

Safety and protection are the prime purposes of Terasaki products. You care about safety and protection. The people who depend on products you specify care about safety and protection. We call TemBreak 2 the Ultimate Safety Breaker. Throughout this catalogue you will see our Safety+ mark. This is designed to draw your attention to safety features which exceed international standards.

Please read further to discover the benefits of TemBreak 2.



WELCOME TO TEMBREAK 2

EASY SELECTION GUIDE

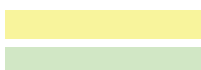
The TemBreak 2 range of products includes:

- Moulded Case Circuit Breakers (MCCBs)
 - Switch-Disconnectors in the same compact moulded case frame sizes as MCCBs
 - A comprehensive range of accessories which are common to MCCBs and Switch-Disconnectors.
- All internal accessories are common to all frame sizes.



Key to Model and Type Designations

Model Denoted by

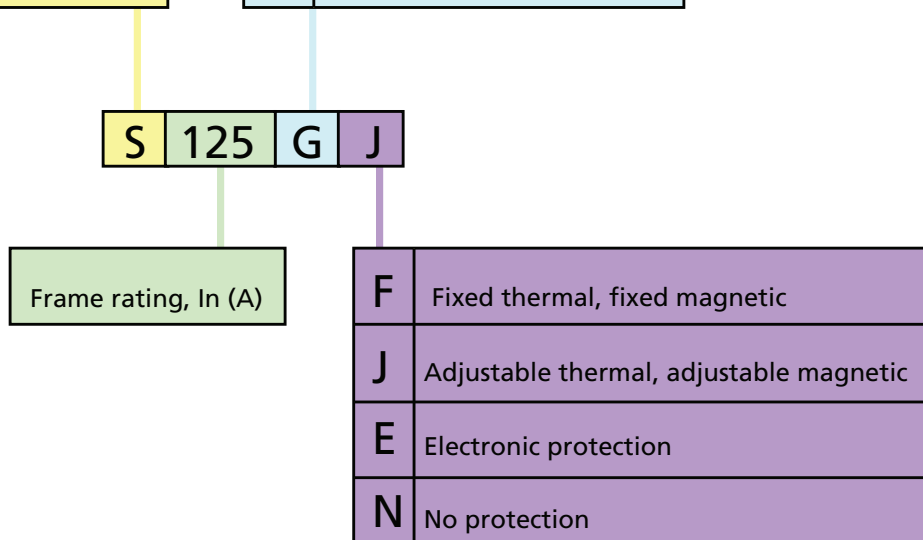


Type Denoted by








E	Economical
S	Standard
H	High
L	Limiting*

C	Low breaking capacity
N	Medium breaking capacity
G	High breaking capacity
P	Extra High breaking capacity



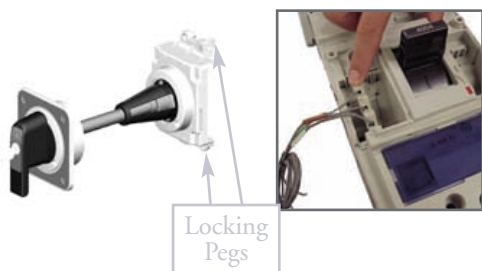
EASY SELECTION GUIDE

Frame Rating (A)																											
50/100		125			160/250			400/630			800/1250/1600																
E S H L	MCCBs																										
	Model			Type			I _{cu} (kA)			Model			Type			I _{cu} (kA)			Model			Type			I _{cu} (kA)		
	E125			NJ			25			E250			NJ			25			E400			NJ			25		
																			E630			NE			36		
	S125			NF			25			S160			NF			25			S400			CJ			36		
	S125			NJ			36			S160			NJ			36			S400			NJ			50		
	S125			GJ			65			S160			GJ			65			S400			GJ			70		
										S250			NJ			36			S400			NE			50		
										S250			GJ			65			S400			GE			70		
										S250			PE			70			S630			CE			50		
H125*			NJ			125			H160			NJ			125			H400			NJ			125			
									H250			NJ			125			H400			NE			125			
L125*			NJ			200			L160			NJ			200			L400			NJ			200			
									L250			NJ			200			L400			NE			200			
		I _n (A)																									
		125 ↕ 16						250 ↕ 16						630 ↕ 250						1600 ↕ 630							
100 ↕ 10																											
Switch-Disconnectors																											
Model			Type						Model			Type						Model			Type						
S125			NN						S160			NN						S400			NN						
									S250			NN						S630			NN						

