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## **Information technology — Ubiquitous green community control network — Control and management**

*Technologies de l'information — Protocole de contrôle de la  
communauté verte omniprésente — Contrôle et gestion*



Reference number  
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IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
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E-mail [inmail@iec.ch](mailto:inmail@iec.ch)  
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Institute of Electrical and  
Electronics Engineers, Inc.  
3 Park Avenue, New York  
NY 10016-5997, USA  
E-mail [stds.ipr@ieee.org](mailto:stds.ipr@ieee.org)  
Web [www.ieee.org](http://www.ieee.org)

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# IEEE Standard for Ubiquitous Green Community Control Network: Control and Management

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# IEEE Standard for Ubiquitous Green Community Control Network: Control and Management

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**IEEE-SA Board of Governors**

Approved 23 August 2013

**IEEE-SA Standards Board**

## ISO/IEC/IEEE 18881:2016(E)

**Abstract:** This standard describes network gateway access, control, and management; specifies control and management requirements; defines the system architecture, communication sequences, and enhanced functions for the protocols defined in IEEE 1888™, “Ubiquitous Green Community Control Network Protocol”; and extends the protocols and interfaces based on the requirements. This standard shall provide enhanced protocols, workflows, and message formats for the network gateway under control and management, such as registration, access, control, event handling, configuration, status querying, etc.

**Keywords:** access, configuration, control, event handling, IEEE 1888.1™, management, running status

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## Participants

At the time this IEEE standard was completed, the Ubiquitous Community Network Access Control and Management Protocol Working Group had the following membership:

**Huiling Zhao**, *Chair*  
**Dong Liu**, *Vice Chair*

Beijing Jiaotong University  
BII Group Holdings Ltd.  
China Telecommunications  
Corporation

Cisco Systems Inc.  
Intel Corporation  
Qingdao Gaoxiao Information  
Industry Co., Ltd.

Raisecom Technology Co., Ltd  
The University of Tokyo

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Bin Yang  
Changhe Du  
Chen Gu  
Dehui Liu  
Dong Liu  
Guoquan Tan  
Hideya Ochiai  
Hiroshi Esaki  
Hongke Zhang

Jiabao Cao  
Li Liu  
Lianshan Jiang  
Lihua Pi  
Ming Feng  
Ming Qiu  
Ning Zou  
Shoichi Sakane  
Tiejun Wang

Tsuyoshi Momose  
Wei Li  
Wenhai Wang  
Wenjie Li  
Xiaochuan Gu  
Xiaopeng Zhao  
Xiuying Tan  
Yan He

The following members of the entity balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Beijing Jiaotong University  
BII Group Holdings Ltd.  
China Datang Corporation  
China Telecommunications  
Corporation

Cisco Systems, Inc.  
Intel Corporation  
Marvell Semiconductor, Inc.  
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Telephone Corporation (NTT)

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Industry Co. Ltd.  
Raisecom Technology Co., Ltd.  
The University of Tokyo

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Masayuki Ariyoshi  
Peter Balma  
Farooq Bari  
Ted Burse  
Wael William Diab  
Stephen Dukes  
Jean-Philippe Faure  
Alexander Gelman

Mark Halpin  
Gary Hoffman  
Paul Houzé  
Jim Hughes  
Michael Janezic  
Joseph L. Koepfinger\*  
Oleg Logvinov  
Ron Petersen

Gary Robinson  
Jon Walter Rosdahl  
Adrian Stephens  
Peter Sutherland  
Yatin Trivedi  
Phil Winston  
Yu Yuan

\*Member Emeritus

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Richard DeBlasio, *DOE Representative*  
Michael Janezic, *NIST Representative*

Patrick Gibbons  
*IEEE Standards Program Manager, Document Development*

Krista Gluchoski  
*IEEE Standards Project Specialist, Professional Services*

Joan Woolery  
*IEEE Standards Program Manager, Technical Program Development*

## Introduction

This introduction is not part of IEEE Std 1888.1-2013, IEEE Standard for Ubiquitous Green Community Control Network: Control and Management.

In an IEEE 1888 network, there are components [such as an application (APP), a gateway (GW) and storage, etc.] and sensors/actuators. GWs and sensors/actuators are the most popular facilities used in Ubiquitous Green Community Control Networks (UGCCNets). Sensors/actuators are data terminals that “generate” physical data or “accept” command data. GWs are used to relay data between sensors/actuators and other components, and data translation may be made during the transmission. GWs could be provided by different vendors or suppliers with different functions; therefore, they need to be managed to operate collaboratively. In this case, a consistent protocol, which is the essential task of this standard, is required.

This standard is based on IEEE Std 1888-2011 protocols, enhancing the management and control functionality of the network by extending the interfaces, protocols, and message formats, and focuses on the GW-related workflows for access, control, configuration, registration, running status, event handling, etc. Three aspects are included in this specification:

- a) Specifying system architecture to manage and control GWs and the connected sensors/actuators
- b) Providing methods to monitor GWs
- c) Describing the communication processes that facilitate the operation abilities

In order to achieve effective network operation management, the management and control unit (MCU), which is responsible for the management of components (such as GW) access, control, and configuration, is introduced.

This document is organized as follows:

- Clause 4 specifies the general system architecture and typical communication sequences
- Clause 5 and Clause 6 describe the MCU and GW, respectively, which are key nodes in the GW control and management process
- Clause 7 focuses on the access, configuration, control, and management processes of the GW
- Clause 8 and Clause 9 describe the relevant interfaces and data structures that are extensions of IEEE Std 1888-2011
- Clause 10 describes the compatibility with IEEE Std 1888-2011
- Clause 11 describes the security considerations

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## 1. Overview

### 1.1 Scope

Based on the IEEE 1888™ protocols, this standard describes network gateway central access control and management policy through the extension of existing interface protocols, message formats, and interactive processing in ubiquitous green community control networks (UGCCNets). This standard extends the definition of the original interface protocols and message formats and mainly specifies the network gateway signal flow for access control, registration management, state querying, event reporting, remote management, etc.

### 1.2 Purpose

This standard aims to provide open and standardized network gateway management interface protocols for service providers, system integrators, equipment manufacturers, etc., through the extension of the original interface protocol in order to be able to remotely control and monitor the network gateway and other facilities in green communities, such as heating, ventilation, and air conditioning (HVAC); lighting systems; energy equipment; and so on.

## 2. Normative references

The following referenced documents are indispensable for the application of this document (i.e., they must be understood and used, so each referenced document is cited in text and its relationship to this document is explained). For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

IEEE Std 1888<sup>TM</sup>-2011, IEEE Standard for Ubiquitous Green Community Control Network Protocol.<sup>1,2</sup>

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