



KONICA MINOLTA

LASER IMAGER

DRYPRO MODEL 793

DICOM 3.0 Conformance Statement

Ver. 1.02 2005. 02

KONICA MINOLTA MEDICAL & GRAPHIC, INC.

DRYPRO MODEL 793

Revision History

Date	Version	Description
10/06/2004	Ver.0.01	New edition
14/06/2004	Ver.0.02	Changed the setting range of the port number for receiving data.
21/06/2004	Ver.0.03	Added an indication on image input limitations.
22/06/2004	Ver.0.04	Changed the applied medium type from DR Blue-base to Mammo Film.
08/07/2004	Ver.0.05	Added a definition regarding the character stamp orientation in the image input limitations.
15/07/2004	Ver.0.06	Added an initial value for a port waiting for input.
09/08/2004	Ver.0.07	Changed the limitation for the number of 14x14 pixels.
27/08/2004	Ver.0.08	Changed the limitation for the number of pixels for "stamp character orientation: opposite of film orientation".
14/09/2004	Ver.0.09	Changed the valid maximum settable size for a requested image size.
17/09/2004	Ver.0.10	Changed the implementation UID class. Changed the range of the maximum density.
01/10/2004	Ver.1.00	First edition
01/12/2004	Ver.1.01	Conformed to Basic Annotation Box SOP Class.
01/02/2005	Ver.1.02	Modified the descriptions on annotation character restrictions. Conformed to the new film type in Medium Type (2000,0030)

NOTE: Descriptions in this document are subject to change without prior notice.

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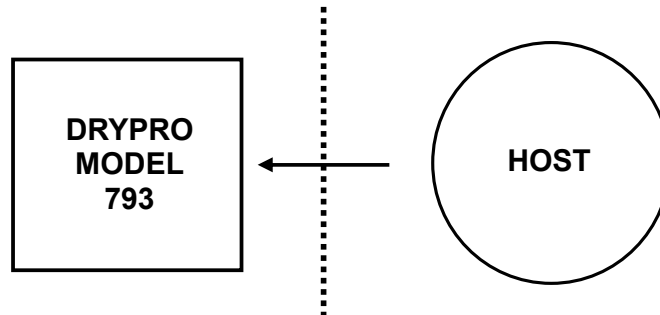
0 INTRODUCTION

This document describes the compatibility of LASER IMAGER DRYPRO MODEL 793 (Print Management Service Class) with DICOM3.0.

1 IMPLEMENTATION MODEL

DRYPRO MODEL 793 (SCP) is a laser imager to hardcopy images according to print requests from the Host (SCU).

1.1 Application Data Flow Diagram



1.2 Functional Definitions of AEs

When the SCP receives Verification or Print Management Service from SCU, the SOP class defined by Verification or Print Management Service Class is used.

As for the operating method of SOP classes, the DIMSE service defined by each SOP class is used.

DRYPRO MODEL 793 (SCP) processes image data and hardcopies images according to the individual attribute values that are designated by the Host (SCU).

1.3 Sequencing of Real World Activities

This model is not applicable with the Sequence of Real-World Activities.

2 AE SPECIFICATION

2.1 DRYPRO MODEL793 Specification

DRYPRO MODEL 793 receives print request associations and operates as an application entity. DRYPRO MODEL 793 conforms as an SCP to the following SOP classes.

Table 1 Print Management Meta SOP Class

Meta SOP Class , SOP Class Name	Meta SOP Class , SOP Class UID
Verification SOP Class	1.2.840.10008.1.1
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23

2.1.1 Association Establishment Policies

Hereinafter, conditions for establishing association will be described.

2.1.1.1 General

DRYPRO MODEL 793 utilizes DICOM Upper Layer Services to establish association with SCU. An association is made for each Verification and Basic Print Service Request.

2.1.1.2 Number of Associations

The number of associations that DRYPRO MODEL 793 can support at the same time is 32.

2.1.1.3 Asynchronous Nature

DRYPRO MODEL 793 supports asynchronous N-EVENT-REPORT messages. However, these are transmitted as required.

2.1.1.4 Implementation Identifying Information

The implementation class UID for DRYPRO MODEL 793 is "1.2.392.200036.9107.404".

The implementation version for DRYPRO MODEL 793 is "KC_DPRO3_x.xxRxx".
* X.XXXXX indicates the software version.

e.g. KC_DPRO3_1.00R00

2.1.2 Association Initiation Policy

DRYPRO MODEL 793 starts associations to publish asynchronous N-EVENT-REPORT messages.

2.1.3 Association Acceptance Policy

DRYPRO MODEL 793 establishes associations from the association establishment request from the Host (SCU).

2.1.3.1 Real World Activities

2.1.3.1.1 Associated Real World Activity

Image data and various parameters are sent to the imager with the command from the Host (SCU) in order to print image data on films.

Request for C-ECHO, Film Session, Film Box, or Image Box can be sent with the command from the Host (SCU).

2.1.3.1.2 Proposed Presentation Contexts

DRYPRO MODEL 793 can receive the presentation contexts listed in the following table.

