BACnet

Certification Handbook

Version 4.0

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1 Document Purpose

This chapter describes the general intent of this document. This handbook describes the various aspects of the BACnet certification process.

1.1 Intended Audience

All parties involved in BACnet certification, such as vendors applying for a certificate, testing organizations applying to become a Recognized BACnet testing organization, the Certifier, the Certification Body and interested third parties, are the intended audience.

1.2 Purpose and Motivation

In close co-operation with BACnet International (BI) and the BACnet Testing Laboratory Working Group (BTL-WG), the BACnet Interest Group Europe (BIG-EU) developed a certification scheme to certify that products conform to the BACnet standard. The rules described in this document are binding on all parties involved in the certification process.

An important field of application for BACnet is the integration of system components from different vendors into one Building Automation system at the customer's premises. These multi-vendor and/or multidiscipline systems are advantageous for the customer, the scope of functionality can be broadened and the dependency on one vendor may be reduced. However, the customer needs to be able to trust in the interoperability of the products within his system.

It is the goal of the BACnet Interest Group Europe to support the proliferation of the BACnet protocol in the market. Therefore the association developed and maintains this certification scheme. The purpose of the certification scheme is to:

- Achieve a defined degree of interoperability between BACnet products;
- Increase the market success of the BACnet protocol;
- Establish and maintain a BACnet certificate.

While interoperability is the ultimate goal, a certificate is issued on the basis of a conformance test (see ISO/IEC 9646-1 clause 5.8).

In the document [CEN/TR 15615:2008 "Umbrella Document"] the relationship between several European standards and the Energy Performance of Buildings Directive (EPBD) is explained. The EPBD requires several different measurement methods to get reasonable usage of energy resources and to reduce the influence on the ecological environment. This technical report describes the European standards (EN) supporting the EPBD with calculation methods for getting the energy efficiency of a building.

The EPBD has to be implemented in all countries in the European Union. For example, in 2005 the EPBD became a national law in France by adoption of the Réglementation Thermique 2005 (RT 2005). Newer regulations are available. This is an ongoing process. This requires that all devices used in a building have to certify to fulfill international, European or, if not available, national standards. This can be realized by conformance testing and certification.

1.3 Scope

This document governs all aspects of BIG-EU's certification scheme which is the process used to obtain a BACnet certificate, issued by an accredited certifier on behalf of BACnet Interest Group Europe. It provides guidance for all parties, persons or legal entities involved in the certification process and it defines the structure of, and the rules for, the authorities issuing the certificates.

This certification scheme applies to products using the BACnet protocol for data communication according to ISO 16484-5 (ASHRAE 135). The scheme certifies the conformance to the standard by the BTL test documents on basis of (and extending) the test standard ISO 16484-6 (ASHRAE 135.1).

This handbook shall complement, rather than contradict, the BACnet standard, its addenda, and the BTL Test Package.

1.4 BTL Policies

This document is not intended to provide information about the testing process, retesting policies, scope of retests, requirements for testing derived or OEM products and definitions which components are "the product" (combinations of

hardware/software vs. platforms) and which changes to the product requires a retest.

This information can be found in the BTL testing documentation which is a material part of the certification process and is included here by reference (the current link can be found in the Annex document).

2 Terms and Abbreviations

BACTOR BACnet Test Organization Recognition

BI BACnet International

BIG-EU BACnet Interest Group Europe
BTL BACnet Testing Laboratories

BTL-WG BTL Working Group

TEVIA Testing Equivalence, Validation and Improvement Activity

WG-T BIG-EU's Working Group Technique

3 Acknowledgement

In 2011-2015 the Certification Handbook working group updated the outdated version from 2006.

Members of the Certification Handbook Group as of January 2012:

- Dr. Frank Bitter, WSPCert, Stuttgart/ Germany
- Prof. Dr. Peter Fischer, University of Applied Sciences and Arts, Dortmund/Germany
- Klaus Wächter, Siemens AG, Zug/Switzerland
- Christoph Zeller, Fr. Sauter AG, Basel/Switzerland
- Carl Neilson, Delta Controls, Surrey/Canada
- Frank Schubert, Beckhoff Automation, Verl/Germany

4 References

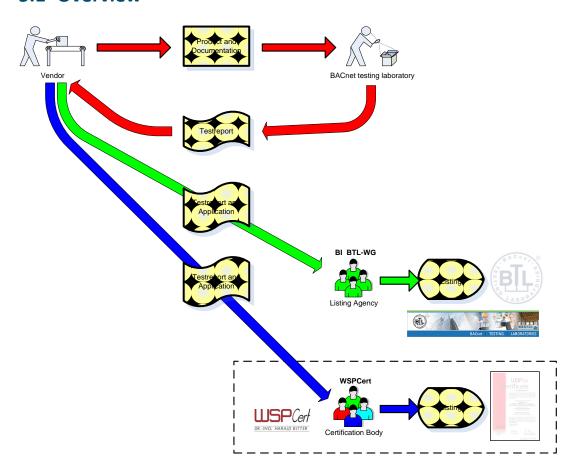
4.1 Revision History

Rev	Date		Remarks		
A	2006	•	Initial Certification Handbook		
4.0	25 Jan 2016	•	New certification process after merging process with BTL		

5 Getting Started

This chapter provides an overview of the testing and certification process and its relationship to BACnet International's testing and listing process.

