

Implementation of
ISO 10758:1994

Graphic technology — Prepress digital data exchange — Online transfer from electronic prepress systems to colour hardcopy devices

ICS 37.100.10

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PAI/43, upon which the following bodies were represented:

- British Kinematograph, Sound and Television Society
- British Printing Industries Federation
- British Rubber Manufacturers' Association Ltd.
- Graphical Paper and Media Union (GPMU)
- Her Majesty's Stationery Office
- Institute of Printing
- Metal Packaging Manufacturers' Association
- Newspaper Society
- PICON
- Periodical Publishers' Association Ltd.
- Watford College

This British Standard, having been prepared under the direction of the Materials and Chemicals Sector Board (I/-), was published under the authority of the Standards Board and comes into effect on 15 January 1995

© BSI 05-2000

The following BSI references relate to the work on this standard:
Committee reference PAI/43
Draft for comment 90/44055 DC

ISBN 0 580 23650 1

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
National foreword	ii
Foreword	iv
Text of ISO 10758	1

National foreword

This British Standard reproduces verbatim ISO 10758:1994 and implements it as the UK national standard.

This British Standard is published under the direction of the Materials and Chemicals Sector Board whose Technical Committee PAI/43 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

NOTE International and European Standards, as well as overseas standards, are available from Customer Services, BSI, 389 Chiswick High Road, London, W4 4AL.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 27 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

INTERNATIONAL STANDARD

ISO
10758

First edition
1994-07-01

Graphic technology — Prepress digital data exchange — Online transfer from electronic prepress systems to colour hardcopy devices

*Technologie graphique — Échange de données digitales de
préimpression — Transfert en ligne en provenance de systèmes de
préimpression électronique vers des copies papier couleur*



Reference number
ISO 10758:1994(E)

Contents

	Page
Foreword	iv
Introduction	1
1 Scope	1
2 Conformance	1
3 Normative references	1
4 Definitions	1
5 Symbols and abbreviations	2
6 General requirements	2
7 Application level protocol for proof transfer	3
7.1 Application level commands	3
7.2 Command sequence	4
8 Application level data formats for proof transfer	5
8.1 Job descriptor	5
8.2 Separation descriptor	8
8.3 Image set descriptor	9
8.4 Contone picture file descriptor	10
8.5 Line art file descriptor	11
8.6 Vendor-specific file descriptor	13
8.7 Set device feature descriptor	14
8.8 Job status response	14
8.9 Device status response	14
8.10 Device capability response	15
8.11 Current feature response	16
8.12 Error response	16
9 SCSI as the transfer mechanism	17
9.1 Physical characteristics	17
9.2 Logical characteristics	17
9.3 Supported SCSI commands	17
9.4 Supported SCSI messages	18
9.5 Transport level protocol for proof transfer	19
10 SCSI commands	21
10.1 SEND command	21
10.2 RECEIVE command	22
10.3 REQUEST SENSE command	22
10.4 INQUIRY command	25
10.5 MODE SELECT command	26
10.6 MODE SENSE command	27
Figure 1 — Graphic arts device command sequence application level	5
Figure 2 — Example of scaling of colour values	7
Figure 3 — Relationship between first line of data, image orientation and orientation code	10
Figure 4 — Graphic arts device command sequence including SCSI transport level	20
Table 1 — Job descriptor	6
Table 2 — Separation descriptor	8
Table 3 — Image set descriptor	9
Table 4 — Contone picture file descriptor	10
Table 5 — Line art file descriptor	11
Table 6 — Colour table format	11
Table 7 — Colour table entry format	12

	Page
Table 8 — Vendor-specific file descriptor	14
Table 9 — Set device feature descriptor	14
Table 10 — Job status response	14
Table 11 — Device status response	15
Table 12 — Device capability response	15
Table 13 — Current feature response	16
Table 14 — Error response	17
Table 15 — SCSI commands for DDCP devices	18
Table 16 — Send command	21
Table 17 — Receive command	22
Table 18 — Request sense command	22
Table 19 — Request sense response from DDCP	23
Table 20 — SENSE key values in CEPS/DDCP application	23
Table 21 — Additional SENSE Codes	24
Table 22 — INQUIRY command	25
Table 23 — INQUIRY response from DDCP	26
Table 24 — Mode select command	27
Table 25 — Mode SENSE command	27

Descriptors: Graphic technology, magnetic recording, images, information interchange, data transfer, data layout, formats, specifications, interfaces.

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 10758 was prepared by the American National Standards Institute (as ANSI IT8.4-1989) 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 that of American National Standard IT8.4-1989. The ANSI document was circulated for ISO approval as a fast track document at the request of the 1989 plenary meeting of ISO/TC 130 and subsequent to its approval was restructured to be in accordance with part 3 of the ISO/IEC Directives. The IT8 document 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 and ISO 10756. The transport definition is implemented via ISO 9316.

This International Standard is organized to separate the data format and transfer protocol used at the application level from that used at the transport level. A primary reason for this distinction is the desire to ease the adaptation of this International Standard to transport mechanisms other than SCSI.

Clause 4 includes definitions. Clauses 7 and 8 describe the application level protocol for proof transfer and the data format at the application level. These clauses will remain valid for future CEPS to DDCP connections that might use other transport media.

Clause 9 describes the SCSI transport medium as it is used for CEPS to DDCP communication in this International Standard, and clause 10 describes each of the SCSI commands as they are used to implement this International Standard.

