

ICS 35.240.50

CCS L 67



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 28847.5-2021

**Building automation and control systems - Part 5: Data
communication protocol**

建筑自动化和控制系统 第5部分：数据通信协议

(English Translation)

Issued on: March 9, 2021

Implemented on: October 1, 2021

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Foreword	
Introduction	
1 Scope	
2 Normative references	
3 Terms and definitions	
4 Abbreviations and symbols	
5 BACnet protocol structure	
6 Application layer	
7 Network layer	
8 Data link/physical layer. ISO /IEC 8802-3 ("Ethernet") LAN	
9 Data link/physical layer. ARCNET LAN	
10 Data transmission/physical layer. master-slave/token pass (MS/TP) LAN	
11 Data link layer/physical layer. point-to-point (PTP)	
12 Data link/physical layer. EIA/CEA-709.1 ("LonTalk") LAN	
13 Object modeling of control equipment	
14 Alarm and Event Service	
15 File Access Service	
16 Object Access Service	
17 Remote Device Management Service	
18 Virtual Terminal Service	
19 Error, Rejection and Abort Code	
20 BACnet Regulation	
21 BACnet protocol data unit coding	
22 Standardized description of application protocol data unit	
23 Conformance and Interoperability	
24 BACnet extension	
25 Cyber Security	
Appendix A (normative appendix) Protocol implementation conformance statement	
Appendix B (normative appendix) BACnet network combined with non-BACnet network	
Appendix C (Normative Appendix) BACnet/IP	
Appendix D (Normative Appendix) BACnet Interoperability Components (BIBBs)	

Appendix E (Normative Appendix) Description and configuration of standard BACnet equipment

Appendix F (normative appendix) BACnet/WS web service interface

Appendix G (Normative Appendix) ZigBee is used as the BACnet data link layer

Appendix H (normative appendix) BACnet coding in standard discriminating factor format

Appendix I (Normative Appendix) XML Data Format

Appendix J (Normative Appendix) Network layer mapping error

Appendix K (Normative Appendix) List of Standard Terms

References

1 Scope

This part of GB/T 28847 specifies the BACnet protocol structure and application involved in the data communication protocol in building automation and control systems.

Use layer, network layer, data link/physical layer. ISO /IEC 8802-3 ("Ethernet") LAN, data link/physical layer. ARCNET local area Network, data link/physical layer. master-slave/token pass (MS/TP) LAN, data link/physical layer. point-to-point (PTP), data link/ Physical layer. EIA/CEA-709.1 ("LonTalk") local area network, modeling control equipment as a set of objects, alarm and event services, file access Services, object access services, remote device management services, virtual terminal services, errors, denial and termination codes, BACnet procedures, BACnet Protocol data unit coding, application protocol data unit standardized description, consistency and interoperability, BACnet extension, network security and other requirements.

This section applies to data communication services and protocols between related equipment in building automation and control systems.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

GM/T 0002-2012 SM4 block cipher algorithm

GM/T 0004-2012 SM3 cryptographic hash algorithm

ISO 7498 (all parts) Information Processing System Open System Interconnection Basic Reference Model (Informationprocessing 3 Terms

3 Terms and definitions

and definitions The following terms and definitions apply to this document.

3.1 Abstract syntax

The application layer data or application protocol control information uses the regulations to be followed by the symbolic rules independent of the coding technology that represents them.

3.2 Application

A collection of user information processing requests.

3.3 Application-entity

The OSI-related part of an application process.

3.4 Application-process

An element of a specific application for information processing in an open system.

3.5 Application-protocol-control-information

Use presentation layer services to coordinate the exchange of information between application entities that connect operations.

3.6 Application-protocol-data-unit

The data unit specified in the application protocol includes application protocol control information and so on.

3.7 Application-service-element

When appropriate, the OSI environment is provided through the use of lower-layer services, part of the application entity.

3.8 Concrete grammar

concretesyntax The specific realization of a certain data representation is used in the grammatical rules in the formal specification of the data.

3.9 Confirm(primitive)

An interactive representation in which a service provider indicates that certain procedures have been completed on a specific service access point.

3.10 Indication(primitive)

An interactive representation in which the service provider either indicates that it has actively requested some procedures, or indicates that a procedure has been Requested by the service user at the access point of the peer-to-peer service.

3.11 Peer-entities

Entities at the same layer in the protocol.

3.12 Real open system

A real system that complies with the requirements of the OSI standard when communicating with other real systems.

3.13 Real system

A collection consisting of one or more computers, related software, external software, terminals, operators, physical processes, information transmission methods, etc.

Note: It is an autonomous whole with the ability of information processing and information transmission.

3.14 Request(primitive)

In the interaction, the service user requests the execution of some procedures in an interactive representation.

3.15 Response(primitive)

In the interaction, the service user indicates that it has completed some procedures.

3.16 N-layer service access point (N)-service-access-point

The Nth layer entity provides the access point of the Nth layer service to the N-1th layer entity.

3.17 Nth layer service data unit (N)-service-data-unit

The interface data of the Nth layer maintains consistency in the Nth layer communication.

3.18 Service-user

An entity in a single open system that uses a service through a service access point.