Table 2 Proposed Presentation Contexts

Abstract syntax		Role
Name	UID	
Verification SOP Class	1.2.840.10008.1.1	SCP
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	
Printer Management Class	1.2.840.10008.5.1.1.16	
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	

Extended negotiation can be conformed to as required.

The following transmission structure is valid against the individual SOP classes mentioned above.

Name	UID
Implicit VR Little Endian	1.2.840.10008.1.2

2.1.4 SOP Class Compatibility

2.1.4.1 Verification SOP Class

This model is applicable with Verification SOP Class.

When this model receives a C-ECHO Request, it returns a C-ECHO Response.

2.1.5 Basic Grayscale Print Management Meta SOP Class

This model conforms to the Basic Grayscale Print Management Meta SOP Class.

The following SOP classes are supported.

Table 3 Supported SOP Class and UID Value

SOP Class	UID Value
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4
Printer SOP Class	1.2.840.10008.5.1.1.16

2.1.5.1 Basic Film Session SOP Class

Table 4 Film Session

Tag	Name	VR	VM	Permitted Value
(2000, 0010)	Copies	IS	1	(Range) 1-99
(2000, 0020)	Print Priority	CS	1	LOW MED HIGH
(2000, 0030)	Medium Type	CS	1	CLEAR FILM = Clear Base Film BLUE FILM = Blue Base Film DR BLUE FILM = Mammo Blue Film MAMMO BLUE FILM = Mammo Blue Film
(2000, 0040)	Film Destination	CS	1	PROCESSOR = Auto Processor BIN_1 = Sorter Bin 1 BIN_2 = Sorter Bin 2 BIN_3 = Sorter Bin 3 BIN_4 = Sorter Bin 4 BIN_5 = Sorter Bin 5 BIN_6 = Sorter Bin 6
(2000, 0060)	Memory Allocation	LO	1	Set the required memory contents. Indicate in KB.

Tags other than those listed above will not be checked.

Furthermore, this model can conform to non-conforming header data as required.

2.1.5.2 Basic Film Box SOP Class

Table 5 Film Box

Tag	Name	VR	VM	Permitted Value
(2010, 0010)	Image Display Format	ST	1	STANDARD\C,R = CxR Format ROWR1,R2 = Row Format
(2010, 0030)	Annotation Display Format ID	CS	1	P1 = PORTRAIT L1 = LANDSCAPE TM = TIME CC = Copy Count ID = Modality ID MS = Message
(2010, 0040)	Film Orientation	CS	1	Portrait (Vertical) Landscape (Horizontal)
(2010, 0050)	Film Size ID	CS	1	8in x 10in 10in x 12in 11in x 14in 14in x 14in 14in x 17in
(2010, 0060)	Magnification Type	CS	1	NONE = No interpolation BILINEAR = Bilinear interpolation REPLICATE = Replicate interpolation CUBIC = Cubic B-Spline
(2010, 0080)	Smoothing Type	CS	1	(Range) 1 - 7 Enlarging Method (2010,0060) = Valid only for cubic.
(2010, 0100)	Borders Density	CS	1	BLACK = Black Border WHITE = Clear Border
(2010, 0120)	Min Density	US	1	Minimum Density (Range) 0 - 100
(2010, 0130)	Max Density	US	1	Maximum Density (Range) 100 - 460
(2010, 0140)	Trim	US	1	YES = With trim frame NO = Without trim frame
(2010, 0150)	Configuration Information	ST	1	Imager LUT KC_LUT = 1 to KC_LUT = 7 Custom Format KC_CUSTOM
(2010, 015E)	Illumination	US	1	Illumination (Range) 0 - 38000
(2010, 0160)	Reflected Ambient Light	US	1	Reflected Ambient Light (Range) 0 - 38000

Tags other than those listed above will not be checked.
Furthermore, this model can conform to non-conforming header data as required.

2.1.5.3 Basic Grayscale Image Box SOP Class

Table 6 Image Box

Tag	Name	VR	VM	Permitted Value
(0028, 0002)	Samples per Pixel	US	1	
(0028, 0004)	Photometric Interpretation	CS	1	MONOCHROME1 = Min. VOI pixel : White MONOCHROME2 = Min. VOI pixel : Black
(0028, 0010)	Rows	US	1	Pixels in imager Y orientation
(0028, 0011)	Columns	US	1	Pixels in imager X orientation
(0028, 0034)	Pixel Aspect Ratio	IS	2	
(0028, 0100)	Bits Allocated	US	1	Bits allocated in pixel. Non-used bits are included. 0x0008 = 8 (8bits) 0x000A = 16 (12bits) Those other than the above result in an error.
(0028, 0101)	Bits Stored	US	1	Bits in 1 pixel. 0x0008 = 8 (8bits) 0x000C = 12 (12bits)
(0028, 0102)	High Bit	US	1	High Bit (Pixel data MBS) 0x0007 = 7 (Bits Stored = 8) 0x000B = 11 (Bits Stored = 12)
(0028, 0103)	Pixel Representation	US	1	Pixel data representation 0x0000 = Integer with no marks
(2020, 0010)	Image Position	US	1	Image Position (Range) 1 - 64 Image position that structures a page.
(2020, 0020)	Polarity	CS	1	NORMAL REVERSE
(2020, 0030)	Requested Image Size	CS	1	
(2020, 0040)	Requested Decimate/Crop Behavior	CS	1	DECIMATE CROP FAIL
(7fe0, 0010)	Pixel Data	OW OB	1	

Tags other than those listed above will not be checked.
Furthermore, this model can conform to non-conforming header data as required.

