ASHRAE Addenda b, c, and d to
ASHRAE Guideline 13-2007

ASHRAE GUIDELINE

Specifying Direct Digital Control Systems

Approved by the ASHRAE Standards Committee on June 26, 2010, and by the ASHRAE Board of Directors on June 30, 2010.

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 (www.ashrae.org) or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from the ASHRAE Web site (www.ashrae.org) or 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). For reprint permission, go to www.ashrae.org/permissions.

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SPECIAL NOTE

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 committee members 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, or
d. permission to reprint portions of the Guideline.

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

FOREWORD

This addendum updates spec language in Section 8.4.5 to reflect current technology, to prevent tying the spec to a particular technology, and to make the spec more maintainable as the technology progresses by

- *removing "Pentium" to make processor speed generic rather than tied to a particular processor,*
- *removing item 4 because computers are no longer equipped with a floppy disk drive,*
- *bracketing the size and speed numbers as a reminder to the user that these values should be carefully considered and specified according to the project's needs per the guidance language in Section 8.4.5, and*
- *renumbering as appropriate.*

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum b to Guideline 13-2007

[Revise paragraph G in Section 8.4.5 as indicated.]

G. Portable Operator's Terminal. Furnish a portable operator's terminal that shall be capable of accessing all system data. This device may be connected to any point on the system network or may be connected directly to any controller for programming, setup, and troubleshooting. This device may be connected to any point on the system network or it may be connected directly to controllers using the BACnet point-to-point (PTP) data link/ physical layer protocol. The terminal shall use the read (initiate) and write (execute) services as defined in ~~Sections~~ Clauses 15.5 and 15.9, respectively, of ASHRAE Standard 135 to communicate with BACnet objects in the internetwork. The portable operator's terminal shall be ~~an IBM-compatible~~ a notebook-style PC including all software and hardware required. The PC shall contain at minimum:

1. ~~120 MHz Pentium processor~~{Dual core}processor, not less than the third fastest processor speed offered by the manufacturer
2. ~~16 MB~~{3 GB} of RAM
3. ~~800 MB~~{250 GB} hard drive
4. ~~1.44 MB floppy disk drive~~15-in. LCD display
5. Touch-pad or other internal pointing device
6. USB 2.0 port(s)
7. Network connectivity as required by controllers or hardware

The items within the above brackets {} indicate specifications that should be evaluated for each project based on the size and complexity of the system needs and the evolution of technology.

[Update the BACnet reference in Section 12, References, from the 2004 to the 2008 edition of the standard as shown.]

ANSI/ASHRAE Standard 135-~~2004~~2008, BACnet—A Data Communication Protocol for Building Automation and Control Networks.

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

FOREWORD

This addendum updates spec language to reflect current technology, to prevent tying the spec to a particular technology, and to make the spec more maintainable as the technology progresses. Specifically, it makes the processor generic by removing "Intel," eliminates the requirement for a 3.5-in. disk drive, adds some hardware requirements, and adds brackets as a reminder to the user that bracketed values should be carefully considered and specified according to the project's needs.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum c to Guideline 13-2007

[Revise paragraph C in Section 8.4.3 as indicated.]

C. Hardware. Each operator workstation or Web server shall consist of the following:

1. Computer: Hardware shall meet or exceed DDC system manufacturer's recommended specifications and shall meet response times specified elsewhere in this document. The following hardware requirements also apply:
   a. The hard disk shall have sufficient memory to store:
      1. All required operator workstation software
      2. A DDC database at least twice the size of the delivered system database
      3. One year of trend data based on the points specified to be trended at their specified trend intervals.
   b. Provide additional hardware (communication ports, video drivers, network interface cards, cabling, etc.) to facilitate all control functions and software requirements specified for the DDC system.
   c. Minimum hardware configuration shall include the following:
      1. ~~Intel 3.0 GHz processor~~Quad-core or two dual-core processors, not less than the third fastest processor speed offered by the manufacturer
      2. ~~1 GB of RAM~~{4 GB} of RAM
      3. ~~1.44 MB 3.5-inch diskette drive~~ Two-button optical mouse with wheel
      4. ~~48x~~{48x} CD-RW/DVD optical drive
      5. ~~80 GB hard disk drive~~ {Two 500 GB} hard disk drives providing data at ~~1 GB/sec~~{3 GB/sec} configured for {Raid 1} mirroring
      6. ~~17 in.~~{17-in.} LCD monitor with at least ~~1024 x 768~~{1024×768} resolution
      7. Full-size keyboard with numeric keypad
      8. NIC card rated for at least 1 Gigabit or 10 Gigabit Ethernet
      9. Three USB 2.0 bootable ports on the front panel to allow attachment of additional devices.
2. Modem: Auto-dial modem and associated cables shall transmit over voice-grade telephone lines at a nominal ~~56,000 baud~~{56Kbps} and shall provide communication between workstation or Web server and remote buildings and workstations.
3. Alarm Printer: Alarm printer shall have tractor feed and associated cables and shall be capable of a minimum ~~160 characters per second~~{160 characters per second} operation.
4. BACnet: Workstation/server shall have demonstrated interoperability during at least one BMA Interoperability Workshop and shall substantially conform to BACnet Operator Workstation (B-OWS) device profile as specified in ANSI/ASHRAE 135~~ASHRAE/ANSI 135-2001~~, BACnet Annex L.

The items within the above brackets {} indicate specifications that should be evaluated for each project based on the size and complexity of the system needs and the evolution of technology.

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

FOREWORD

This addendum adds a BACnet® Testing Laboratories (BTL) listing for the building controller.

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum d to Guideline 13-2007

[Add the following new paragraph to Section 8.6.9 and new item 8 to Paragraph 2.5, Building Controllers, as indicated below.]

BACnet allows different LAN technologies to be used. Ethernet has been selected for the example specification. However, ARCNET, MS/TP, or LonTalk also could be used. Keep in mind that Ethernet is a high-speed, high-performance LAN that may require additional hardware, wiring, configuration, and maintenance. Ethernet will be a higher cost solution than MS/TP using EIA 485 communication.

BACnet® Testing Laboratories were established to support compliance testing and interoperability testing activities to products that use the BACnet® protocol. BACnet® Testing Laboratories ensure that standardized BACnet devices meet the specified BACnet® capabilities and interoperability as defined in BACnet® Standard 135, Annex L, Profiles of Standardized BACnet Devices.

8. The Building Controller shall be listed by or submitted for testing to an official BACnet® Testing Laboratory as compliant with the standardized BACnet device capabilities for a BACnet Building Controller (B-BC). The Building Controller shall display the BTL Mark Label.

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.