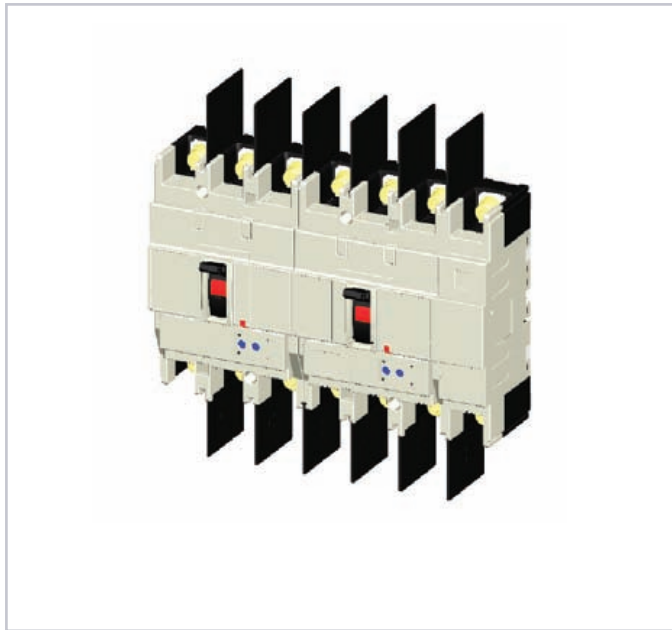
Interpole barriers provide maximum insulation between phases at the terminals of the MCCB. They cannot be fitted at the same time as any of the terminal covers.

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 moulds 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*

# ACCESSORIES

## ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

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.

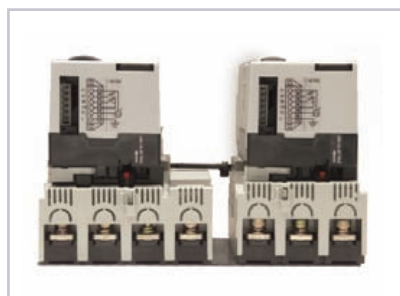
An automatic changeover controller can monitor the status of two supplies and control the switching of two MCCBs according to pre-programmed parameters. When an automatic changeover controller is interfaced to a pair of interlocked MCCBs fitted with remote control accessories, a secure, fully automatic changeover system is achieved.



Link Interlock



Changeover Pair with Link Interlock and Motor Operators



Viewed from Below

### Link Interlock (ML)

Link interlocks 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.

The TemBreak 2 link interlock is an innovative design breakthrough 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 automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

## ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

### Wire Interlock (MW)

Wire interlocks 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 1.0m or 1.5m 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 compartment or on different planes.



*Changeover Pair with Wire Interlock and Motor Operators*



*View from above*

The TemBreak 2 wire interlock is an innovative design breakthrough which will save space, time and money for switchboard builders in that:

- Installation is extremely simple. Wire interlocks are field-installable.
- 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
- An automatic changeover pair consisting of an interlocked pair of MCCBs with internal control accessories and motor operators can be assembled in a few minutes!

### Slide Interlock (MS)

Slide interlocks are manually operated toggle locking devices which can be installed between two adjacent MCCBs. Depending on the position of the slide, one or other of the MCCBs on either side of a slide interlock is inhibited from being in the ON position.

Slide interlocks can be used between MCCBs of the same number of poles and of the same frame size.

Slide interlocks can be installed in the field and are padlockable in both positions.



*Slide Interlock Installed Between two MCCBs*

# ACCESSORIES

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### TemTransfer Automatic Changeover Controller

The TemTransfer is a fully configurable **Automatic Changeover Controller (ACC)**. It is designed to monitor the incoming AC mains supply (1 or 3 phases) for under/over voltage and under/over frequency. Should these fall out of limits, the module will issue a start command to the generating set controller. Once the set is available and producing an output within limits the ACC will control the transfer devices and switch the load from the mains to the generating set. Should the mains supply return to within limits the module will command a return to the mains supply and shut down the generator after a suitable cooling run. Various timing sequences are used to prevent nuisance starting and supply breaks.

TemTransfer is compatible with TemPower 2 ACBs, TemBreak 2 MCCBs and TemContact contactors.

When TemTransfer is used with a pair of TemBreak 2 MCCBs, additional control wiring and components may be necessary for some control schemes. Contact us for details.

Terasaki can supply TemTransfer pre-configured to specification, or unconfigured with an optional interface kit.

**Configuration** is by PC based software and the interface kit using an FCC68 socket on the rear of the module. This allows rapid and secure configuration of the module. The FCC68 socket also provides full real-time diagnostics on the status of the ACC, its inputs and outputs.

Configuration and connection options allow for a wide range of **higher functions** such as *'Auto start inhibit'*, *'Manual restore to mains'*, *'Load inhibit'* (both mains and gen-set), *'Lamp test'*, *Push-button transfer control*, *External mains* or *Gen-set failure inputs*, etc.

