



SLOVENSKI STANDARD
SIST EN ISO 16484-6:2026

01-junij-2026

Nadomešča:

SIST EN ISO 16484-6:2026

Sistemi za avtomatizacijo in regulacijo stavb (BACS) - 6. del: Preskušanje skladnosti protokolov za izmenjavo podatkov (ISO 16484-6:2026)

Building automation and control systems (BACS) - Part 6: Data communication conformance testing (ISO 16484-6:2026)

Systeme der Gebäudeautomation - Teil 6: Datenübertragungsprotokoll - Konformitätsprüfung (ISO 16484-6:2026)

Systèmes d'automatisation et de gestion technique du bâtiment (BACS) - Partie 6: Essais de conformité de la communication de données (ISO 16484-6:2026)

Ta slovenski standard je istoveten z: EN ISO 16484-6:2026

ICS:

35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
91.040.01	Stavbe na splošno	Buildings in general

SIST EN ISO 16484-6:2026

en,fr,de

Sample Document

get full document from standards.iteh.ai

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 16484-6

April 2026

ICS 91.040.01; 35.240.67

Supersedes EN ISO 16484-6:2025

English Version

Building automation and control systems (BACS) - Part 6: Data communication conformance testing (ISO 16484- 6:2026)

Systèmes d'automatisation et de gestion technique du bâtiment (BACS) - Partie 6: Essais de conformité de la communication de données (ISO 16484-6:2026)

Systeme der Gebäudeautomation - Teil 6:
Datenübertragungsprotokoll - Konformitätsprüfung
(ISO 16484-6:2026)

This European Standard was approved by CEN on 14 February 2026.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2026 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 16484-6:2026 E

Contents	Page
European foreword.....	3

Sample Document

get full document from standards.iteh.ai

European foreword

This document (EN ISO 16484-6:2026) has been prepared by Technical Committee ISO/TC 205 "Building environment design" in collaboration with Technical Committee CEN/TC 247 "Building Automation, Controls and Building Management" the secretariat of which is held by SNV.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2026, and conflicting national standards shall be withdrawn at the latest by October 2026.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 16484-6:2025.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 16484-6:2026 has been approved by CEN as EN ISO 16484-6:2026 without any modification.

Sample Document

get full document from standards.iteh.ai



**International
Standard**

ISO 16484-6

**Building automation and control
systems (BACS) —**

Part 6:
**Data communication conformance
testing**

*Systèmes d'automatisation et de gestion technique du bâtiment
(BACS) —*

Partie 6: Essais de conformité de la communication de données

**Sixth edition
2026-02**

Sample Document

get full document from standards.iteh.ai

ISO 16484-6:2026(en)

Sample Document

get full document from standards.iteh.ai

**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

© ISO 2026 – All rights reserved

ISO 16484-6:2026(en)