Note: All breaking capacities are r.m.s. symmetrical at 415V AC

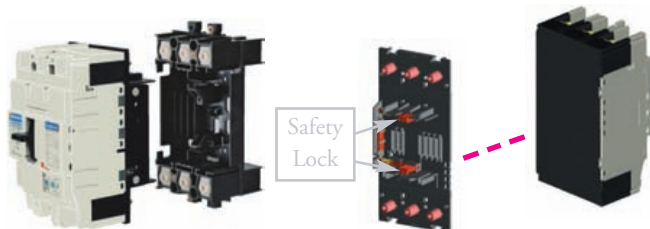
10 REASONS TO USE TEMBREAK 2

1. FIELD-INSTALLABLE ACCESSORIES



- Accessories can be fitted by the switchboard builder or added by the end-user. All internal accessories are common for TemBreak 2 MCCBs.
- Handles and motor operators can be rapidly fitted using the locking pegs. It takes **less than 10 seconds to secure a handle or motor** to the MCCB – a great time saving compared to alternative products.
- All accessories are endurance tested to the same level as the host MCCB.

2. SAFETY LOCK FOR PLUG-IN VERSIONS

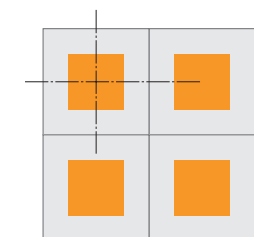


Plug-in MCCB and base

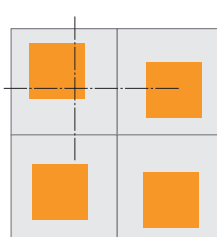
Plug-in connection kit, including safety lock

The plug-in MCCB is locked to the base when the toggle is ON. It cannot be removed unless the toggle is OFF or TRIPPED. The safety lock prevents a trip occurring as the MCCB is being removed from the base.

3. SYMMETRICAL DOOR CUTOUT PATTERNS



Using TemBreak 2 Operating Handles



Using other MCCB Operating Handles

Door cutout patterns for handles are symmetrical, even when breakers are mounted in opposite directions.

4. SUPERIOR TEMPERATURE PERFORMANCE



All TemBreak 2 MCCBs are fully rated for use at 50°C.

Overheating is the most common cause of failure in electrical switchgear. You can reduce the likelihood of overheating by using switchgear with superior temperature performance.



5. MODULAR SIZES



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



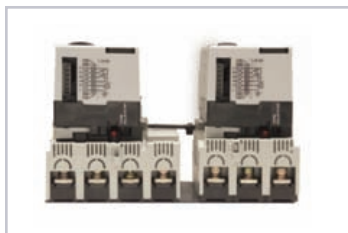
The compact 125A size offers the same features and performance but with reduced dimensions and cost.

10 REASONS TO USE TEMBREAK 2

6. COMPACT CHANGEOVERS



Changeover Pair with Link Interlock and Motor Operators



Viewed from Below (250A frame)

The mechanical interlock is installed on the front of the MCCB, and is compatible with motor operators and handles. An automatic changeover system can be assembled in a few minutes by a switchboard builder or end-user.

