
**Information technology — Transfer syntax
for high capacity ADC media**

*Technologies de l'information — Syntaxe de transfert pour supports ADC à
haute capacité*

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 15434 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

Annex A of this International Standard is for information only.

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Introduction

This International Standard defines the manner in which the data is transferred to the high capacity ADC media from a supplier's information system and the manner in which the data is transferred to the recipient's information system. This International Standard does not define the internal data storage format for specific high capacity ADC media. This International Standard does not specify the application of data structures provided by a specific data syntax format. The application of the data structure is specified by industry conventions.

Users of automatic data capture (ADC) technologies benefit by being able to receive data in a standard form and by being able to provide data in a standard form. Static ADC technologies such as bar code symbologies, magnetic stripe, optical character recognition, surface acoustical wave (SAW), and Weigand effect typically encode a single field of data. Most applications of these technologies involve the encoding of a single field of datum by the supplier of the medium and the subsequent decoding of the datum field by the recipient. Encoding single fields of data permit the supplier to perform the encodation from a single field within the supplier's information system. Decoding single fields of data permit the recipient to input this data into a single field into the recipient's information system, in lieu of key entry.

High capacity ADC technologies, such as two-dimensional symbols, RFID transponders, contact memories, and smart cards encode multiple fields of data. These multiple fields usually are parsed by the recipient's information system and then mapped to specific fields of data in recipient's information system. It is the purpose of this International Standard to define the syntax for high capacity ADC media, so as to enable ADC users to utilize a single mapping utility, regardless of which high capacity ADC media is employed.

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Information technology — Transfer syntax for high capacity ADC media

1 Scope

This International Standard specifies a transfer structure, syntax, and coding of messages and data formats when using high capacity ADC media between trading partners, specifically between suppliers and recipients, and where applicable, in support of carrier applications, such as bills of lading and carrier sortation and tracking;

The data encoded pursuant to this International Standard includes:

- That which may be used in the shipping, receiving, and inventory of transport units.
- That which may be contained within supporting documentation, in paper or electronic form, related to unit loads or transport packages.
- That which may be used in the sortation and tracking of transport units.

This International Standard describes the ASCII (ISO 646) data transfer syntax for automatic data capture. Where ASCII is not the transfer syntax of choice for transfer this International Standard does not apply. An example of this is in the case where ASN.1 (ISO 8824-1 through 4 and ISO 8825-1 and 8825-2) is applied for RFID purposes.¹

This International Standard does not apply when there is a symbology, standardized by ISO, reserved for a given transfer syntax.

This International Standard does not supersede or replace any applicable safety or regulatory marking or labeling requirements. This International Standard is to be applied in addition to any other mandated labeling requirements.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 646,	<i>Information technology — ISO 7-bit coded character set for information interchange.</i>
ISO/IEC 2382 (all parts),	<i>Information technology — Vocabulary.</i>
ISO/IEC 8824-1,	<i>Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation.</i>
ISO/IEC 8824-2,	<i>Information technology — Abstract Syntax Notation One (ASN.1): Information object specification.</i>
ISO/IEC 8824-3,	<i>Information technology — Abstract Syntax Notation One (ASN.1): Constraint specification.</i>
ISO/IEC 8824-4,	<i>Information technology — Abstract Syntax Notation One (ASN.1): Parameterization of ASN.1 specifications.</i>
ISO/IEC 8825-1,	<i>Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).</i>
ISO/IEC 8825-2,	<i>Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER).</i>
ISO 9735 (all parts),	<i>Electronic data interchange for administration, commerce, and transportation (EDIFACT) — Application level syntax rules (Syntax version number: 4).</i>

¹ This statement does not imply that ASN.1 is the required syntax for RFID.