5.1 Overview



A vendor of a BACnet product has various options to assure and demonstrate BACnet Conformance.

5.2 Testing

The first step is the testing process. The testing organization issues a test report which documents the scope of testing and the general result (device passed or failed) and the detailed test results. The test report is not published. The testing process is the same regardless of whether the vendor wants to obtain a BACnet Certification or a BTL Listing.

5.3 BTL Mark

After the successful testing of a product, a vendor may apply for a BTL listing and the right to apply the BTL Mark to the device. All products which have obtained a BTL listing are available on the BI website in the section "BTL Listed Products". BI is solely responsible for managing the BTL listing process and rights to apply the BTL Mark. This process is not covered by this handbook.

5.4 Certificate

After the successful testing of a product, a vendor may apply for a certificate. A database of certificates is published on the BIG-EU website (Certificate database). In many European project tenders, certified devices are requested and a vendor or system-integrator offering a certified product may include a copy of the certificate when applying for projects.

5.5 Organizations

Due to the different roles and responsibilities, a vendor has to contact different parties to apply for testing, listing (BTL Mark) and certification of BACnet products.

The testing organizations are responsible for offering and performing the testing of BACnet products according to the BTL test package.

BI is responsible for maintaining the global listing of products which have been granted the right to wear the BTL Mark.

The certification body on behalf of BIG-EU is responsible for issuing certificates and forwarding them to the BIG-EU office for inclusion in the certificate database.

6 Parties involved and their Roles

This chapter describes the parties involved in the certification process, their rights and their duties.

6.1 Certification Scheme

The figure below explains the certification scheme, the relationship between the parties and the flow of information.

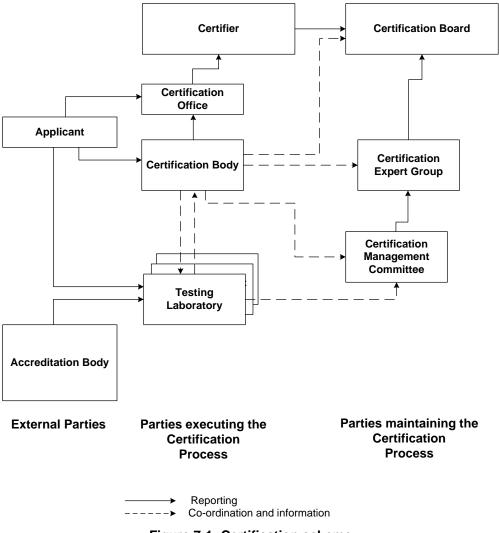


Figure 7-1: Certification scheme

6.2 The Parties Involved

This clause introduces the parties involved in the certification process. Annex part 2 contains a current list of organizations and their contact information.

6.2.1 The Applicant

The applicant is a BACnet vendor or a company marketing a BACnet product which is applying for a certificate.

6.2.2 The Certifier

The certifier is the executive board of the BIG-EU and certifies a product based on the technical judgment of a recognized BACnet testing organization. This task is performed by the certification body on behalf of the certifier. The certifier is responsible for approving BACnet testing organizations. This task is performed on behalf of the certifier through the BACnet Test Organization Recognition (BACTOR) process overseen by the BTL-WG.

The certifier is responsible for developing and maintaining the certification scheme.

6.2.3 Certification Board

The certification board is responsible for the surveillance of the certification process. The certification board also acts as the ultimate body of appeal. The certification board consists of the BIG-EU Advisory Board.

6.2.4 Certification Office

The Certification Office is the primary source of information regarding the certification process. The tasks of the certification office are fulfilled by the BIG-EU office. The certification office is responsible for maintaining the Certificate database. The Certification Office may contact the applicant for information not contained in the certification records provided by the Certification Body.

The Certification Office is responsible to make the Certification Handbook publically available.

6.2.5 Certification Body

The Certification Body is responsible for implementing the certification process and thereby checks the certification requirements, verifies that the product passed the conformance test and formally judges the validity of the test report (e.g. completeness of the set of tests applied, correctness of the test report, the report was issued by a recognized BACnet testing organization, etc.).

