

IEEE Standard Cybersecurity Requirements for Substation Automation, Protection, and Control Systems

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**Power System Relaying Committee and Substations Committee
of the
IEEE Power and Energy Society**

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IEEE-SA Standards Board

Abstract: Cybersecurity measures require that a balance be achieved between technical feasibility and economic feasibility and that this balance addresses the risks expected to be present at a substation. Further, cybersecurity measures must be designed and implemented in such a manner that access and operation to legitimate activities is not impeded, particularly during times of emergency or restoration activity. This standard presents a balance of the above factors.

Keywords: critical infrastructure protection, cybersecurity, electronic access, encryption, IEEE C37.240™, remote access, password management, substations

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Introduction

This introduction is not part of IEEE Std C37.240™-2014, IEEE Standard Cybersecurity Requirements for Substation Automation, Protection, and Control Systems.

This document provides technical requirements for substation cybersecurity. It presents sound engineering practices that can be applied to achieve high levels of cybersecurity of automation, protection, and control systems independent of voltage level or criticality of cyber assets. Cybersecurity includes trust and assurance of data in motion, data at rest, and incident response.

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1. Overview

1.1 Scope

This document provides technical requirements for substation cybersecurity. It presents sound engineering practices that can be applied to achieve high levels of cybersecurity of automation, protection, and control systems independent of voltage class or criticality of cyber assets. Cybersecurity includes trust and assurance of data in motion, data at rest, and incident response.

1.2 Reason

Modern substation automation, protection, and control systems, while using technology advancements to achieve greater power-system reliability, can be vulnerable to a multitude of cybersecurity threats. These vulnerabilities and threats can lead to overall power-system integrity issues. With the increasing dependency on communication technology and the growing pressure of a secure utility infrastructure, various standardization bodies are in the process of developing cybersecurity standards where very little effort has gone into the harmonization or rationalization of these standards to substation applications. Examples of important standards to the utility community are the following: