INTERNATIONAL STANDARD

ISO

10756

First edition
1994-07-01

Graphic technology — Prepress digital data exchange — Colour line art data on magnetic tape

Technologie graphique — Échange de données digitales de préimpression — Données de ligne d'art couleur sur bande magnétique

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10756 was prepared by the American National Standards Institute (as ANSI IT8.2-1988) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 130, *Graphic technology*, in parallel with its approval by the ISO member bodies.

Introduction

The technical content of this International Standard is identical to American National Standard IT8.2-1988. The ANSI document was circulated for ISO approval as a fast track document at the request of the 1989 plenary meeting of ISO/TC130 and subsequent to its approval was restructured to be in accordance with part 3 of the ISO/IEC Directives. IT8.2 itself resulted from the joint efforts of an international industry group that included participants representing all of the major prepress vendors in the world. This group, initially identified as the DDES (Digital Data Exchange Specification) Committee, later became the founders of the ANSI IT8 (Image Technology) accredited standards committee which is responsible for electronic data exchange standards in graphic arts prepress.

The data formats are modelled on ISO 10755.

Graphic technology — Prepress digital data exchange — Colour line art data on magnetic tape

1 Scope

This International Standard specifies a format for magnetic tape that will enable colour line art data transfer between colour electronic prepress systems manufactured by different vendors.

2 Conformance

A DDES implementation shall be in conformance with this International Standard if it meets the requirements of clauses 6 to 8 excepting those requirements specifically identified as non-UEF and EUEF. Non-UEF and EUEF, if used, shall be written as specified but are optionally read.

3 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange*

ISO 1001:1986, *Information processing — File structure and labelling of magnetic tapes for information interchange*

ISO/IEC 1864:1992, *Information technology — Unrecorded 12,7 mm (0,5 in) wide magnetic tape for information interchange — 32 ftpmm (800 ftpi), NRZ1, 126 ftpmm (3 200 ftpi) phase encoded and 356 ftpmm (9 042 ftpi), NRZ1*

ISO/IEC 3788:1990, *Information processing — 9-track, 12,7 mm (0,5 in) wide magnetic tape for information interchange using phase encoding at 126 ftpmm (3 200 ftpi), 63 cpmm (1 600 cpi)*

ISO 5652:1984, *Information processing — 9-Track, 12,7 mm (0.5 in) wide magnetic tape for information interchange — Format and recording, using group coding at 246 cpmm (6 250 cpi)*

4 Definitions

For the purposes of this International Standard, the following definitions apply.

4.1 Digital Data Exchange Specification (DDES): A method of sharing digitally encoded information between cooperating systems.

4.2   User Exchange Format (UEF): The basic features that a system should implement to be in accordance with this International Standard.

4.3   Extended User Exchange Format (EUEF): Optional features that a system may implement in addition to the UEF features.

4.4   non-UEF: Vendor-specific capabilities not defined in this International Standard.

4.5   decimal point notation: The expression of a decimal number in a numeric field as a string of numeric characters (ISO/IEC 646 positions 3/0 to 3/9), with optional decimal point (ISO/IEC 646 position 2/14 — full stop).

5   Symbols and abbreviations

The following symbols and abbreviations are used in this International Standard.

BP	Byte position within a label. For ease of use with ISO 1001, byte positions start at 1.
L	Length of field in number of byte positions.
SPACE or ƀ	The character coded in position 2/0 of ISO/IEC 646.
ZERO	The character coded in position 3/0 of ISO/IEC 646.
h	Hexadecimal numbers are identified by the digits 0 to 9 and the letters A to F followed by a lower case "h" (e.g. 3F6Ah).

6   Requirements

6.1   Basic requirement

UEF version 01 is the basic requirement for exchange of colour line art. The line art data to be interchanged under UEF version 01 shall consist of a rectangular array of picture elements (pixels), each of which holds one of a limited number of colours. The colours shall be defined in a colour palette table, which specifies the values of the colour separation components for each entry in the palette.

NOTE 1   The line art image is further characterized by having continuous areas of many pixels of the same palette entry, and not simulating a greater range of colours by "dithering" or "error diffusion" techniques. The spatial information is therefore amenable to run length encoding techniques, which may reduce file size and allow for faster processing. As a clarification, consider a line art file as characterized by a limited number of colours out of a larger domain, raster data rather than geometric description data, a rectangular array, and no object placement information. Image placement information is neither assumed nor implied by this specification.

