

 **MITSUBISHI ELECTRIC**  
**POWER PRODUCTS, INC.**

SF<sub>6</sub> CIRCUIT BREAKER

DEAD TANK TYPE

MODEL: 500-SFMT-50E  
500-SFMT-63E



## 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 mechanically independent pole-operated, isolated phase dead tanks

supported by galvanized steel frames. Each tank houses a single-break puffer interrupter and supports two porcelain or composite bushings. The tanks and bushings are pressurized with SF<sub>6</sub> gas.

The frame of each phase also supports the mechanism cabinet. It houses a pneumatic-type operating mechanism and interphase linkages. The control cabinet houses the control circuits and can be mounted on any phase.



TYPE	500-SFMT-50E	500-SFMT-63E
Voltage (max kV)	550	550
BIL (kV Crest)	1800	1800
60 Hz withstand (kV)	860	860
Continuous Current (A)	2000 / 3000 / 4000	2000 / 3000 / 4000
Interrupting Current (kA)	50	63
Interrupting Time (cycles)	2	2
Total Weight (lbs / kgs)	19,200 / 8,730	19,200 / 8,730
Weight of SF <sub>6</sub> (lbs / kgs)	1,300 / 590	1,300 / 590



## 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 C37 and IEC 62271-100, 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, tests 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 SF<sub>6</sub> for Open Gap Insulation
- No Solid Insulation Bridging the Open Contacts
- Low Operating Pressure (85 psig @ 20°C) for 550kV, 40kA, 50 or 63kA ratings

## 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 or Composite Bushings
- Integral NEMA 4-hole bushing terminal

## Application Flexibility

- 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

- Pneumatic-Open, Spring-Close Operating Mechanism
- Allowed 5 Stored Operations

## Rapid Installation

- Integral NEMA 4-Hole Bushing Terminals
- Complete Breaker Factory Assembled and Production Tested

## Controls

- Space for Two or more 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
- Composite Insulators
- Pre-Insertion Resistors
- Capacitors (for 63kA)
- Synchronous Operation Control

## Features to Reduce Installation and Maintenance

All SFMT breakers are fully assembled, pre-surized and tested to ANSI or IEC and Mitsubishi standards prior to shipment. Each breaker is shipped under partial pressure with dry nitrogen gas. Installation is completed rapidly and easily with the assistance of a Mitsubishi field service engineer. Site work is limited to removing all packing, bolting the frame to the foundation, and installing the bushings. Then, the interrupter tanks and bushings are vacuum-filled to operating pressure with bottled SF<sub>6</sub> gas, and the control and power leads are connect-ed. The breaker is then ready for final inspection and any field testing required by the user.

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 or screens to inspect.

