

# IEEE Standard for Intelligent Electronic Devices Cyber Security Capabilities

IEEE Power and Energy Society

Sponsored by the  
Substations Committee  
and the  
Transmission and Distribution Committee

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**IEEE Std 1686™-2013**  
(Revision of  
IEEE Std 1686-2007)



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# **IEEE Standard for Intelligent Electronic Devices Cyber Security Capabilities**

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**Substations Committee**  
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**IEEE Power and Energy Society**

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**Abstract:** The functions and features to be provided in intelligent electronic devices (IEDs) to accommodate critical infrastructure protection programs are defined in this standard. Security regarding the access, operation, configuration, firmware revision and data retrieval from an IED are addressed. Communications for the purpose of power system protection (teleprotection) are not addressed in this standard.

**Keywords:** CIP, critical infrastructure protection, cyber, IED, IEEE 1686™, intelligent electronic device, security, substation.

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## Introduction

This introduction is not part of IEEE Std 1686™-2013, IEEE Standard for Intelligent Electronic Devices Cyber Security Capabilities.

Critical infrastructure protection (CIP) programs developed by utilities are highly dependent on the functionality and capabilities of intelligent electronic devices (IEDs) in regards to cyber security. This standard provides utilities that develop such programs the ability and assurance to procure, install, and commission IEDs that do not compromise their programs. The standard also provides the required suite of functions and capabilities to the various vendors that will be required to incorporate these features in their product line for customers that cite this standard.

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## 1. Overview

### 1.1 Scope

The standard defines the functions and features to be provided in intelligent electronic devices (IEDs) to accommodate critical infrastructure protection (CIP) programs. The standard addresses security regarding the access, operation, configuration, firmware revision, and data retrieval from an IED. Encryption of communications to and from the IED is also addressed.

### 1.2 Purpose

The standard defines the functions and features to be provided in IEDs to accommodate CIP programs. Specifically, the standard states what safeguards, audit mechanisms, and alarm indications shall be provided by the vendor of the IED with regard to all activities associated with access, operation, configuration, firmware revision, and data retrieval from an IED. The standard also allows the user to define a security program around these features and alert the user if an IED does not meet this standard as to the need for other defensive measures (technical and/or procedural) that may need to be taken. The encryption for the secure transmission of data to the IED is also part of this standard.