ISO/IEC 15418,	<i>Information technology — Automatic Identification and Data Capture Techniques — International Specification — Data Application Identifiers.</i>
CEN EN 1556,	<i>Terminology.</i>
IATA Resolution 606,	<i>Cargo Label.</i>
ANSI X12,	<i>Electronic Data Interchange — United States.</i>
CII Syntax Rule (Vers 3.00),	<i>CII Syntax Rule Specifications (3.00) (Electronic Data Interchange — Japan).</i>
ANSI MH10.8.2,	<i>Data Application Identifiers.</i>
ANSI UCC 4,	<i>Application Identifiers.</i>
ANSI MH10.8.3M,	<i>Two-dimensional Symbols with unit loads and transport packages.</i>

3 Definitions

For the purposes of this International Standard, the definitions given in CEN EN 1556 and ISO/IEC 2382 apply.

Document Notation Conventions:	
This International Standard uses the following typographical conventions in message examples	
• BOLD, ALL CAPITALS	Text that must be entered exactly as it appears (In this International Standard, F_s, G_s, U_s, R_s, E_t are used to represent non-printable special characters. The ASCII representation of special characters used in this International Standard can be found in Annex A.);
• <i>italic, lower case</i>	Variable Parameters. The user must supply an appropriate value. In some cases default values are recommended in this International Standard.

4 Message Format

This clause defines how data shall be transferred from a High Capacity ADC Media reading device to the user's application software.

To allow multiple data Formats to be contained within a data stream, a two level structure of enveloping is employed. The outermost layer of the message is a Message Envelope that defines the beginning and end of the message. Within the Message Envelope are one or more Format Envelopes that contain the data. (See Figure 1). Multiple formats in a single message should only be employed with bi-lateral agreements of the trading partners.

The Message Envelope shall consist of

- A Message Header.
- One or more Format Envelope(s), and,
- A Message Trailer (when required).

Each Format Envelope within the Message Envelope shall consist of,

- A Format Header,
- Data, formatted according to the rules defined for that Format, and,
- A Format Trailer (when required).