CONTENTS

CLAUSE	PAGE
FOREWORD	vi
1. PURPOSE	1
2. SCOPE	1
3. DEFINITIONS	1
3.1 Terms Adopted from International Standards	1
3.2 Abbreviations and Acronyms Used in the Standard	1
3.3 Common language used in tests	1
4. ELECTRONIC PICS FILE FORMAT	2
4.1 Character Encoding	2
4.2 Structure of EPICS Files	3
4.3 Character Strings	3
4.4 Notational Rules for Parameter Values	3
4.5 Sections of the EPICS File	4
5. EPICS CONSISTENCY TESTS	10
6. CONVENTIONS FOR SPECIFYING BACnet CONFORMANCE TESTS	12
6.1 TCSL Components	12
6.2 TCSL Statements	13
6.3 Time Dependencies	18
6.4 BACnet References	19
6.5 TD Requirements	19
6.6 Test Execution Considerations	19
7. OBJECT SUPPORT TESTS	21
7.1 Read Support for Properties in the Test Database	21
7.2 Write Support for Properties in the Test Database	23
7.3 Object Functionality Tests	30
8. APPLICATION SERVICE INITIATION TESTS	357
8.1 AcknowledgeAlarm Service Initiation Tests	357
8.2 ConfirmedCOVNotification Service Initiation Tests	359
8.3 UnconfirmedCOVNotification Service Initiation Tests	374
8.4 ConfirmedEventNotification Service Initiation Tests	379
8.5 UnconfirmedEventNotification Service Initiation Tests	425
8.6 GetAlarmSummary Service Initiation Tests	449
8.7 GetEnrollmentSummary Service Initiation Tests	449
8.8 GetEventInformation Service Initiation Tests	451
8.9 LifeSafetyOperation Service Initiation Tests	452
8.10 SubscribeCOV Service Initiation Tests	453
8.11 SubscribeCOVProperty Service Initiation Tests	454
8.12 AtomicReadFile Service Initiation Tests	459
8.13 AtomicWriteFile Service Initiation Tests	459
8.14 AddListElement Service Initiation Tests	460
8.15 RemoveListElement Service Initiation Tests	460
8.16 CreateObject Service Initiation Tests	461
8.17 DeleteObject Service Initiation Tests	461
8.18 ReadProperty Service Initiation Tests	462
8.19 ReadPropertyConditional Service Initiation Tests	464
8.20 ReadPropertyMultiple Service Initiation Tests	464
8.21 ReadRange Service Initiation Tests	466
8.22 WriteProperty Service Initiation Tests	470
8.23 WritePropertyMultiple Service Initiation Tests	473
8.24 DeviceCommunicationControl Service Initiation Tests	475
8.25 ConfirmedPrivateTransfer Service Initiation Test	476
8.26 UnconfirmedPrivateTransfer Service Initiation Test	476
8.27 ReinitializeDevice Service Initiation Tests	477
8.28 ConfirmedTextMessage Service Initiation Tests	477
8.29 UnconfirmedTextMessage Service Initiation Tests	478
8.30 TimeSynchronization Service Initiation Tests	479
8.31 UTCTimeSynchronization Service Initiation Tests	479
8.32 Who-Has Service Initiation Tests	479

ISO 16484-6:2026(en)

8.33	I-Have Service Initiation Tests	481
8.34	Who-Is Service Initiation Tests	481
8.35	I-Am Service Initiation Tests	482
8.36	VT-Open Service Initiation Tests	482
8.37	VT-Close Service Initiation Tests	483
8.38	VT-Data Service Initiation Tests	484
8.39	RequestKey Service Initiation Tests	485
8.40	Authenticate Service Initiation Tests	486
8.41	WriteGroup Service Initiation Tests	489
8.42	SubscribeCOVPropertyMultiple Service Initiation Tests	489
8.43	AuditLogQuery Initiation Tests	493
8.44	Who-Am-I Service Initiation Tests	494
8.45	You-Are Service Initiation Tests	494
9.	APPLICATION SERVICE EXECUTION TESTS	497
9.1	AcknowledgeAlarm Service Execution Tests	497
9.2	ConfirmedCOVNotification Service Execution Tests	521
9.3	UnconfirmedCOVNotification Service Execution Tests	526
9.4	ConfirmedEventNotification Service Execution Tests	529
9.5	UnconfirmedEventNotification Service Execution Tests	534
9.6	GetAlarmSummary Service Execution Tests	535
9.7	GetEnrollmentSummary Service Execution Tests	536
9.8	GetEventInformation Service Execution Tests	539
9.9	LifeSafetyOperation Service Execution Test	541
9.10	SubscribeCOV Service Execution Tests	545
9.11	SubscribeCOVProperty Service Execution Tests	555
9.12	AtomicReadFile Service Execution Tests	566
9.13	AtomicWriteFile Service Execution Tests	572
9.14	AddListElement Service Execution Tests	581
9.15	RemoveListElement Service Execution Tests	584
9.16	CreateObject Service Execution Tests	585
9.17	DeleteObject Service Execution Tests	590
9.18	ReadProperty Service Execution Tests	591
9.19	ReadPropertyConditional Service Execution Tests	595
9.20	ReadPropertyMultiple Service Execution Tests	596
9.21	ReadRange Service Execution Tests	605
9.22	WriteProperty Service Execution Tests	618
9.23	WritePropertyMultiple Service Execution Tests	626
9.24	DeviceCommunicationControl Service Execution Test	641
9.25	ConfirmedPrivateTransfer Service Execution Tests	648
9.26	UnconfirmedPrivateTransfer Service Execution Tests	649
9.27	ReinitializeDevice Service Execution Tests	649
9.28	ConfirmedTextMessage Service Execution Tests	652
9.29	UnconfirmedTextMessage Service Execution Tests	653
9.30	TimeSynchronization Service Execution Tests	654
9.31	UTCTimeSynchronization Service Execution Tests	655
9.32	Who-Has Service Execution Tests	655
9.33	Who-Is Service Execution Tests	662
9.34	VT-Open Service Execution Tests	665
9.35	VT-Close Service Execution Tests	666
9.36	VT-Data Service Execution Tests	667
9.37	RequestKey Service Execution Test	668
9.38	Authenticate Service Execution Tests	669
9.39	General Testing of Service Execution	673
9.40	AuditLogQuery Service Execution Tests	674
9.41	WriteGroup Tests	676
9.42	SubscribeCOVPropertyMultiple Service Execution Tests	679
9.43	Who-Am-I Service Execution Tests	693
9.44	You-Are Service Execution Tests	695
10.	NETWORK LAYER PROTOCOL TESTS	702
10.1	General Network Layer Tests	702
10.2	Router Functionality Tests	703

