

 MITSUBISHI ELECTRIC  
POWER PRODUCTS, INC.

SF<sub>6</sub> CIRCUIT BREAKER

DEAD TANK TYPE

MODEL: 100-SFMT-40E  
120-SFMT-40E



## Introduction

Mitsubishi Electric Power Products, Inc. is an affiliate of Mitsubishi Electric Corporation.

## Factory

Mitsubishi Electric Power Products Manufacturing facility is located in Warrendale, Pennsylvania, a suburb of Pittsburgh. This location also serves as the center for product service and training.

## Evolutionary Design

Thousands of SFMT breakers rated at transmission voltages through 1100kV have been installed and are operating reliably on T&D systems worldwide. Introduced in 1974, the design is based on proven engineering principals and extensive development and testing.

The SFMT features isolated phase dead tanks supported by a galvanized steel frame. Each tank houses a single-break, gang-operated puffer interrupter and supports two porcelain bushings. The tanks and bushings are pressurized with SF<sub>6</sub> gas.

The frame also supports the control cabinet. It houses a spring-type operating mechanism, interphase linkages and the control circuits.



TYPE	100-SFMT-40E	120-SFMT-40E
Voltage (max kV)	123	145
BIL (kV Crest)	550	650
60 Hz withstand (kV)	260	310
Continuous Current (A)	1200 / 2000 / 3000 / 4000	1200 / 2000 / 3000 / 4000
Interrupting Current (kA)	40	40
Interrupting Time (cycles)	3	3
Total Weight (lbs / kgs)	5720 / 2600	5720 / 2600
Weight of SF <sub>6</sub> (lbs / kgs)	55 / 25	55 / 25



## Revolutionary Performance

The SFMT reflects Mitsubishi Electric's commitment to supply power circuit breakers with extended service lives, and that meet or exceed the most demanding specifications for interrupting, insulating, and current-carrying capabilities. The design and performance of all breakers are fully verified in accordance with the procedures of ANSI C.37 and IEC 56, and by procedures at Mitsubishi's laboratories that subject the breakers to conditions that are considerably more comprehensive and severe.

These procedures have confirmed the safety and ruggedness of Mitsubishi breakers. For example, they confirm Mitsubishi breakers withstand 10,000 mechanical operations and severe seismic forces, and that they operate reliably in extremely low or high temperatures.

Users also report extraordinarily low cost of ownership based on exceptional reliability, application flexibility, safety, and ease of maintenance.

## Features of the SFMT Design Insulation

- Dead Tank Construction
- Only SF6 for Open Gap Insulation
- No Solid Insulation Bridging the Open Contacts
- Low Operating Pressure (71 psig @ 20°C)

## Primary Electrical Parts/Interrupters

- True Puffer Interrupters
- Contacts Easily Accessible for Inspection and Changeout
- Verified Full Dielectric and Interrupting Rating at Lockout Pressure
- High Strength Porcelain Bushings
- Integral NEMA 4-hole bushing terminal

## Application Flexibility

- -35°C Application without Tank Heaters; Mechanically Tested and Verified to -50°C with tank heaters
- Definite Purpose Capacitive Current Switching Capability
- Reactor Switching Capability
- Tested and Verified for Seismic Applications
- Quiet Operation; Suitable for Urban Installations

## Mechanical Operations

- Spring Type Operating Mechanism
- Universal Type Spring Charging Motor (AC/DC)
- Quick Spring Charging for 0-CO-10 sec-CO Duty Cycle

## Rapid Installation

- Bushings Shipped Installed
- Integral NEMA 4-Hole Bushing Terminals
- Complete Breaker Factory Assembled and Production Tested
- Lightweight to Minimize Foundation Size

## Controls

- Space for Minimum Two BCTs per Bushing

## Proof

- Tested and Verified for 90% Short Line Fault
- Tested and Verified to Exceed ANSI and IEC Standards
- Verified in Environmental Test Lab
- Production Tested as a Fully Assembled Breaker

## Options

- Tank Heaters for Low Temperature Applications
- High Altitude
- Polymer Bushings

## Features to Reduce Installation and Maintenance

All SFMT breakers are fully assembled, pressurized and tested to ANSI or IEC and Mitsubishi standards prior to shipment. Each breaker is shipped with 5 psig of SF6 gas. Installation is completed rapidly and easily. Site work is limited to removing all packing, bolting the sub-frame to the foundation and bolting the breaker to the sub-frame. Then, using bottled SF6 gas, the interrupter tanks and bushings are filled to operating pressure, and the control and power leads are connected. The breaker is then ready for final inspection and any field testing required by the user.

The helical spring mechanism requires virtually no maintenance over the life of the breaker. The mechanism must be lubricated only every six years during normal inspections.

Critical interrupter components (stationary and moving arcing contacts and nozzles) need only be inspected after 2000 operations at rated load current. The components are removed easily by simply unbolting the tank inspection cover. Unlike other designs, there are no interrupter valves, seal rings, solid insulation or screens to inspect.