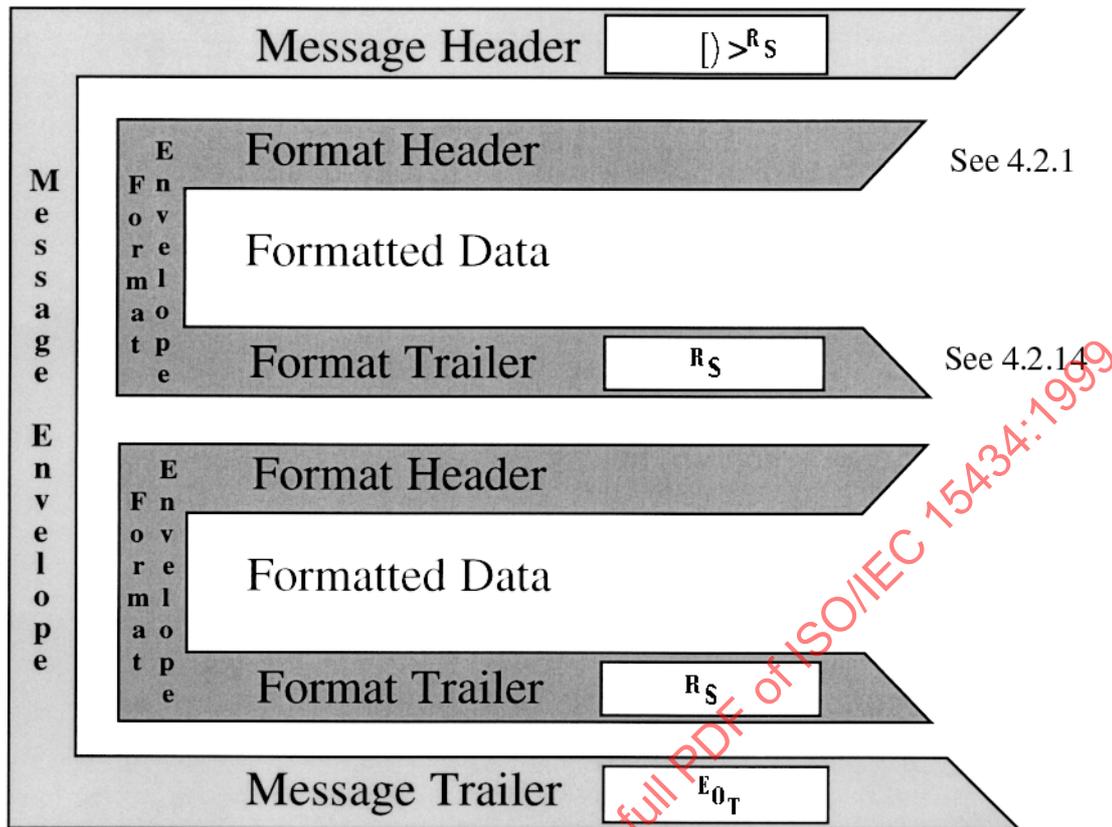


Figure 1 — Enveloping Structure

(Annex A shows the Decimal and Hexadecimal values of ASCII characters)

4.1 Message Envelope

The Message Envelope defines the start and end of the data contained within the data stream, and provides the following functions:

- Indication that the message contained within this media is formatted in compliance with the rules of this International Standard
- Indicates the character which has been defined to separate Formats within this Message.
- Provide an unique character to indicate the end of the Message.

The structure within a data stream is as follows:

A Message, containing one or more Formats

A Format, containing one or more Segments

A Segment, containing one or more Data Elements

A Data Element (Field), potentially containing one or more Sub-elements (Sub-fields).

4.1.1 Message Header

The Message Header consists of two parts:

- the three character Compliance Indicator, and
- the Format Trailer Character

The complete Message Header is: $[]>R_S$

4.1.1.1 Compliance Indicator

The Compliance Indicator shall be the first three characters in the Message Header. The Compliance Indicator shall be $[]>$ (left bracket, right parenthesis, and greater than). See Annex A for a table of ASCII decimal and hexadecimal values.

4.1.1.2 Format Trailer Character

The Format Trailer Character shall be the fourth character in the Message Header. The Format Trailer Character shall be the non-printable ASCII character "R_S" (see Annex A). The Format Trailer Character is used throughout the message to indicate the end of a data Format envelope. (See 4.2.15).

4.1.2 Message Trailer

The Message Trailer identifies the end of the message within the data stream. The Message Trailer shall be the End Of Transaction character, "E_{OT}" (see Annex A). The Message Trailer character shall not be used elsewhere in the message except in Format "09" (binary data) and Format "11" (ASN.1 value) where the "E_{OT}" character may appear.

The Message Trailer shall **not** be used with Formats "02" (Complete EDI message / transaction) and "08" (Structured data using CII Syntax Rules).

4.2 Format Envelope

The Format Envelope defines the start and end of data in a given Format and provides the following functions:

- Identifies the data Format used within the envelope,
- Defines the character(s) used to separate the Segments, Data Elements (Fields), and Sub-elements (Sub-fields) within this data Format, and,
- Indicates any applicable date, release, or control information.

4.2.1 Format Header

A Format Header shall consist of two parts:

- A Format Indicator (a two-digit numeric identifier which identifies the rules governing the Format), and
- Variable data (if any) which defines the separators used and version and release, date, or control information of the applicable standards.

Table 1 lists the Format Indicators and variable data associated with the Format Header.

Table 1 — Format Header Table Showing Recommended Separators

Format Indicator	Variable Header Data	Format Trailer	Format Description
00			Reserved for future use
01	G_{svv}	R_S	Carrier sortation & tracking
02			Complete EDI message / transaction
03	$vvvrrr^F G_S U_S$	R_S	Structured data using ANSI ASC X12 Segments
04	$vvvrrr^F G_S U_S$	R_S	Structured data using UN/EDIFACT Segments
05	G_S	R_S	Data using EAN/UCC Application Identifiers
06	G_S	R_S	Data using Data Identifiers ²
07		R_S	Free form text
08	$vvvrrmn$		Structured data using CII Syntax Rules
09	$G_{sttt...t} G_{sccc...c} G_{snnn...n} G_S$	R_S	Binary data (file type) (compression technique) (number of bytes)
10			Reserved for future use
11	$bbb...b G_S$		Structured data using ASN.1
12-99			Reserved for future use