1 Scope

This International Standard specifies the mechanical, electrical, protocol and data format characteristics to permit online transfer of digital colour proof data between colour Electronic Prepress Systems (CEPS) and Direct Digital Colour Proofing (DDCP) systems. The transfer protocol neither requires nor provides a mechanism to guarantee a sustained data rate. The mechanical and electrical characteristics and the transport level protocol make use of the Small Computer System Interface (SCSI).

This International Standard takes precedence if a conflict exists with respect to the standards indicated in clause 3.

2 Conformance

A DDES implementation shall be in conformance with this International Standard if it meets the requirements of clauses 6 through 10.

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 9316:1989, *Information processing systems — Small Computer System Interface (SCSI)*.

ISO 10755:1992, *Graphic technology — Prepress digital data exchange — Colour picture data on magnetic tape*.

ISO 10756:1994, *Graphic technology — Prepress digital data exchange — Colour line art data on magnetic tape*.

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

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)

4.3

contone (colour picture) data

a rectangular array of picture elements (“pixels”)

NOTE 1 A pixel is represented by a set of values corresponding to its colour components, and for a four-colour picture consists of four eight-bit bytes, representing cyan (“C”), magenta (“M”), yellow (“Y”) and black (“K”) process colours.

4.4

line art data

a rectangular array of picture elements (“pixels”), each of which holds one of a limited number of colours. The colours may be defined in a colour palette table, which specifies the values of the colour separation components for each entry in the palette

NOTE 2 Line art data are generally characterized by having contiguous 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.

4.5

vendor-specific data

data sent at the discretion of the vendor

4.6

proof

a simulation or prototype of a graphic arts printed image

4.7

direct digital colour proofer (DDCP)

an output device capable of producing a proof directly from digital data

4.8

image set

a logical grouping of data (contone picture data, line art data, vendor-specific data) used to create a rectangular area of a proof

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 9316, byte positions start with 0.
- L: Length of field in number of byte positions.
- SPACE or **b**: 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 the lower case “h” (e.g. 3F6Ah).

6 General requirements

A proof shall be a single sheet of output medium and shall contain one or more image sets. Each image set shall cover a rectangular area with sides parallel to the edges of the media. No two image sets shall overlap. Each image set shall contain at least one of the following data files: contone picture data file, line art data file or a vendor specific data file. No more than one of each type shall be included in an image set. When both a line art file and a picture file are present within an image set, the line art file shall take precedence (i.e. the transparency or opacity of the line art data will determine the visibility of the underlying picture data).

All files within an image set shall have identical placement, orientation, length of line and breadth of area (i.e. will overlay exactly).

Data transport between the CEPS and DDCP shall utilize ISO 9316 as defined within this International Standard. The application layer shall communicate with the transport layer via application level commands and data descriptors shall be used to transfer relevant information between the CEPS and DDCP.

7 Application level protocol for proof transfer

The application layer communicates with the transport layer via application level commands. These commands convey data attribute information by means of descriptors.

Twelve types of data descriptors are specified for proof transfer; seven are used to describe the information sent from the CEPS to the DDCP and five are used to describe the information sent from the DDCP to the CEPS.

The descriptors for transfer to the DDCP are Job Descriptor, Separation Descriptor, Image Set Descriptor, Contone Picture File Descriptor, Line Art File Descriptor, Vendor Specific File Descriptor and Set Device Feature Descriptor.

The descriptors for transfer from the DDCP are Job Status Response, Device Status Response, Device Capability Response, Current Feature Response and Error Response.

7.1 Application level commands

The following commands are specified for communication with the transport level: SEND JOB, STOP JOB, GET JOB STATUS, GET DEVICE STATUS, GET DEVICE CAPABILITY, SET DEVICE FEATURE, GET CURRENT FEATURE and REPORT STATUS.

The first five shall always be used and must be implemented. The last three shall be used to support the optional “spontaneous status report” feature.

The responses to commands shall either be GOOD or ERROR. If the response is GOOD, processing continues. If the response is ERROR, the error response data structure contains error information. The error response data structure is described in 8.12.

The manner in which the transport layer implements these application level commands is dependent on the particular transport medium used. A SCSI implementation is described in this International Standard.

7.1.1 SEND JOB

A job shall be started by sending the following information, in the order described, from the CEPS to the DDCP:

- Job Descriptor (8.1);
- the first Separation Descriptor (8.2);
- other separation descriptors;
- the first Image Set Descriptor (8.3);
- the first Contone Picture File Descriptor (8.4) and Contone Picture Data (if it exists);
- the first Line Art File Descriptor (8.5), colour table (8.5.1) and Line Art Data (if it exists);
- the first Vendor-specific File Descriptor (8.6) and Vendor Specific Data (if it exists);
- other image set descriptors, file descriptors and data.

EXAMPLE (Sample sequence of data transfer)

This example shows the order in which the descriptors and data are sent for a proof consisting of two image sets, the first containing both contone and line art data and the second containing contone data only.

```

Job Descriptor
Separation Descriptor (Sep. 1)
Separation Descriptor (Sep. 2)
Separation Descriptor (Sep. 3)
Separation Descriptor (Sep. 4)
Image Set Descriptor (Set 1)
  Contone Picture File Descriptor
  Contone Picture Data
  
```