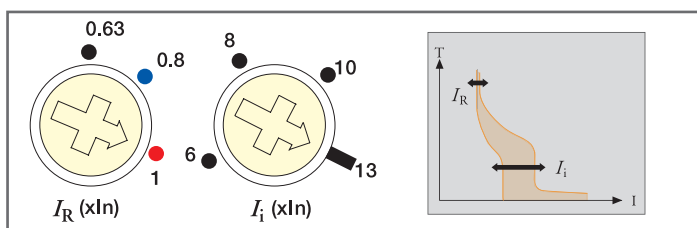
7. DIRECT OPENING



Under the heading “Measures to minimise the risk in the event of failure”, IEC 60204-1 Safety of Machinery-Electrical Equipment of Machinery includes the following recommendation:

“-the use of switching devices having positive (or direct) opening operation.”

8. UNSURPASSED FLEXIBILITY



Overload protection is adjustable between 63% and 100% of the rating.

Short-circuit protection is adjustable on all thermal magnetic models.

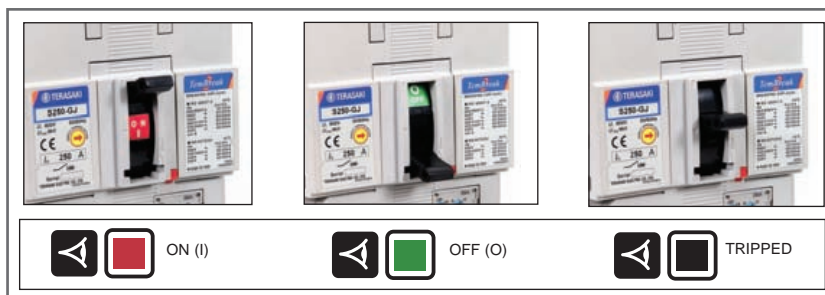
Short-circuit protection settings are suitable for motor starting on all models, including the compact 125A frame.

9. CUSTOMISED TRIPPING TIMES



If you require a characteristic which is not available as a preset on our electronic protection unit, send us the details and we will program a customised characteristic to suit your application. (Within certain limits - contact us for details).

10. VISUAL SAFETY



Coloured indicators display the ON or OFF status. The indicators are fully covered if the breaker trips, and black is the only visible colour.



WELCOME TO TEMBREAK 2

SAFETY PLUS

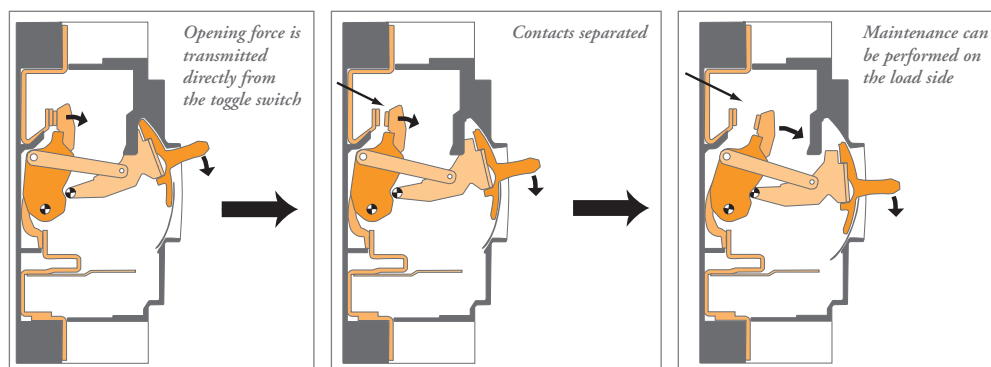
Terasaki have an innovative approach to product design. Our goal is to develop products which not only meet, but exceed recognised standards.

We use our knowledge of related applications to improve circuit breaker designs. For instance, when developing the Direct Opening Action, we applied ideas from a machinery safety standard to the design of the TemBreak 2 switching mechanism.

This proactive development policy confirms our reputation as Innovators in Protection Technology.