- vv represents the two-digit version of Format "01" being used
 R_S - represents the Format Trailer character (See 4.2.15).
 F_S - represents the Segment Terminator (See 4.2.1.1.1).
 G_S - represents the Data Element Separator (See 4.2.1.1.2).
 U_S - represents the Sub-Element Separator (See 4.2.1.1.3).
 $vvvrrr$ represents the three digit Version (vvv) followed by the three digit Release (rrr) (See 4.2.5).
 $vvvrrmn$ represents the four digit Version (vvvv) followed by the two digit Release (rr) followed by the two digit Edition indicator (mn) (See 4.2.10).
 $ttt...t$ represents the file type name (See 4.2.11).
 $ccc...c$ represents the compression technique name (See 4.2.11).
 $nnn...n$ represents the number of bytes (See 4.2.11).
 $bbb...b$ represents the number of bytes (See 4.2.13).

4.2.1.1 Separators and Terminators

The Separators and Terminators are an integral part of the data stream. The Separator and Terminator characters shall not be used in non-binary data elsewhere in the message. For binary data strings (Format "09") and ASN.1 values (Format "11"), special considerations apply (see 4.2.11 and 4.2.13, respectively).

4.2.1.1.1 Segment Terminator

Each segment in Format "03" shall be terminated by the Segment Terminator character, the non-printable character " F_S " (see Annex A).

4.2.1.1.2 Data Element Separator

Data elements in Formats "01," "03," "05," and "06" shall be separated by the Data Element Separator, the non-printable character " G_S " (see Annex A).

² Previously known as FACT Data Identifiers.

4.2.1.1.3 Sub-element Separator

Sub-elements in Format "03" shall be terminated by the Sub-element Separator character, the non-printable character "U_S", (see Annex A).

4.2.2 Format Header "00" - Reserved Format

Format header "00" is reserved for future assignment by the maintenance body of this International Standard.

4.2.3 Format Header "01" - Carrier Sortation & Tracking

The Format Header shall be represented as:

01G_Svv

where:

- G_S is the Data Element Separator to be used between Data Elements
- vv represents the two-digit version assigned by the maintenance body of this International Standard

4.2.4 Format Header "02" - Complete EDI Message / Transaction

The Format Header shall be represented as:

02

There is no variable header data for this data Format. (See 4.3.3).

4.2.5 Format Header "03" - Structured Data Using ASC X12 Segments

The Format Header shall be represented as:

03vvvrrr^F_S ^G_S ^U_S

where:

- vvvrrr represents the three-digit Version (vvv) and three-digit Release (rrr) indicator for the drafts of ASC X12 used,
- ^F_S is the Segment Terminator to be used to indicate the end of an EDI segment,
- ^G_S is the Data Element Separator to be used between EDI Data Elements,
- ^U_S is the Sub-element Separator to be used between EDI Sub-elements in a Composite Data Element.

Format Header "03" employs ANSI ASC X12 segments, used in North America. For international trade Format Header "04" should be used. Format "03" is intended for use within North America only.

4.2.6 Format Header "04" - Structured Data Using UN/EDIFACT Segments

The Format Header shall be represented as:

04vvvrrr^F_S ^G_S ^U_S

where:

- vvvrrr represents the three-digit Version (vvv) and three-digit Release (rrr) indicator for the UN/EDIFACT level used,
- ^F_S is the Segment Terminator to be used to indicate the end of an EDI segment,
- ^G_S is the Data Element Separator to be used between EDI Data Elements,
- ^U_S is the Sub-element Separator to be used between EDI Sub-elements in a Composite Data Element.

4.2.7 Format Header "05" - Data Using EAN/UCC Application Identifiers

These identifiers are referenced in ISO/IEC 15418 and are defined in the EAN General Specifications.

The Format Header shall be represented as:

05^G_S

where:

- ^G_S is the Data Element Separator to be used between data Fields

4.2.8 Format Header "06" - Data Using Data Identifiers

These identifiers are referenced in ISO/IEC 15418 and are defined in ANSI MH10.8.2.