6.2   DDES00 tapes

When the tape is identified as DDES (BP 44-47) version 00 (BP 50-51) in the Volume 1 Header, then the tape shall be written as specified in this International Standard. No other values are permitted in UEF or EUEF fields. The only fields available for nonprescribed use are the fields with contents "reserved for system use (vendor use)" and vendor UHLs (BP 04-80). All other fields shall be written either as described in this International Standard or as in ISO 1001.

Where fields are not defined in this International Standard, ISO 1001 shall be used.

DDES tapes shall be written at 1 600 bpi phase encoded or 6 250 bpi GCR, in accordance with ISO/IEC 3788 or ISO 5652 respectively, on media as specified in ISO/IEC 1864.

6.3   EUEF formats

Use of the extended implementation EUEF fields and values is optional. However, only those codes specified in this International Standard shall be used.

6.4 Non-UEF

Non-UEF fields and values are also to be specified within DDES. These fields and values shall be restricted in use in the same manner as EUEF fields and values.

6.5 Specifying UEF, EUEF and non-UEF formats

BP 05-10 of UHL1 shall be used as the UEF indicator. This field shall be coded as indicated in 7.2.4.

6.6 Padding of fields

Any numeric fields shall be right-aligned and ZERO padded, and any alphanumeric fields shall be left-aligned and padded with SPACEs.

6.7 Utilization of User Header Labels

UHL1, UHL2, UHL3 and UHL4 are currently specified in this International Standard. Up to 25 additional UHLs are reserved for use in UHL2: up to seven additional for future DDES use (BP 31), up to nine for other future use (BP 32), and up to nine for vendor use (BP 33). DDES UHL values (BP 04) shall be unique and in order. The values "1" to "9", "A" and "B" shall be reserved for DDES use.

6.8 Intermixing tape formats

Different UEF magnetic tape file formats may be found on the same DDES tape and/or volume set. A DDES magnetic tape may also contain EUEF as well as non-UEF file formats.

7 Header Labels for DDES00

The following subclauses describe the DDES use of ISO 1001 tape format.

7.1 General tape format

Table 1 gives the format for two line art files on one tape. Table 2 gives the format for two line art files on two tapes. This International Standard supports multiple tapes in a file set as described in HDR1, including the splitting of a line art file over multiple tapes.

Table 1 — Format for two line art files on one tape

| BOT | Physical tape mark (beginning of tape) |
VOL1	Volume Header Label
HDR1	File Header Label 1 of the following file
HDR2	File Header Label 2 of the following file
UHL1	User Header Label 1 of the following file
UHL2	User Header Label 2 of the following file
UHL3	User Header Label 3 of the following file
UHL4	User Header Label 4 of the following file
*	Additional UHLs may be specified in
*	UHL2 (BP 31-33)
*	
TM	Logical tape mark
****	line art data LINE ART FILE 1
TM	Logical tape mark
EOF1	End of File Label 1
EOF2	End of File Label 2
UTL1	User Trailer Label 1
UTL2	User Trailer Label 2
UTL3	User Trailer Label 3
UTL4	User Trailer Label 4
*	A UTL for each UHL is to be included on the tape. These are not
*	required to be read. UTLs follow EOV2 and EOF2. These are copied
*	from the preceding UHLs (see 8.1)
TM	Logical tape mark
HDR1	File Header Label 1 of the following file
HDR2	File Header Label 2 of the following file
UHL1	User Header Label 1 of the following file
UHL2	User Header Label 2 of the following file
UHL3	User Header Label 3 of the following file
UHL4	User Header Label 4 of the following file
*	
*	
*	
TM	Logical tape mark
****	line art data LINE ART FILE 2
TM	Logical tape mark
EOF1	End of File Label 1
EOF2	End of File Label 2
UTL1	User Trailer Label 1
UTL2	User Trailer Label 2
UTL3	User Trailer Label 3
UTL4	User Trailer Label 4
*	
*	
*	
TM	Logical tape mark
TM	Logical tape mark (logical end of tape)
EOT	Physical tape mark (end of tape)

