TECHNICAL REPORT

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Application guide for ISO 10755, ISO 10756, ISO 10757, ISO 10758 and ISO 10759

Guide d'application pour ISO 10755, ISO 10756, ISO 10757, ISO 10758 et ISO 10759

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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.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 13928, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This Technical Report has been developed to help implementors and users of ISO 10755 to ISO 10759. It is intended to supplement the above International Standards.

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Application guide for ISO 10755, ISO 10756, ISO 10757, ISO 10758 and ISO 10759

A. ISO 10755, 10756 and 10759 Implementors' Guide

This guide has been developed to help implementors of ISO 10755, 10756 and 10759, the standards for the exchange of colour picture, colour line art and monochrome image data on magnetic tape, develop their software. As various implementors have encountered areas of questions or concern, ISO/TC 130/WG 2 has attempted to clarify the clause in question via this guide. THE INFORMATION CONTAINED HEREIN DOES NOT REPLACE OR MODIFY IN ANY WAY ANY PART OF ISO 10755, 10756 OR 10759. This guide is meant to augment the specifications themselves. In any cases where a conflict exists between the two, ISO 10755, 10756 and 10759 take precedence.

Clause numbers will be used to locate the reader within the proper clauses of the International Standards. Clause numbers refer to all three International Standards ISO 10755, 10756 and 10759, unless prefixed by individual International Standard numbers.

3. Normative References

The ISO 1001 document referenced has been updated to 1986. The newest version appears to be identical to the DDES implementation where applicable, except for the use of the value "4" in BP 80 of VOL 1 (see clause 7.2.1). In order to maintain software compatibility, UEF00 has not been changed at this time. It is anticipated that a future version of UEF00 will provide for values of either a "3" or "4" in BP 80 of VOL 1 in order to provide conformance to the current version of ISO 1001.

6.2 DDES00 Tapes

As an alternative medium to half-inch reel to reel tape, the 8-mm Helical-Scan Digital Computer Tape Cartridge may be used if the participants in an interchange agree. This medium and recording method is being specified by ISO/IEC JTC 1, and when an International Standard results from this work, an amendment to clause 6.2 or ISO 10755, 10756 and 10759 will be proposed to cover this additional medium.

When the 8-mm tape is used, the participants must also agree on the block size to be used in the header and trailer labels. Two values are common, 80 bytes and 1024 bytes. If the value 1024 is used, data is only written in the first 80 bytes; the remainder of the block should not contain any data.

6.3 Extended User Exchange Format

To provide flexibility for the future the concept of the Extended User Exchange Format was developed to provide options for those implementors willing or able to use them. While it is necessary for an implementor to implement all UEF capabilities and features in order to meet full compliance with ISO 10755, 10756 or 10759, an implementor of EUEF capabilities and features may selectively implement only those features desired and still be in compliance (providing, of course, that those features chosen are implemented according to ISO 10755, 10756 or 10759 and all of the UEF subset is implemented).

6.6 Padding of Fields and Document Conventions

Where the specification calls for padded blanks or zeros, the blanks or zeros must be present in order to be in conformance with ISO 10755, 10756 or 10759.

6.8 Intermixing tape formats

The DDES tape format is defined identically in ISO 10755, 10756 and 10759. It is therefore entirely reasonable to record colour picture, colour line art and monochrome picture files on the same tape to represent the different components of a page or a job.

Furthermore, the parameters and layout of the ISO 10755, 10756 and 10759 file headers have been kept identical to the extent that this was possible, to allow for common implementations.

7.1 General Tape Format

When a file is split over multiple tapes in a volume set, the values in corresponding user header labels shall be the same for all file sections of that file.

The occurrence of the physical end of tape mark (EOT) prior to the end of the data on the tape (indicated by two logical tape marks) in the first tape of Figure 2 (illustration of two picture files on two tapes) is not an error. As specified in ISO 1864, the EOT mark is physically placed on the tape prior to the absolute end of the tape so that there is enough room to allow end of tape processing (i.e., end of volume and trailer records) once the EOT is encountered by the tape controller.

7.2.1 Volume 1 Header (VOL 1)

The volume identifier (BP 05-10) for purposes of ISO 10755, 10756 and 10759 is not checked but can be important for tape volume tracking and management. Its use is recommended.

7.2.2 File Header Label 1 (HDR1)

The HDR 1 (the first header label of each file) should include an ascending "file sequence number". The motivation for counting the files is especially significant for continuation tapes, but should be correct in any case. In particular, the use of a value of "1" for every file should be avoided.

7.2.3 File Header Label 2 (HDR2)

UEF00 specifies fixed length 8192 byte block sizes. If the last block on a tape does not require the full 8192 bytes, the block should be padded to achieve a uniform fixed block size.

7.2.4 User Header Label 1 (UHL1)

It is strongly recommended to include the three-character country code from ISO 3166 "Codes for the representation on names of countries" as the last three characters of the "Vendor name" field (i.e. BP 28-30), to identify the country of registry of the vendor name.

The UHL1 should use the "picture name" field (BP 61-80) as a unique identification. Using the same value for different files may result in some systems overwriting previous files. The picture name should not be left blank even though the "file identifier" in HDR1 may contain the picture name as well.

7.2.5 User Header Label 2 (UHL2)

The offset to start of data (BP 34-35) is a file specific area which occurs once per file, not once for each file section.

ISO 10755 7.2.6.1.1 Pixel Interleaving

When using the pixel interleaving format with an even number of colour separations, it is permissible but not necessary to pad lines that have an odd number of pixels since the line length is already an even number of bytes.