The certification body is accredited based on ISO/IEC17065.

The function of the certification body is solely delegated to the certification agency listed in the Annex part 4.

The certification body presents an annual report to BIG-EU. This report is presented to the members of BIG-EU at the annual general meeting. BIG-EU may provide this report to other interested parties upon request.

The report shall provide an overview of the yearly activities in BACnet certification and contains among others the:

- Number of certificates issued:
- Number of certificates renewed:
- Number of certificates expired and not being renewed;
- Current list of valid certificates;
- Problems noticed in the certification process;
- Pricing structure for the next year (cost per certificate).

6.2.6 Certification Expert Group

The Certification Expert Group is responsible for overseeing the drafting, extension and maintenance of the Certification Process and the maintenance of the Certification Handbook. The group consists of the members of the BIG-EU WG-Technique (WG-T). The group reports to the BIG-EU.

The Certification Expert Group acts as a technical expert team for the Certification Board and the Certification Body in cases when either party needs a second opinion on the recommendation for issuance of a certificate.

6.2.7 Testing Organizations

For the purpose of obtaining a BACnet certificate, only test reports from BTL recognized test organizations shall be accepted. Recognized testing organizations shall meet the requirements defined by the BTL-WG in the BACTOR process which includes the requirement that test organizations be accredited according to ISO/IEC 17025.

Recognized Testing Organizations within the scope of this certification scheme are obliged to participate in regularly scheduled Testing Equivalent, Validation and Improvement activities (TEVIA) organized by the BTL-WG. Details are given in the TEVIA process description.

6.2.8 BTL-WG

Among its other tasks, the BTL-WG is responsible for the following elements BACnet test organization oversight:

- BACnet Test Organization Recognition (BACTOR) process;
- Testing Equivalence, Validation and Improvement Activity (TEVIA)
 process, formerly known as "round robin testing";

For a description of the BACTOR process see Annex part 6. For a description of the TEVIA process see Annex part 7.

7 Processes

This chapter describes the various processes in detail.

7.1 Testing

The process of testing is described in the BTL Test Package and is not part of this handbook. The interface between the testing and the certification process is a BACnet test report issued by a testing organization as described in this document.

For information on applying and preparing for testing refer to the BACnet International website in the BACnet Testing Labs section.

7.2 BTL-Listing

Applying for the BTL Mark and the BTL Listing is out of the scope of this document. Please refer to the BI website in the section "BTL Listed Products".

7.3 Certification

The certification process consists on the following 5 phases:

- 1. Information
- 2. Testing phase
- 3. Application
- 4. Certification
- 5. Issuing and publication of certificate

Information:

For information on the certification process the applicant can contact the certification body, certification office or a testing organization. The applicant will receive the relevant documents and information for the certification process.

Testing phase:

The applicant contacts the test organizations on his own and arranges for the testing of the product with the test organization. The selection of which recognized test organization to use is up to the applicant. The costs for testing will be directly charged by the test organization. For any questions which may concern the certification the applicant can, at any time, contact the certification body.

Application:

After the successful completion of testing, the applicant can apply for the certification of his tested BACnet products. He has to complete the application form and sign a certification agreement described in this document. The signed certification agreement is valid for all products that the applicant may submit at this, or any future time.

The date of the test report shall not be more than one year prior to the application for certification.

Certification:

Once all relevant documents have been sent to the certification body the certification body reviews and verifies the successful completion of the conformance tests, the fulfillment of the certification requirements and the completeness and correctness of the documents.

Issuing and publication of the certificate:

When the Certification process is successfully completed the certification body issues a certificate. The certification costs and the annual fee for the first year are due at this time. The certification body will inform the certification office about the certificate. The certification office will arrange the publication in the certificate database on the BIG-EU website.

7.3.1 Initial Certificate

7.3.1.1 Uniquely Identifying the Firmware

The format of the unique identification of a firmware revision and application software version may be documented and explained to the certification body by the vendor. To allow third parties to identify an implementation, the format provided by the vendor is publically available on the BIG-EU website together with the certificate information. This allows non-BACnet relevant changes in the firmware without the requirement to increase the entire revision or version information.

If the vendor does not document the format of firmware revision and application software version the information found in the implementation at the time of testing is statically documented in the certificate.

The rules that determine whether, or not, retesting is required due to changes made to a product are defined by the BTL Retesting Policy.

7.3.2 Validity of the certificate

Certificates are valid for up to one year. All certificates expire March 31st. For the initial certificates, which are valid for less than a full year, the fee shall be pro-rated for the number of months the certificate is valid.