The four position key-switch allows for mode selection:-

- Auto Mode
- Auto mode with manual return to Mains
- Run generator off load
- Run generator on load

A clear mimic diagram with 'International' symbols and LEDs provide clear indication of supply availability and load switching status. Further LED indication is provided for *'Start delay in progress'* and *'Mains return timer active'*. Two **user configurable LED's** are provided to allow the user to display specific states (defaulted to indicate that the closing procedure of the Mains or Generator circuit breaker has been started).

Five **user configurable relays** are provided to allow control of contactors, different circuit breaker types and engine control modules and alarm systems.

The controller features a self seeking power supply which will utilise power from the Mains AC supply or the Generator AC supply. A DC supply to the module is not essential for basic operation, though some 'higher' functions require it (such as system diagnostics).

The module is mounted in a robust plastic case, connection to the module is via plug and socket connectors.



TemTransfer Automatic Changeover Controller



## ACCESSORIES FOR DUAL SUPPLY CHANGEOVER SYSTEMS

### Specifications

#### DC Supply

The TemTransfer is normally powered from the AC sensing supplies. It will only draw power from the DC supply if both AC supplies are not present.

DC power should be supplied from a low voltage supply between 8 to 35V continuous. It is able to operate at 0V for 50ms during cranking, providing supply was at least 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries.

#### Maximum operating current:

150mA @ 12V, 95mA @ 24V.

#### Maximum standby current (AC powered supply)

34.7 mA @ 115V. 16.1mA @ 230V.

#### 3 Low voltage auxiliary relay contacts:

8Amp DC rated 1 each: NO+NC C/O (a and b C/O contacts)

#### 2 Mains rated relay contacts:

8Amp RMS rated 1 each NO+NC. (a and b contacts)

#### Dimensions:

96 x 144 x 155 DIN STANDARD.

#### Operating temperature range:

-15 to +55°C

#### Indication LED's:

Mains Available/On Load, Generator Available/On load, Start Delay, Mains Return Delay and 2 User Configurable.

#### Operating voltage: - Specify on ordering.

AC Voltage Input Range (for AC Powered Operation):

115V Version:- 88 - 160 V ac RMS

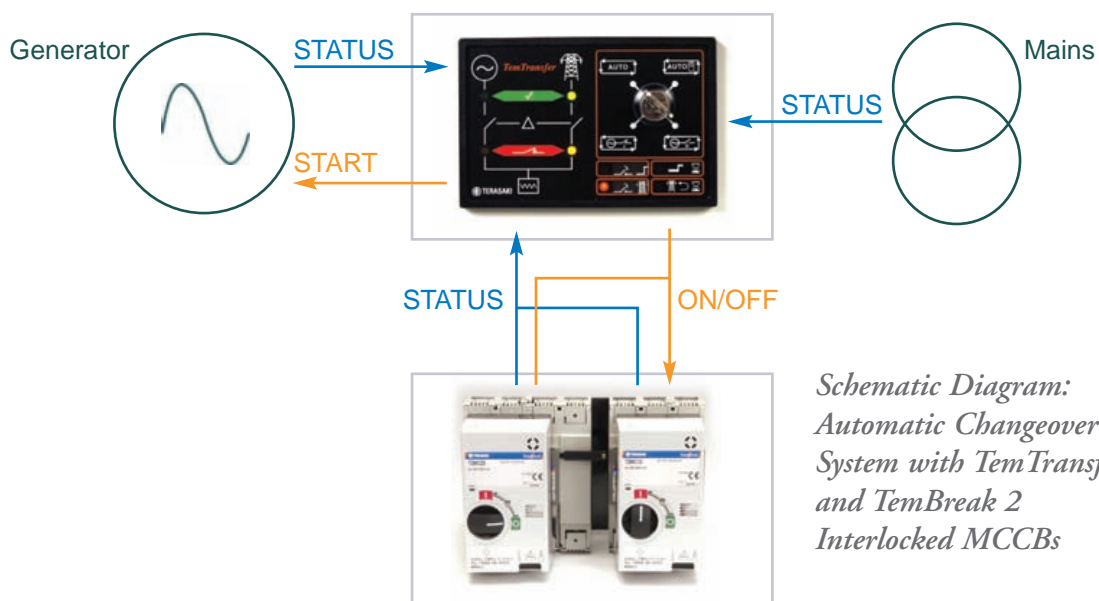
230V Version:- 176 - 305 V ac RMS

AC Voltage Input/Adjustment Range (Sensing Operation):

115V Version:- 55 - 152 V ac RMS

230V Version:- 110 - 304 V ac RMS

AC Frequency Input/Adjustment Range: 10 - 75 Hz



## MODULAR SIZES



All current ratings up to 630A can be supplied in 2 sizes: the 250A and 630A sizes.



The compact 125A size offers the same features and performance but with reduced dimensions and cost.

