

# IEEE Standard for Pad-Mounted Dry Vault, Submersible, and Overhead Fault Interrupters for Alternating Current Systems Up to and Including 38 kV

IEEE Power and Energy Society

Developed by the  
Switchgear Committee

IEEE Std 37.12™-2020

# IEEE Standard for Pad-Mounted, Dry Vault, Submersible, and Overhead Fault Interrupters for Alternating Current Systems Up to and Including 38 kV

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**Switchgear Committee**  
of the  
**IEEE Power and Energy Society**

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**IEEE SA Standards Board**

**Abstract:** Required definitions, ratings, procedures for performing design tests and production tests, and construction requirements for pad-mounted, dry vault, submersible, and overhead fault interrupters for alternating current systems up to and including 38 kV are provided in this standard.

**Keywords:** dry vault, fault interrupter, FI, IEEE C37.62™, medium voltage, overhead, pad-mounted, submersible, switchgear

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## Introduction

This introduction is not part of IEEE Std C37.62-2020, IEEE Standard for Pad-Mounted, Dry Vault, Submersible, and Overhead Fault Interrupters for Alternating Current Systems Up to and Including 38 kV.

Fault interrupter (FI) and automatic recloser switchgear have shared the same standard, IEEE Std C37.60™, for many decades.<sup>1</sup> Because reclosers are used extensively throughout the world, IEEE coordinated with the International Electrotechnical Commission (IEC) to publish a dual logo standard, IEEE Std C37.60/IEC 62271-111, in 2005 and revised in 2012. A second revision started shortly after the 2012 publication. As part of that revision, it was decided that the fault interrupter, which is not used extensively throughout the world, should have its own IEEE non-dual logo standard, to be designated IEEE Std C37.62. As FIs are primarily used in regions where equipment is specified to IEEE standards, it was considered to be appropriate for this to be an IEEE standard and not have a dual logo, the intent being that the new standard will maintain its focus on FIs without being influenced by the requirements for other switchgear.

This standard is an extraction from IEEE Std C37.60-2012/IEC 62271-111:2012 of its testing structure, preferred ratings, construction requirements, and design and routine test requirements that are relevant to FIs. Changes made to the 2018 revision of IEEE Std C37.60/IEC 62271-111 have been included in this standard as they are relevant to FIs.

The principle technical changes, with respect to IEEE Std C37.60-2012/IEC 62271-111:2012, are as follows:

- The clause numbering was changed from the IEC style used in IEEE Std C37.60-2012/IEC 62271-111:2012 to the preferred IEEE style.
- The temperature rise limits were lowered for tin-coated contacts (see 5.4.2).
- An oil sampling provision for sampling from the bottom of the tank is required of all pad-mounted units, not just submersible units (see 6.1.3).
- The power frequency voltage withstand test method was changed from the traditional ten second wet test to the one minute wet test per the IEEE Std 4™ “standard test procedure” (see 7.3.7.2).
- A limitation on preliminary impulse test shots was added to impulse voltage withstand testing of vacuum interrupters (see 7.3.3.3).
- A procedure for testing line- and cable-charging current interruption in three-phase FI with three independently controlled poles was added (see 7.13.4.1).
- The handling of restrikes in line- and cable-charging current interruption tests was changed to a limitation of no more than three operations with restrikes rather than three restrikes (see 7.13.6.2).
- The T<sub>100</sub> test duty current range was changed from 90% to 100% of rated symmetrical interrupting current to 100% to 105% (see Table 9).
- The critical current interrupting test was replaced by a low current interrupting test at 5% and 10% of rated symmetrical interrupting current (see 7.16).
- A thermal runaway test was specified for verifying current carrying capability following current interrupting tests if resistance measurements are not conclusive (see 7.25).
- A sealed tank pressure test to verify proper mechanical operation was specified (see 7.26).
- An operations endurance test, performed with the switchgear under rated pressure, was added for submersible units (see 7.27).

<sup>1</sup> Information on references can be found in Clause 2.

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# IEEE Standard for Pad-Mounted, Dry Vault, Submersible, and Overhead Fault Interrupters for Alternating Current Systems Up to and Including 38 kV

## 1. Overview

### 1.1 Scope

This standard applies to all pad-mounted, dry vault, submersible, and overhead single- or multi-pole alternating current fault interrupters (FIs) for rated maximum voltages above 1000 V and up to and including 38 kV.

Devices that require a dependent manual operation are not covered by this standard.

In order to simplify this standard where possible, the term FI (FIs) has been substituted for fault interrupter (fault interrupters).

### 1.2 Purpose

The purpose of this standard is to define the rating structure, preferred ratings, test, and construction requirements for pad-mounted, dry vault, submersible, and overhead single- or multi-pole alternating current FIs for maximum voltages above 1000 V and up to 38 kV.

### 1.3 Word usage

The word *shall* indicates mandatory requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted (shall equals is required to).<sup>2, 3</sup>

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<sup>2</sup> The word *must* is deprecated and cannot be used when stating mandatory requirements; *must* is used only to describe unavoidable situations.

<sup>3</sup> The word *will* is deprecated and cannot be used when stating mandatory requirements; *will* is only used in statements of fact.