Table 2 — Format for two line art files on two tapes

	First Tape	
BOT	Physical tape mark (beginning of tape)	
VOL1	Volume Header Label	
HDR1	File Header Label 1 of the following file	
HDR2	File Header Label 2 of the following file	
UHL1	User Header Label 1 of the following file	
UHL2	User Header Label 2 of the following file	
UHL3	User Header Label 3 of the following file	
UHL4	User Header Label 4 of the following file	
*		
*		
*		
TM	Logical tape mark	
****	line art data	LINE ART FILE 1
TM	Logical tape mark	
EOF1	End of File Label 1	
EOF2	End of File Label 2	
UTL1	User Trailer Label 1	
UTL2	User Trailer Label 2	
UTL3	User Trailer Label 3	
UTL4	User Trailer Label 4	
*		
*		
*		
TM	Logical tape mark	
HDR1	File Header Label 1 of the following file section	
HDR2	File Header Label 2 of the following file section	
UHL1	User Header Label 1 of the following file section	
UHL2	User Header Label 2 of the following file section	
UHL3	User Header Label 3 of the following file section	
UHL4	User Header Label 4 of the following file section	
*		
*		
*		
TM	Logical tape mark	
****	line art data	LINE ART FILE 2 — Section 1
EOT	Physical tape mark (end of tape)	
TM	Logical tape mark	
EOV1	End of Volume Label 1	
EOV2	End of Volume Label 2	
UTL1	User Trailer Label 1	
UTL2	User Trailer Label 2	
UTL3	User Trailer Label 3	
UTL4	User Trailer Label 4	
*		
*		
*		
TM	Logical tape mark	
TM	Logical tape mark (logical end of tape)	

	Second Tape
BOT	Physical tape mark (beginning of tape)
VOL1	Volume Header Label
HDR1	File Header Label 1 of the following file section
HDR2	File Header Label 2 of the following file section
UHL1	User Header Label 1 of the preceding file section
UHL2	User Header Label 2 of the preceding file section
UHL3	User Header Label 3 of the preceding file section
UHL4	User Header Label 4 of the preceding file section
* * *	
TM	Logical tape mark
****	line art data
TM	Logical tape mark
EOF1	End of File Label 1
EOF2	End of File Label 2
UTL1	User Trailer Label 1
UTL2	User Trailer Label 2
UTL3	User Trailer Label 3
UTL4	User Trailer Label 4
* * *	
TM	Logical tape mark
TM	Logical tape mark (logical end of tape)
EOT	Physical tape mark (end of tape)

LINE ART FILE 2 — Section 2

7.2 Header labels

The following subclauses specify the Header Labels for DDES00 UEF01 tapes. There shall be no optional formats or fields in DDES00 except as specified.

7.2.1 Volume 1 Header (VOL1)

Table 3 gives byte position, field name, length in bytes, and content for the Volume 1 Header.

The sequence number of tapes in a volume set shall start with "01" and be incremented by 1 for each tape in the set as specified in BP 48-49.

Table 3 — Volume 1 Header (VOL1)

BP	Field name	L	Content
01-04	label identifier and number	4	"VOL1"
05-10	volume identifier	6	
11	volume accessibility	1	SPACE
12-37	reserved for ISO 1001 use	26	SPACEs
38-43	creation date (ISO 1001 format)	6	
44-47	DDES identifier	4	"DDES"
48-49	sequence number of tape in volume set	2	
50-51	DDES version	2	"00"
52-79	reserved for ISO 1001 use	28	SPACEs
80	label standard version	1	

7.2.2 File Header Label 1 (HDR1)

Table 4 gives byte position, field name, length in bytes and content for File Header Label 1.

The contents of file identifier (BP 05-21), generation number (BP 36-39) and generation version number (BP 40-41) can be different between different operating systems. These fields are not intended for use in intervendor systems communication.

The file set identifier (BP 22-27) does not contain a job name for DDES. The job name shall be contained in the User Header Label 1 (see table 6).

When the date is not defined, SPACE followed by five ZEROs or, alternatively, six ZEROs shall be used (see BP 48-53 in table 4).

Table 4 — File Header Label 1 (HDR1)

BP	Field name	L	Content
01-04	label identifier and number	4	"HDR1"
05-21	file identifier	17	
22-27	file set identifier	6	
28-31	file section number	4	
32-35	file sequence number	4	
36-39	generation number	4	
40-41	generation version number	2	
42-47	file creation date	6	
48-53	file expiration date (optional)	6	
54	file accessibility	1	SPACE
55-60	block count	6	ZEROs
61-73	reserved for system use (vendor use)	13	
74-80	reserved for ISO 1001 use	7	SPACEs

7.2.3 File Header Label 2 (HDR2)

Table 5 gives byte position, field name, length in bytes and content for File Header Label 2.

BP 16-50 (system use/vendor use) shall be for individual use of the vendors and not for intervendor systems communication.

Table 5 — File Header Label 2 (HDR2)

BP	Field name	L	Content
01-04	label identifier and number	4	"HDR2"
05	record format = fixed length	1	"F"
06-10	block length (fixed for UEF)	5	"08192"
11-15	record length (fixed for UEF)	5	"08192"
16-50	reserved for system use (vendor use)	35	
51-52	buffer offset length	2	ZEROs
53-80	reserved for ISO 1001 use	28	SPACEs