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IEEE Standard for 4.76 kV to 38 kV Rated Ground and Test Devices Used in Enclosures

IEEE Power and Energy Society

Sponsored by the
Switchgear Committee

IEEE
3 Park Avenue
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USA

IEEE Std C37.20.6™-2015
(Revision of
IEEE Std C37.20.6-2007)

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Abstract: Drawout-type ground and test devices for use in medium-voltage metal-clad switchgear rated 4.76 kV through 38 kV are covered. The description, design, and testing of these accessory devices that are inserted in place of drawout circuit breakers for the purpose of grounding and testing are also covered.

Keywords: electrical operation, ground and test (G&T) devices, IEEE C37.20.6™, locking/interlocking, manual operation, one or two terminal sets, terminal selector switch, test port

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Introduction

This introduction is not part of IEEE Std C37.20.6™-2015, IEEE Standard for 4.76 kV to 38 kV Rated Ground and Test Devices Used in Enclosures.

Although ground and test (G&T) devices have been used as accessory devices in metal-clad switchgear for decades, they were not covered by standards until the original (1997) edition of this standard. This is because they are specialized accessory devices, designed and tested in accordance with applicable sections of circuit breaker standards, and based on user-unique operational requirements.

This standard complements IEEE Std C37.20.2™, IEEE Standard for Metal-Clad Switchgear,[a] and addresses the more common G&T device types. The 2007 edition of IEEE Std C37.20.6 clarified that G&T devices are not required to have the interrupting and continuous current ratings of the circuit breakers they may temporarily replace for the purpose of grounding and testing medium-voltage circuits. The 2007 edition also recognized that some devices may be offered that have interrupting capability, and specified applicable tests to verify such ratings. The current revision makes no significant changes with respect to these issues. There are minor and editorial changes throughout this revision, but little substantive change.

G&T devices are supplied in various forms and the following list generally summarizes the more common forms:

a) Simple manual devices. These devices are equipped with either one or two terminal sets for grounding through cables or bus, manually connected to the device ground connection system. Hot stick voltage testing is possible.

b) Complex manual devices. These devices are equipped with one or two terminal sets, and a manually operated switch. In the case of a device with one terminal set, the switch allows connection of the terminal set to the device ground connection system or disconnection of the terminal set from the device ground connection system. In the case of a device with two terminal sets, the switch allows selection of which terminal set to connect to the device ground connection system. In either case, the switch is manually operated and is not required to have any continuous or fault-making current ratings.

c) Simple electrical devices. These devices are equipped with one terminal set connected, through a power-operated ground-making switch, to the device ground connection system. Voltage test ports may be provided. A second terminal set may be included for connection to test ports.

d) Complex electrical devices. These devices are equipped with two terminal sets and a manually operated switch for selecting which terminal set is to be connected, through the power-operated ground-making switch, to the device ground connection system. Voltage test ports may be provided.

All G&T devices are equipped with necessary isolation barriers and locking or interlocking mechanisms to provide some degree of protection during handling and operation.

This standard does not cover G&T devices that are specially equipped with current and voltage transformers, glow-tubes, and like components.

This revision, as in the 2007 edition, uses the rating system introduced in IEEE Std C37.04™-1999, with voltage range factor (K) set equal to 1.0, effectively eliminating the voltage range factor from the ratings basis. It is recognized that some G&T devices may be required for use with equipment manufactured and

[a]Information on references can be found in Clause 2.

rated to the older rating system. For such applications, the user should refer to the 1997 edition of this standard.

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1. Overview

1.1 Scope

This standard covers drawout-type, indoor, medium-voltage ground and test (G&T) devices for use in drawout metal-clad switchgear rated 4.76 kV through 38 kV as described in IEEE Std C37.20.2™.[1] Four G&T device types are generally supplied for temporary circuit maintenance procedures for insertion in place of the circuit breaker as follows:

a) Simple manual devices

b) Complex manual devices

c) Simple electrical devices

d) Complex electrical devices

There may be more complicated G&T devices that may include current and/or voltage transformers, glow tubes, or other accessory components. These more complex devices are not covered by this standard. Due to their complexity, additional testing and interlocking are required, and manufacturers should be consulted for the availability and ratings of these types of devices.

[1] Information on references can be found in Clause 2.