The Format Header shall be represented as:

06 G_s

where:

- G_s is the Data Element Separator to be used between data Fields

4.2.9 Format Header "07" - Free Form Text Data

The Format Header shall be represented as:

07

There is no variable header data for this data Format. (See 4.3.8).

4.2.10 Format Header "08" - Structured Data Using CII Syntax Rules

The Format Header shall be represented as:

08*vvvvrrnn*

where:

- *vvvvrrnn* represents the four-digit Version (*vvvv*), two-digit Release (*rr*), and two-digit edition (*nn*) indicator for the CII level used. This equates to the BPID in CII Syntax Rules. (See 4.3.9).

Format Header "08" employs CII syntax rules, used in Japan. For international trade Format Header "04" should be used. Format "08" is intended for use within Japan only.

4.2.11 Format Header "09" - Binary Data

The Format Header shall be represented as:

09 G_s *ttt...t* G_s *ccc...c* G_s *nnn...n* G_s

where:

- G_s is the Data Element Separator to be used between Fields in this header and at the end of the last data field
- *ttt...t* represents the identification of the binary file type, e.g., JPEG, TIFF, PCX, BMP, CSV, CGM, GIF. This field is a variable length of 1-30 characters (including version if applicable). This field shall be terminated by the " G_s " character. The binary file type and the means by which to represent the binary file type should be mutually agreed upon between the trading partners.
- *ccc...c* represents the compression technique employed. This field is a variable length of 0-30 characters. If no compression is used, this field shall be left blank. In any case this field shall be terminated by the " G_s " character. The compression technique and the means by which to represent the compression technique should be mutually agreed upon between the trading partners.
- *nnn...n* represents the number of bytes in the binary message. This field is a variable length field of 1-15 digits. The count does not include the length of the data format header or the data format trailer. This field shall be terminated by the " G_s " character, which is not part of the byte count.

4.2.12 Format Header ("10") - Reserved Format

Format header "10" is reserved for future assignment by the maintenance body of this International Standard.

4.2.13 Format Header ("11") - Structured Data using ASN.1

Format Header shall be represented as:

11*bbb...b* G_s

where:

- *bbb...b* represents the number of bytes in the structured data. This field is a variable length ASCII number whose value ranges between 5 and 4294967295. This count does not include the length of the data format header. This field shall be terminated by the "G_s" character, which is not part of the byte count.
- G_s is the Data Element Separator to be used to signify the end of the length.

The formatted data that follows the Format Header shall be the PER Aligned encoding of the following ASN.1 type:

```
Identifier ::= SEQUENCE {
    type          OBJECT IDENTIFIER,
    encoding      OBJECT IDENTIFIER DEFAULT
                  {joint-iso-itu-t(2) asn1(1) packed-encoding(3) basic(0) aligned(0)}
}
```

followed immediately by the encoding of the value of the ASN.1 type using the encoding rules identified by "encoding".

When the value of the ASN.1 type is encoded according to the PER Aligned encoding rules it will in practice consist of :

- 00 A single byte of binary zeros indicating that the value is encoded according to the PER Aligned encoding rules.
- TT A single byte in binary indicating the length of the "type" value.
- ttt...t The OBJECT IDENTIFIER value for "type" encoded according to BER, excluding the tag and length.

When the value of the ASN.1 type is not encoded according to the PER Aligned encoding rules it will in practice consist of :

- 80 A single byte with the high order bit set to 1 and the rest to 0, indicating that the value is not encoded according to the PER Aligned encoding rules.
- TT A single byte in binary indicating the length of the "type" value.
- ttt...t The OBJECT IDENTIFIER value for "type" encoded according to BER, excluding the tag and length.
- EE A single byte in binary indicating the length of the "encoding" value.
- eee...e The OBJECT IDENTIFIER value for "encoding" encoded according to BER, excluding the tag and length.

It is recommended that PER Aligned be used for all Format 11 values unless there is compelling reason to use another set of encoding rules. The Basic Encoding Rules are defined in ITU-T Rec. X.690 | ISO/IEC 8825-1, and the Packed Encoding Rules in ITU-T Rec. X.691 | ISO/IEC 8825-2.