Machine Safety



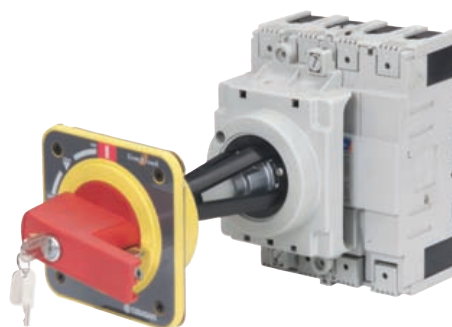
TemBreak 2 MCCBs are marked with IEC symbol indicating Direct Opening Action. (→)

The robust mechanism ensures that the force you apply to the toggle is transmitted directly to the contacts.

Under the heading “Measures to minimise risk in the event of failure”, IEC 60204-1 Safety of Machinery - Electrical Equipment of Machines includes the following recommendation:

“ - the use of switching devices having positive (or direct) opening operation.”

TemBreak 2 MCCBs help you to comply with the world's most stringent safety standards. It is one of the safest switching devices for machinery.



WELCOME TO TEMBREAK 2

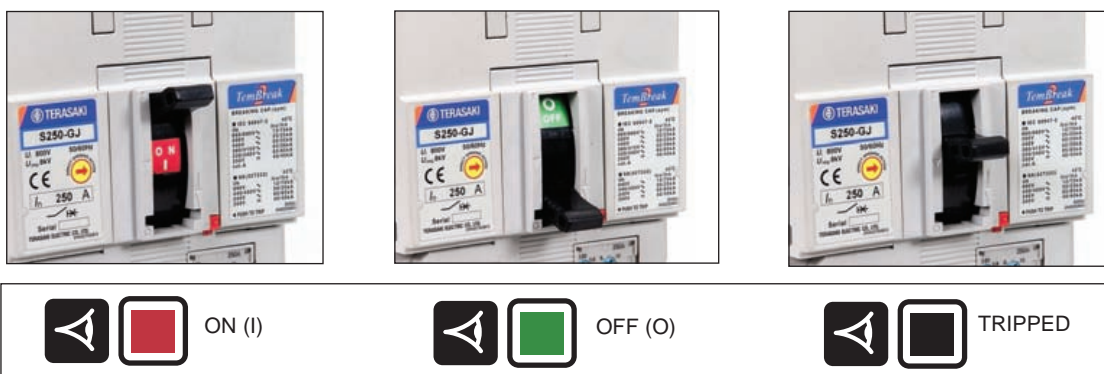
SAFETY PLUS

Visual Safety

You can easily see if a breaker is open, closed or tripped. **SAFETY+** coloured indicators boldly display the ON or OFF status. The indicators are fully covered if a breaker trips, and black is the only visible colour.

This is a *unique* safety feature. You can identify faulty circuits at a glance.

The toggle position always matches the position of the main contacts.

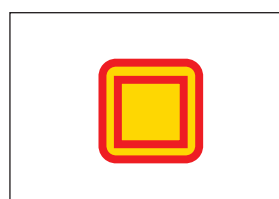


Touch Safety

The risk of touching live parts has been minimised by design.

These features reduce the risk of touching live parts:

- There are no exposed metal screws on the front face
- IP20 protection at the terminals
- IP30 protection at the toggle
- If the toggle is broken by accident or misuse, no live part is exposed
- No live parts are exposed when fitting accessories
- Double Insulation



WELCOME TO TEMBREAK 2

EXCEEDING STANDARDS

Safety Plus

TemBreak 2 MCCBs exceed the requirements of recognised standards.