7.2.6.3 Colour Values

It is possible that the colour values of the pixels can fall above or below the values specified in BP 25-28 and 29-32 of UHL3 for 0% dot and 100% dot. In this case it is at the discretion of the receiving system to either accept or truncate the data (e.g., where the value for 0% dot is "20" and the data value is "15", the resulting data value after transfer would be "20").

7.2.6.4 Picture Orientation

The various fields in UHL3 from BP 33-80 all interact to describe the size and orientation of the logical image on tape. It is important to remember that the length of line and breadth of area fields are all referring to the bags of pixels on tape, and not the logical image itself. The term "length" or "line" defined in BP 33-42, 53-58, 67 and 69-74 refers to the dimension of the image represented by the first row of pixels on the tape. The term "breadth" defined in BP 43-52, 59-64, 68 and 75-80 refers to the dimension of the image represented by the number of lines on the tape. For example, orientations "00" and "02" define "length" as the horizontal axis of the logical image, and "breadth" as the vertical axis. Orientations "01" and "03" define "length" as the vertical axis and "breadth" as the horizontal axis.

Pixels do not need to be square in size. To properly size an image the resolution of both axes must be considered. The necessary information is provided by the size specifications for each axis, and the number of pixels of each axis. From these numbers, the resolution (where resolution is the number of pixels per inch or mm) for each axis may be determined by dividing the number of pixels by the size. There is an optional set of fields to present this data, and if present must agree with the calculation.

8.1 EOFn – EOVn

The block count (BP 56-61 of EOF1) for a file section includes any vendor offset blocks (BP 34-35 of UHL2) present in that file section.

B. ISO 10755, 10756, 10759 Users' Guide

This guide has been developed to help users of ISO 10755, 10756 and 10759 understand what is happening as they transfer image files from one system to another. As various users have encountered areas of questions or concern, ISO TC 130/WG 2 has attempted to clarify the clause in question via this guide. THE INFORMATION CONTAINED HEREIN DOES NOT REPLACE OR MODIFY IN ANY WAY ANY PART OF ISO 10755, 10756 OR 10759. This guide is meant to augment the specification itself, and in any cases where their is a conflict between the two, ISO 10755, 10756 and 10759 take precedence.

Clause numbers will be used to locate the reader within the proper clause of the official standards. All clause numbers refer to ISO 10755, 10756 and 10759.

1. Scope

The purpose of these standards is to provide a method of transferring process or continuous tone colour images, coloured line art, and monochrome images destined for print using the four colour printing process. These images can originate from a wide variety of sources, and may be transferred at any point in the production process. Therefore, this specification does not attempt to specify the final printed result, but to define the components of the image (often referred to as a "bag of pixels") and its current parameters, such as size, resolution, colour saturation, etc. This does not imply that these parameters will not be changed prior to the printing process.

7.2.6.3 Colour Values

The relative colour values of the pixels represent the colour of the image at the exact stage in the production process that it had reached at the time it was transferred to tape. Relative colour values may be changed as the image passes from stage to stage in the production process. After scanning, they represent the scanned colour %; after colour correction they represent the corrected colour %; etc. They may represent a target value for dots on film for either lithographic or gravure printing, or the final dot value printed on paper after dot gain, or any of a number of other assumptions about the printing process. UEF00 makes no assumptions about what the value represents, but does provide a vehicle for transferring the values. It is necessary to understand where the image is in the printing process and how it was created to understand what the dot % represents in absolute terms, and this can only be done with information from the originator of the image.

7.2.6.4 Image Orientation

The various fields in UHL3 from BP 33-80 all interact to describe the size and orientation of the logical image on tape. It is important to remember that the length of line and breadth of area fields are all referring to the bags of pixels on tape, and not the logical image itself. The term "length" or "line" defined in BP 33-42, 53-58, 67 and 69-74 refers to the dimension of the image represented by the first row of pixels on the tape. The term "breadth" defined in BP 43-52, 59-64, 68 and 75-80 refers to the dimension of the image represented by the number of lines on the tape. For example, orientations "00" and "02" define "length" as

the horizontal axis of the logical image, and "breadth" as the vertical axis. Orientations "01" and "03" define "length" as the vertical axis and "breadth" as the horizontal axis.

7.2.6.5 Resolution

Pixels do not need to be square in size. To properly size an image the resolution of both axes must be considered. The necessary information is provided by the size specifications for each axis, and the number of pixels for each axis. From these numbers, the resolution (where resolution is the number of pixels per inch or mm) for each axis may be determined by dividing the number of pixels by the size. There is an optional set of fields to present this data, and if present must agree with the calculation. UEF00 does not require resizing of the images when transferring from one device to another. It is anticipated that this will be accomplished by the receiving system immediately prior to output as required. Therefore, when transferring images from one device to another, it is necessary to keep these parameters in mind in order to understand the cause of size changes that may occur between different devices.

C. ISO 10757 Application Note

ISO 10757 specifies the use of 9-track magnetic tape, but since the files of interest may be small, there are advantages to using other media.

When an alternative medium is used, the file which is interchanged should be a representation of the whole content of a single DDES00 tape containing a single UEF02 file, omitting the tape marks. Thus the file contains:

labels VOL1 to UHL4
the IGES data records
labels EOF1 to UTL4

and the "block count" in EOF1 is filled according to the number of 800-byte (10-line) blocks in the data area. Note that the 80-byte records are transferred contiguously without the addition of carriage-return or line-feed characters.

Any file exchange mechanism that is mutually acceptable to the sender and receiver may be used. For example: 3.5", "MS-DOS" floppy disk or any of the readily available file transfer programs operating over a serial communication line.