ISO 16484-6:2026(en)

10.3	Half-Router Functionality Tests	730
10.4	B/IP PAD Tests	737
10.5	Initiating Network Layer Messages.....	739
10.6	Non-Router Functionality Tests	740
10.7	Route Binding Tests	742
10.8	Virtual Routing Functionality Tests	747
11.	LOGICAL LINK LAYER PROTOCOL TESTS	766
11.1	UI Command and Response	766
11.2	XID Command and Response	766
11.3	TEST Command and Response.....	767
12.	DATA LINK LAYER PROTOCOLS TESTS	768
12.1	MS/TP State Machine Tests	768
12.2	PTP State Machine Tests.....	827
12.3	BACnet/IP Functionality Tests.....	859
12.4	BACnet/IPv6 Functionality Tests.....	890
12.5	Secure Connect Functionality Tests	905
13.	SPECIAL FUNCTIONALITY TESTS	965
13.1	Segmentation	965
13.2	Time Manager	973
13.3	Character Sets.....	977
13.4	Malformed PDUs	978
13.5	Subordinate Proxy Tests.....	979
13.6	Automatic Network Mapping.....	981
13.7	Automatic Device Mapping	981
13.8	Backup and Restore Procedure Tests	982
13.9	Application State Machine Tests.....	995
13.10	Workstation Scheduling Tests.....	996
13.11	BACnet/SC Certificate Replacement Tests.....	1013
14.	Reporting Test Results	1020
ANNEX A – EXAMPLE EPICS (INFORMATIVE)		1021
HISTORY OF REVISIONS.....		1039

get full document from standards.iteh.ai

ISO 16484-6:2026(en)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 205, *Building environmental design*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 247, *Building Automation, Controls and Building Management*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement) and with the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).

This sixth edition cancels and replaces the fifth edition (ISO 16484-6:2024), which has been technically revised.

The main changes are as follows:

- see the detailed list of changes on pages 1039 to 1043.

A list of all parts in the ISO 16484 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

ISO 16484-6:2026(en)

1. PURPOSE

1. PURPOSE

To define a standard method for verifying that an implementation of the BACnet protocol provides each capability claimed in its Protocol Implementation Conformance Statement (PICS) in conformance with the BACnet standard.

2. SCOPE

This standard provides a comprehensive set of procedures for verifying the correct implementation of each capability claimed on a BACnet PICS including:

- (a) support of each claimed BACnet service, either as an initiator, executor, or both,
- (b) support of each claimed BACnet object-type, including both required properties and each claimed optional property,
- (c) support of the BACnet network layer protocol,
- (d) support of each claimed data link option, and
- (e) support of all claimed special functionality.

3. DEFINITIONS

All definitions from ANSI/ASHRAE Standard 135-2020 also apply to this addendum.

3.1 Terms Adopted from International Standardss

local network: the network to which a BACnet device is directly connected.

remote network: a network that is accessible from a BACnet device only by passing through one or more routers.

test database: a database of BACnet functionality and objects created by reading the contents of an EPICS.