International Compliance

- The TemBreak 2 MCCB complies with the international standard IEC 60947-2
- TemBreak 2 Switch Disconnectors comply with IEC 60947-3
- Accessories comply with IEC 60947-5-1 or IEC 61058-1
- The entire range conforms to the IEC general rules for switchgear, IEC 60947-1
- TemBreak 2 MCCBs comply with JIS C 8201-2-1 Ann.1
- The TemBreak 2 range complies with the EC Low Voltage Directive and all models are CE marked
- TemBreak 2 MCCBs carry the IEC symbol indicating Direct Opening Action as defined by IEC 60947-5-1. IEC 60204-1, Safety of Machinery - Electrical Equipment of Machines recommends that switches used for machinery have Direct Opening Action to minimise risk in the event of failure



Independent Tests

TemBreak 2 circuit breakers have been tested at independent laboratories as well as in Terasaki's own laboratory in Osaka, Japan. Copies of independent test reports are available on request.

Marine Approvals

TemBreak 2 MCCBs are approved by the leading marine approval organisations.

Visit www.terasaki.com for current marine approvals and performance ratings.



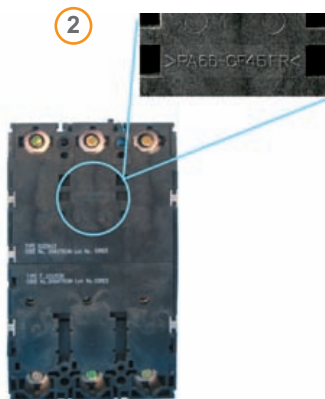
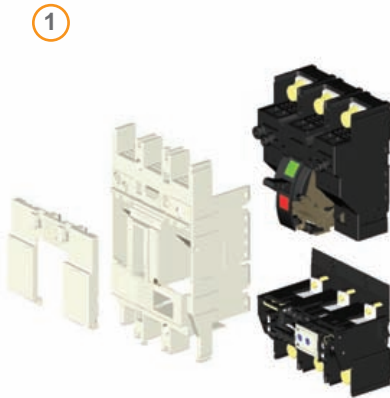
REDUCING ENVIRONMENTAL IMPACT

Longer Life Cycle

It makes good environmental sense to install a product with a long life expectancy. If you install a TemBreak 2 MCCB, you can expect it to stay in service for at least 30,000 mechanical operations (250A Frame). This is 22,000 more operations than recommended by IEC 60947-2, the international standard for circuit breakers.

If a system must be upgraded in future, we have made the following provisions for recycling:

- ① The modular design of TemBreak 2 allows component parts and accessories to be easily disassembled and separately disposed of. Moulded parts do not contain any embedded metal parts.
- ② Materials are clearly marked to allow future identification for easy recycling.



Uses Eco-friendly Materials

The following materials are used in most TemBreak 2 circuit breakers:

- Thermoplastic resin not containing PBBs or PBDEs
- Lead-free solder
- Cadmium-free contacts

Lighter and Smaller

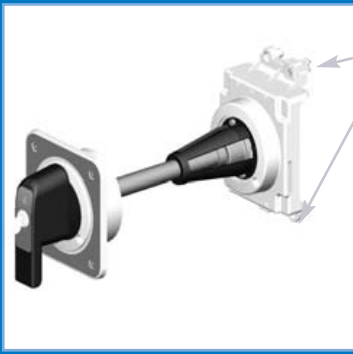
Components with low weight and volume make life easy for users, but high performance from smaller products also means less material used and less waste produced.

ISO 14001

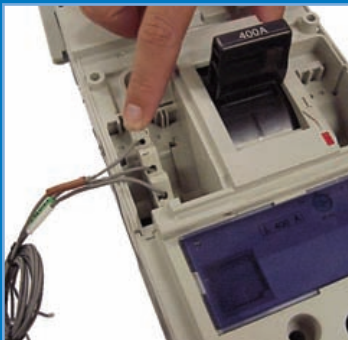
Terasaki operate an Environmental Management System accredited to ISO 14001:1999. This requires us to monitor and measure the environmental performance of our activities, products and services in order to continually improve such performance.

Further information about this standard can be found on the internet at: www.tc207.org

FIELD-INSTALLABLE ACCESSORIES



Locking
Pegs



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