



ASHRAE GUIDELINE

Specifying Direct Digital Control Systems

Approved by the ASHRAE Standards Committee on June 25, 2005, and by the ASHRAE Board of Directors on June 30, 2005.

This guideline is under continuous maintenance by a Standing Guideline Project Committee (SGPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the guideline. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE Web site, <http://www.ashrae.org>, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Guideline may be purchased from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada).

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This Guideline was developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). ASHRAE Guidelines are developed under a review process, identifying a guideline for the design, testing, application, or evaluation of a specific product, concept, or practice. As a guideline it is not definitive but encompasses areas where there may be a variety of approaches, none of which must be precisely correct. ASHRAE Guidelines are written to assist professionals in the area of concern and expertise of ASHRAE's Technical Committees and Task Groups.

ASHRAE Guidelines are prepared by project committees appointed specifically for the purpose of writing Guidelines. The project committee chair and vice-chair must be members of ASHRAE; while other members of the project committee may or may not be ASHRAE members, all must be technically qualified in the subject area of the Guideline.

Development of ASHRAE Guidelines follows procedures similar to those for ASHRAE Standards except that (a) committee balance is desired but not required, (b) an effort is made to achieve consensus but consensus is not required, (c) guidelines are not appealable, and (d) guidelines are not submitted to ANSI for approval.

The Manager of Standards of ASHRAE should be contacted for

- a. interpretation of the contents of this Guideline,
- b. participation in the next review of the Guideline,
- c. offering constructive criticism for improving the Guideline,
- d. permission to reprint portions of the Guideline.

DISCLAIMER

ASHRAE publishes Guidelines in order to provide assistance to interested parties on issues that relate to the design, testing, application, and/or evaluation of products, concepts, and practices where there may be more than one acceptable approach. Guidelines are not mandatory and only provide one source of information that may be helpful in any given situation.

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ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

[This foreword is not part of the guideline. It is merely informative and does not contain requirements necessary for conformance to the guideline.]

FOREWORD

This addendum modifies sample specification Section 2.2 (Section 8.2.8 of guideline) to update BACnet references and communication devices and capabilities.

In this addendum, changes to the current guideline are indicated in the text by underlined blue type (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum i to ASHRAE Guideline 13-2000

Change text in specification Section 2.2 (Section 8.2.8 of guideline) as indicated.

2.2 COMMUNICATION

~~A.~~ **A.** All ~~e~~Control products, communication media, connectors, repeaters, hubs, and routers provided for this project shall ~~shall~~ comprise a BACnet inter-network. Communication involving control components (i.e., all types of ~~e~~Controllers and operator interfaces) communication shall conform to ANSI/ASHRAE Standard 135-19952004, BACnet[®].

~~B.~~ **B.** Each BACnet device shall operate on the BACnet Data Link/Physical layer protocol specified for that device as defined in this section.

~~C.~~ **C.** The contractor shall provide all communication media, connectors, repeaters, hubs, and routers necessary for the inter-network.

~~DB.~~ **D.** All controllers Each controller shall have a communication port for connections to an with the operator interfaces using the BACnet Data Link/Physical layer protocol.

~~EC.~~ **E.** Project drawings indicate remote buildings or sites to be connected by a nominal 56,000 baud modem over voice-grade telephone lines. In each remote location, a modem and field device connection shall allow communication with A device on the inter-network shall be provided with a 28,800 baud modem that will allow for remote operator interface using the BACnet PTP Data Link/Physical layer protocol. Remote operator interface via this modem shall allow for communication with any and all each controllers on the is internetwork as described specified in Paragraph ~~FD~~ below.

~~DF.~~ **F.** Communication services over the inter-network shall result in Inter-network operator interface and value passing shall be that is transparent to the inter-network architecture as follows:

1. Connection of a An operator interface device

connected to any onea controller on the inter-network will shall allow the operator to interface with all each other inter-network controllers as if that interface were directly connected to the other controllers. Controller information such as data, Data, status information, reports, system software, and custom programs, etc., for all controllers shall be available for viewingable and editingeditable from any one each inter-network controller on the inter-network.

2. Inputs, outputs, and control variables used to integrate control strategies across multiple controllers All database values (e.g., objects, software variables, custom program variables) of any one controller shall be readable by any other each controller on the inter-network. This value passing shall be automatically performed by a controller when a reference to an object name not located in that controller is entered into the controller's database. An operator/installer shall not be required to set up any communication services to perform inter-network value passing. Program and test all cross-controller links required to execute specified control system operation. An authorized operator shall be able to edit cross-controller links by typing a standard object address.

~~GE.~~ **G.** Controllers with real-time clocks shall use the BACnet Time Synchronization service. System shall automatically synchronize system clocks daily from an operator-designated device via the inter-network. If applicable, system shall automatically adjust for daylight savings and standard time. The time clocks in all controllers shall be automatically synchronized daily via the inter-network. An operator change to the time clock in any controller shall be automatically broadcast to all controllers on the inter-network.

~~HE.~~ **H.** System shall be expandable to at least twice the required input and output objects with additional controllers, associated devices, and wiring. Expansion shall not require operator interface hardware additions or software revisions. The inter-network shall have the following minimum capacity for future expansion:

1. Each building controller shall have routing capacity for 50 controllers.
 2. The building controller network shall have capacity for 50 building controllers.
 3. The system shall have an overall capacity for 12,500 building controller, custom application controller, and application specific controller input/output objects.
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POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.