3.2 Abbreviations and Acronyms Used in the Standard

BNF	Backus-Naur Form syntax
EPICS	electronic protocol implementation conformance statement
IUT	implementation under test
TCSL	testing and conformance scripting language
TD	testing device
TPI	text protocol information

3.3 Common language used in tests

'any valid value': Any valid value refers to any value of the correct data type and within the vendor's range specified for the property this is applied to.

'any appropriate password': Any password that meets the Configuration Requirements specified in the test or test section. Passwords when required by the vendor are required to be no more than 20 characters.

'reset': Some tests require to reset the IUT. Reset includes power cycle via switch, power cycle via loss of power, and reinitializeDevice WARMSTART. As defined by the BACnet standard, "WARMSTART shall mean to reboot the device and start over, retaining all data and programs that would normally be retained during a brief power outage."

ISO 16484-6:2026(en)**4. ELECTRONIC PICS FILE FORMAT****4. ELECTRONIC PICS FILE FORMAT**

An electronic protocol implementation conformance statement (EPICS) file contains a BACnet protocol implementation conformance statement expressed in a standardized text form. EPICS files are machine and human readable representations of the implementation of BACnet objects and services within a given device. EPICS files shall use the extension ".TPI" (text protocol information) and contain normal editable text lines consisting of text character codes ending in carriage return/linefeed pairs (X'0D', X'0A').

EPICS files are used by software testing tools to conduct and interpret the results of tests defined in this standard. An EPICS file shall accompany any device tested according to the procedures of this standard.

4.1 Character Encoding

BACnet provides for a variety of possible character encodings. The character encodings in BACnet fall into three groups: octet streams, double octet streams and quad octet streams. Octet streams represent characters as single octet values. In some cases, such as Microsoft DBCS and JIS C 6226, certain octet values signal that the second octet which follows should be viewed along with the leading octet as a single value, thus extending the range to greater than 256 possible characters. In contrast, double octet streams view pairs of octets as representing single characters. The ISO 10646 UCS-2 encoding is an example. The first or leading octet of the pair is the most significant part of the value. Quad octet streams, such as ISO 10646 UCS-4, treat tuples of four octets at a time as single characters with the first or leading octet being the most significant.

To accommodate the various encodings that may be used with BACnet device descriptions, EPICS files begin with a header that serves both to identify the file as an EPICS file, and to identify the particular encoding used. The header begins with the string "PICS #" where # is replaced by a numeral representing the character set as shown in Table 4-1.

Table 4-1. Character Set Codes

code	character set
0	ISO 10646 (UTF-8)
1	IBM™/Microsoft™ DBCS
2	JIS X 0208
3	ISO 10646 (UCS-4)
4	ISO 10646 (UCS-2)
5	ISO 8859-1

An octet stream format can be recognized by examining the first eight octets of the EPICS file. Using ANSI X3.4 encoding as an example these eight octets will contain: X'50' X'49' X'43' X'53' X'20' X'30' X'0D' X'0A'. This represents the text "PICS 0" followed by carriage return and linefeed.

A double octet stream format can be recognized by examining the first 16 octets of the EPICS file. Using ISO 10646 UCS-2 encoding as an example these 16 octets will contain:

```
X'00' X'50' X'00' X'49' X'00' X'43' X'00' X'53'
X'00' X'20' X'00' X'34' X'00' X'0D' X'00' X'0A'
```

This represents the text "PICS 4" followed by carriage return and linefeed.

A quad octet stream format can be recognized by examining the first 32 octets of the EPICS file. Using ISO 10646 UCS-4 as an example these 32 octets will contain:

```
X'00' X'00' X'00' X'50' X'00' X'00' X'00' X'49'
X'00' X'00' X'00' X'43' X'00' X'00' X'00' X'53'
X'00' X'00' X'00' X'20' X'00' X'00' X'00' X'33'
X'00' X'00' X'00' X'0D' X'00' X'00' X'00' X'0A'
```

This represents the text "PICS 3" followed by carriage return and linefeed.

ISO 16484-6:2026(en)

4. ELECTRONIC PICS FILE FORMAT

4.2 Structure of EPICS Files

EPICS files consist of text lines ending in carriage return/linefeed pairs (X'0D', X'0A') encoded as octet, double octet or quad octet streams as defined in 4.1. In the rest of this standard, the term "character" will be used to mean one symbol encoded as one, two, or four octets based on the character encoding used in the EPICS file header. For example, the character space may be encoded as X'20' or X'0020' or X'00000020'. In this standard all characters will be shown in their single octet form.