4.2.14 Format Header ("12"-"99") - Reserved Formats

Format headers "12" - "99" is reserved for future assignment by the maintenance body of this International Standard.

4.2.15 Format Trailer

The Format Trailer identifies the end of a Format Envelope. The Format Trailer shall consist of the Format Trailer Character, the non-printable ASCII character "R_s" (see Annex A). The Format Trailer Character shall not be used in non-binary data elsewhere in the Message.

The Format Trailer shall **not** be used with Formats "02" (Complete EDI message / transaction) and "08" (CII - Complete Message).

4.3 Data Format

Within a given Format Envelope, the data shall be formatted using one and only one of the following methods:

- Carrier sortation & tracking
- Complete EDI Message / Transaction (ASC X12, UN/EDIFACT or CII standard)
- Structured Text (ASC X12 or UN/EDIFACT subset)
- Data structured using the rules of EAN/UCC Application Identifiers
- Data structured using the rules of Data Identifiers
- Free form text
- CII Message Record without Message-group header and trailer
- Binary Data
- Data structured using one of the encoding rules of ASN.1

4.3.1 Format "00" (Reserved)

This Format type is reserved for future assignment and should not be used prior to the issuance of a revision or draft standard for trial use of this document.

4.3.2 Format "01" Carrier Sortation & Tracking

The Carrier Sortation & Tracking Format consists of two areas: the first is mandatory data which is common to all carrier sortation and tracking applications, the second area is optional data which may be useful to specific applications between trading partners.

If more than one Format is included in a Message, the Carrier Sortation & Tracking Format, if used, shall be the first Format in the Message.

The organization controlling the data structure within this format is identified through the version indicator in the Format Header. At the time that this standard was published the following versions had been identified.

- Version "26" - Formatted according to the rules of the International Air Transport Association (IATA)
- Version "56" - Formatted according to the rules of International Federation of Freight Forwarders Association (FIATA)
- Version "96" - Formatted according to the rules of ANSI MH10/SC 8

4.3.3 Format "02" (Complete EDI Message / Transaction)

This Format is used to encode an entire EDI transaction / message with the intent of passing it directly to an EDI translator. The Format shall be either ASC X12, UN/EDIFACT or CII-Standard. Enveloping structures as defined by the applicable standard shall be included, e.g., ISA, GS, ST, SE, GE, and IEA segments (for ASC X12) or UNA, UNB, UNH, UNT, and UNZ segments (for UN/EDIFACT), or Message-group-header, Message and Message-group-trailer Record (for CII Standard).

The Message Trailer character "E_{OT}" and the Format Trailer character "R_S" shall **not** be used with Format "02".

There shall be no more than one "02" Format in a Message Envelope. Format "02" shall **not** be combined with any other data format within a Message Envelope.

4.3.4 Format "03" (Structured Data Using ASC X12 Segments)

This Format is used to represent data, such as Ship To and Ship From, etc., structured according to ASC X12 rules. This format allows the encodation of data represented by either individual ASC X12 segments without enveloping, i.e., ISA/IEA, GS/GE, and ST/SE; or a single ASC X12 transaction set with enveloping, i.e., ST/SE. This data is not intended to be passed directly to an EDI translator.

For Format "03," the version of ASC X12 format is contained in the Format Header. The character "F_S" shall be used as the ASC X12 Segment Terminator. The character "G_S" shall be used as the ASC X12 Data Element Separator. The character "U_S" shall be used as the ASC X12 Sub-element Separator. (See Annex A for hexadecimal and decimal values of Terminators and Separators.)

EDI segments such as BIN that encode binary data shall not be used in Format "03." Binary data should be encoded only in Format "09" and Format "11" (see 4.3.10 and 4.3.12, respectively).

Format Header "03" employs ANSI ASC X12 segments, used in North America. For international trade Format Header "04" should be used. Format "03" is intended for use within North America only.

4.3.5 Format "04" (Structured Data Using UN/EDIFACT Segments)

This Format is used to represent data, such as Ship To and Ship From, etc., structured according to UN/EDIFACT rules.

