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Residential Controls—ClimateTalk 2.1 HVAC Application Profile

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Foreword

ClimateTalk is a universal language for innovative, cost-effective solutions that optimize performance, efficiency, and home comfort. The ClimateTalk Open Standards define a set of messages and commands to enable interoperability, enhanced user interface, and machine-to-machine control independent of the physical layer connecting the devices.

This document defines the application requirements corresponding to OSI Layer 7 that are specific to a heating, ventilation, and air conditioning (HVAC) subsystem operation and interaction with other devices on a ClimateTalk network.

These standards are periodically reviewed by the Residential Controls Section of NEMA for any revisions necessary to keep them up to date with advancing technology. Proposed or recommended revisions should be submitted to:

NEMA Technical Operations Department
National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

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Emerson Automation Solutions—Rosemont, IL
Johnson Controls—Goode, VA
Resideo Technologies, Inc.—Golden Valley, MN
White-Rodgers/Copeland—St. Louis, MO

Contents

Figures

Tables

History of Standards

The Residential Controls Section of NEMA was formed in 1940 to promote the standardization of products within the scope of the section. NEMA standards are voluntary and are designed to eliminate misunderstandings between the purchaser and the manufacturer.

This publication is one of a series sponsored by the Residential Controls Section. Other publications in this series are identified as Pub. No. NEMA BS XX (followed by the year of issue).

The present publication, NEMA BS 31011-2023, is published in accordance with NEMA's policy of periodic review and revision to keep NEMA standards contemporary with industry needs and technological advancement.

Section 1
General

1.1 Scope

ClimateTalk is an open standard that defines a set of messages and commands to enable interoperability, enhanced user interface, and machine-to-machine control independent of the physical layer connecting the devices.

The messages and commands defined by the ClimateTalk Information Model (CIM) are the presentation and application layers as defined by the OSI Model.[1] ClimateTalk Applications are fully defined at Layer 7 of the OSI Model by a combination of a Device Specific Application Profile, the Generic Application Specification, and the Command Reference.

ClimateTalk messages can be carried over any physical medium following the OSI model. The ClimateTalk Presentation Layer defines how messages are executed over the various physical mediums in use.

CT-485 and CT-LWP are wired serial physical and network layers designed to support the formation of ClimateTalk networks and transport ClimateTalk messages, but other OSI-based protocols—including wireless transports—can be used as well.

This document defines the specific application requirements for an HVAC subsystem designed to ClimateTalk Open Standards. This profile defines how HVAC subsystem components control, operate, and monitor an HVAC system on a ClimateTalk network. This document defines the interaction and distribution of control and data among a thermostat, an indoor unit (furnace or air handler), and an outdoor unit (air conditioner or heat pump). This profile builds on the *Generic Application Specification* defining requirements common to all ClimateTalk enabled devices.

The ClimateTalk Open Standards package shown in Figure 1 prescribes the mandatory requirements to ensure proper network formation of interoperable devices. Membership in the ClimateTalk Alliance as well as successful completion of mandatory conformance testing is required for listing a product as a ClimateTalk Certified Device.

[1] http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=20269.