The special symbol ¶ is used in this Clause to signify the presence of a carriage return/linefeed pair (X'0D0A'). Except within character strings, the character codes tab (X'09'), space (X'20'), carriage return (X'0D') and linefeed (X'0A') shall be considered to be white space. Any sequence of 1 or more white space characters shall be equivalent to a single white space character. Except within a character string, a sequence of two dashes (X'2D') shall signify the beginning of a comment which shall end with the next carriage return/linefeed pair, i.e., the end of the line upon which the -- appears. Comments shall be considered to be white space, and may thus be inserted freely.

EPICS files shall have, as their first line following the header, the literal text:

BACnet Protocol Implementation Conformance Statement ¶

This text serves as a signature identifying the EPICS file format.

Lines that define the sections of the EPICS (see 4.5) and the particular implementation data for a given device follow the signature line.

The EPICS file ends with a line containing the following literal text:

End of BACnet Protocol Implementation Conformance Statement ¶

4.3 Character Strings

The occurrence of a double quote (X'22'), single quote (X'27') or accent grave (X'60') shall signify character strings. For double quotes, the end of the string shall be signified by the next occurrence of a double quote, or the end of the line. For single quote or accent grave, the end of the string shall be signified by the next occurrence of a single quote (X'27'), or the end of the line. Thus strings which need to include a single quote or accent grave as a literal character in the string shall use the double quote quoting method, while strings which need to include double quote shall use the single quote or accent grave quoting method.

4.4 Notational Rules for Parameter Values

Within each section, parameters may need to be expressed in one of several forms. The following rules govern the format for parameters:

- (a) key words are case insensitive so that X'41' through X'5A' are equivalent to X'61' through X'7A';
- (b) null values are shown by the string "NULL";
- (c) Boolean values are shown by the strings "T" or "TRUE" if the value is true, or "F" or "FALSE" if the value is false;
- (d) integer values are shown as strings of digits, possibly with a leading minus (-): 12345 or -111;
- (e) real values are shown with a decimal point, which may not be the first or last character: 1.23, 0.02, 1.0 but not .02;
- (f) octet strings are shown as pairs of hex digits enclosed in either single quotes (X'2D') or accent graves (X'60'), and preceded by the letter "X": X'001122';
- (g) character strings are represented as one or more characters enclosed in double, single or accent grave quotes as defined in 4.3: 'text' or 'text' or "text";
- (h) bitstrings are shown as a list, enclosed by curly brackets ({} or X'7B' and X'7D'), of true and false values: {T,T,F} or {TRUE, TRUE, FALSE}. When the actual value of a bit does not matter, a question mark is used: {T,T,?};
- (i) enumerated values are represented as named, rather than numeric, values. Enumeration names are case insensitive so that X'41' through X'5A' are equivalent to X'61' through X'7A'. The underscore (X'5F') and dash (X'2D') are considered equivalent in enumeration names. Proprietary values are shown as a named text with no whitespace and ending in a non-negative decimal numeric. Each must start with the word "proprietary": Object_Type, proprietary-object-type-653;
- (j) dates are represented enclosed in parenthesis: (Monday, 24-January-1998). Any "wild card" or unspecified field is shown by an asterisk (X'2A'): (Monday, *-January-1998). The omission of day of week implies that the day is unspecified: (24-January-1998);
- (k) times are represented as hours, minutes, seconds, hundredths in the format hh:mm:ss.xx: 2:05:44.00, 16:54:59.99. Any "wild card" field is shown by an asterisk (X'2A'): 16:54:*. *;
- (l) object identifiers are shown enclosed by parentheses, with commas separating the object type and the instance number: (analog-input, 56). Proprietary object types replace the object type enumeration with the word "proprietary" followed by the numeric value of the object type: (proprietary 700,1);
- (m) constructed data items are represented enclosed by curly brackets ({} or X'7B' and X'7D'), with elements separated by commas. If an element is itself a constructed value, then that element shall be enclosed in curly brackets.