7.3.3 Maintenance of certification

7.3.3.1 Annual renewal of certificates

Before the expiration of the certificate, the applicant is contacted by the certification body. The certification body provides a list of the applicant's certified products and requests confirmation that: the products are still available; the products do not contain substantive changes to the BACnet implementation as defined by the BTL Test Package; and that the applicant would like to renew the certification.

7.3.3.2 Retesting

Retesting of certified products is required every 5 years and as required by the BTL Retesting Policy. The test will be performed according to BTL-WG Re-testing Policy.

The applicant will be informed of the need to retest certified products by the certification body. Such notice will be provided sufficiently in advance so as to allow retesting before the certificates expire.

If the validity period of the certification will exceed a 5 year timeframe after the last testing of the product (initial test or the last retest) was completed, the applicant can either provide a newer test report or terminate the certification at the end of the 5 year period.

The 5 year period may be extended if the applicant can provide a declaration from the test organization that the delay is caused by the workload of the organization and not by the applicant.

7.3.4 Use of the certificate

The certificate can be used by the applicant to demonstrate that the tested product is certified. A copy of the certificate may be provided to customers in tender procedures. The use of the certificate is not restricted as long as it is unchanged, the validity (products, software, date) is clearly shown and it is not used in a deceptive manner.

7.3.5 Withdrawal, End of Certification

The certification may be withdrawn by the certification body with prior information if the applicant breaks the commitments of the certification scheme in the certification agreement, doesn't pay the certification fees or doesn't retest the product if required according to clause 8.3.3.2.

The applicant can choose to cancel a certificate before the annual renewal by informing the certification body .

Certification ends if the product is no longer available on the market.

The annual certification fee is not refundable regardless of when or why a certificate is cancelled.

7.4 Testing organizations

An institution becomes a recognized BACnet testing organization through the BACTOR process. For a description of the BACTOR process see the Annex part 6.

7.5 Certification Handbook Maintenance

Certification handbook maintenance is the responsibility of the certification expert group. While the core document itself (the certification handbook) should not be

modified frequently, information which may change more often is contained in the Certification Handbook's Annex.

7.5.1 Handbook Approval

Changes in the certification handbook shall be formally approved by BACnet International and the certification board. New releases of the annex do not need to be formally approved.

7.5.2 Updates of Annexes

Updating information documented in the annex is the obligation of the certification office. The necessary information for the update may be provided by BACnet International (e.g. new recognized testing organizations), the BTL-WG (e.g. new test-plans), the certification body (e.g. update of the accreditation of a testing organization) or from testing organizations (e.g. contact information, address changes). The certification office shall update the information in the annex as soon as possible and issue a new release and provide it publically on the BIG-EU website.

7.5.2.1 Annex Version Information

In case of any change in the annex document the version number of the entire annex document changes. Changes are documented in the change history section of the annex document. The introduction of a new version of the annex document invalidates all previous versions.

7.6 Appeals

Appeals may be sent at any time by any party involved via a written request. The general goal shall always be consensus based on an open and fair discussion. This clause describes potential source of appeals and describes how these are processed.

Complaints concerning the certification should first be taken up with the certification body.

If the disagreement cannot be resolved with the certification body directly, the applicant can send a written appeal to the certification office. Appeals are handled by the certifier, except in the case where the appeal is against the certifier itself.

If the appeal is addressed against the certifier itself the appeal is forwarded to the certification board.

Certifier or certification board shall solely process all necessary steps to clarify the appeal but may request support from different parties for expertise.

After processing the appeal considering the various detailed aspects and potential support by expert parties the appeal is finally voted. The appeal is judged as being actually entitled or not. If the appeal is entitled all necessary actions shall be taken to correct the reason for the appeal.

Subsequent identical appeals are rejected by the certification office including the reference decision formerly taken for the initial appeal.

Processing appeals will not be charged to the appealing party. The costs to process appeals are taken by the certifier.

7.6.1 Appeals against a denial of a certificate

Appeals regarding the issuance of certificates include denial of an initial application for a certificate, denial of renewal or expiration of an existing certificate or questions about misuse of the certificate. The reasons for a denial may be either technical or organizational so depending on the issue different parties may be involved in clarification of the appeal.

In any case the certification body is involved in clarification of the appeal.

If the issue is based on a technical question the certification expert group is requested for support and expertise.

If the issue is organizational the certification management team may be involved.

If the appeal is not entitled the ultimate decision is taken by the certification board in a formal vote with simple majority. All members of the certification board ballot with one vote.

7.6.2 Appeals against denial of testing organization recognition

Appeals related to the acceptance (or denial) of testing organization recognition are described in the BACTOR process and are handled by the BTL-WG.

7.6.3 Appeals against a test organization or the testing process

Appeals related to the testing of a product are described by the BTL's test package and are handled by the BTL-WG.