This format allows the encodation of data represented by either individual UN/EDIFACT segments without enveloping, i.e., UNB/UNA/UNZ and UNH/UNT; or a single UN/EDIFACT message with enveloping, i.e., UNH/UNT. This data is not intended to be passed directly to an EDI translator.

For Format type "04," the version of UN/EDIFACT format is contained in the Format Header. The character "F_S" shall be used as the UN/EDIFACT Segment Terminator. The character "G_S" shall be used as the UN/EDIFACT Data Element Separator. The character "U_S" shall be used as the UN/EDIFACT Sub-element Separator. (See Annex A for hexadecimal and decimal values of Terminators and Separators.)

4.3.6 Format "05" (Using EAN/UCC Application Identifiers)

Each Data Element in this Format shall be preceded by the appropriate EAN/UCC Application Identifier (AI) code and followed by the Data Element Separator character "G_s" unless the data element is the last field in the data Format, i.e., the last Format "05" data element is followed by the Format Trailer Character "R_s". (See Annex A for hexadecimal and decimal values of Terminators and Separators.)

4.3.7 Format "06" (Using Data Identifiers)

Each Data Element in this Format shall be preceded by the appropriate Data Identifier (DI) code and followed by the Data Element Separator character "G_s" unless the data element is the last field in the data Format, i.e., the last Format "06" data element is followed by the Format Trailer Character "R_s". (See Annex A for hexadecimal and decimal values of Terminators and Separators.)

4.3.8 Format "07" (Free Form Text Format)

This Format permits free-form text information. There is no variable header data for this data Format. Complete sentences will be followed by a period and, if the sentence is not the last sentence in a paragraph, two spaces. Two line feeds will be used between paragraphs.

4.3.9 Format "08" (Structured Data Using CII Syntax Rules)

This Format is structured data according to CII standards, as defined by the Center for Informatization of Industry - Japan. Format "08" contains only one CII-Message-Record. Format-end and Message-end in Format "08" shall be indicated by the CII-Message-trailer.

The Message Trailer character "E_{OT}" and the Format Trailer character "R_s" shall **not** be used with Format "08".

Format "08" shall **not** be combined with any other data Format within a Message Envelope.

Format Header "08" employs CII Syntax Rules, used in Japan. For international trade Format Header "04" should be used. Format "03" is intended for use within Japan only.

4.3.10 Format "09" (Binary Data)

This Format is for binary data in any format. The length and format of the data shall be identified in the format header. Binary files must be defined as to the type, compression technique, and number of bytes used in the data stream.

Binary data strings, such as those that represent digital image data, may be included in messages exchanged by and agreed upon between trading partners. CAD/CAM drawings, picture files, various raster and vector graphic images, as well as 2D and 3D images are examples of the kinds of data which could be compressed and encoded for exchange. Typically such binary data files will be encoded and formatted according to an image file representation standard such as JPEG, TIFF, PCX, BMP, CSV, CGM, GIF, and CCITT Group 4, that will include header data followed by image data. The contents of the binary file data groupings, in order to be intelligible, need to be encapsulated within an identifying envelope that separates the binary image data from the other types of message information normally represented as ASCII characters.

By definition, binary data may include any eight-bit character, even those that have special meaning elsewhere in this International Standard. Care should be taken not to misinterpret binary values as characters having special meaning elsewhere in this International Standard.

The Data Element Separator character ("G_s") shall be used in the header of Format "09" to separate **both** the data elements **and** to terminate the header because all fields in the header are variable length. Though the number of bytes is given in the header, the Format Trailer Character shall follow the binary data to complete the format envelope.

4.3.11 Format "10" (Reserved)

This Format type is reserved for future assignment and should not be used prior to the issuance of a revision or draft standard for trial use of this document.

4.3.12 Format "11" (Data structured using ASN.1)

This Format is for data defined using ASN.1 and encoded according to encoding rules that fully supports ASN.1 (e.g., PER, BER). The Format Header conveys the length of the entire encoded value and includes the prefixing identifier information (the object identifiers).