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The request image dimensions conform only to 1 on 1 format.
 The maximum valid size that can be specified for each film is listed in Table 7.
 However, printing may fail depending on the image aspect.

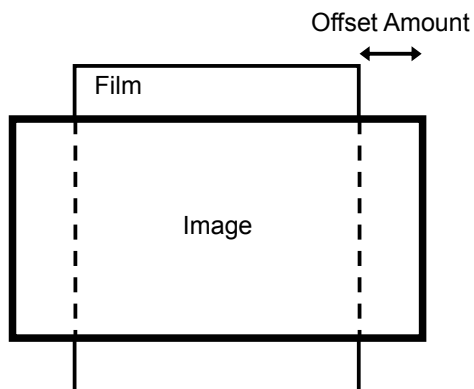
Table 7 Request Image Dimension

Film Size	Film Orientation	Maximum Settable Size (mm)
14x17	Portrait	341 (353)
	Landscape	417 (425)
14x14	Portrait	341 (353)
	Landscape	341 (349)
11x14	Portrait	266 (274)
	Landscape	341 (353)
10x12	Portrait	240 (252)
	Landscape	290 (298)
8x10	Portrait	189 (201)
	Landscape	240 (248)

The parenthesized value is in case of the CR mode.

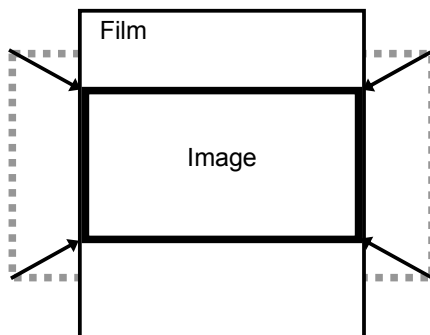
Following are the setups in case the request image dimension exceeds the values in the table above.

When DRYPRO MODEL 793 is set to CROP



Some part of the image cannot be printed since the image is recorded based on the center of the film. In this case, the offset amount is printed on the film.

When DRYPRO MODEL 793 is set to other than CROP



The image is recorded on the film using the scale factor specified in the imager. In this case, the ratio to the request image dimension is printed on the film.

2.1.5.4 Printer SOP Class

Table 8 Printer

Tag	Name	VR	VM	Permitted Value
(0008, 0070)	Manufacture	LO	1	KONICA MINOLTA
(0008, 1090)	Manufacture's Model Name	LO	1	DRYPRO 793
(0018, 1000)	Device Serial Number	LO	1	Serial Number of the DRYPRO
(0018, 1020)	Software Version	LO	1	Software Version of the DRYPRO
(2110, 0010)	Printer Status	CS	1	Imager Status Normal Warning Failure
(2110, 0020)	Printer Status Information	CS	1	* See Appendix C.
(2110, 0030)	Printer Name	LO	1	DRYPRO 793

2.1.5.5 Annotation Box SOP Class

Table 9 Annotation Box

Tag	Name	VR	VM	Permitted Value
(0008, 0070)	Annotation Position	US	1	Annotation Position
(0008, 1090)	Text String	LO	1	Text String

2.1.6 Presentation LUT SOP Class

Table 9 Presentation LUT

Tag	Name	VR	VM	Permitted Value
(2050, 0010)	Presentation LUT Sequence	SQ	1	
(0028, 3002)	LUT Descriptor	US	3	
(0028, 3003)	LUT Explanation	LO	1	
(0028, 3006)	LUT Data	US or SS	1-n	
(2110, 0030)	Presentation LUT Shape	CS	1	IDENTITY / LIN OD

3 COMMUNICATION PROFILES

3.1 Supported Communication Stack

It provides the TCP/IP network communication support defined by the DICOM3.0 PART8.

3.2 TCP/IP Stack

The TCP/IP stack is succeeded from the Linux system environment.

3.2.1 Physical Media Support

This model supports the following physical media by standard.

- 10 BaseT, 100BaseTX, 1000BaseT

4 EXTENSIONS / SPECIALIZATIONS / PRIVATIZATIONS

The following attributes are reserved in the Basic Film Box SOP Class.

- (2011,0010) Konica Private Data Element
- (2011,1011) Patient Name Position
- (2011,1021) Patient ID Position
- (2011,1030) Density
- (2011,1031) Contrast
- (2011,1040) ID Image Position
- (2011,1050) Other Information
- (2011,1060) Modality ID
- (2011,1070) Target Printer Name
- (2011,1080) Glossy
- (2011,1090) Calibration LUT

The following attributes are reserved in the Printer SOP Class.

- (2011,0010) Konica Private Data Element
- (2011,10A0) Error Reset
- (2011,10A1) Copy Stop
- (2011,10B0) Supply Magazine Counter1
- (2011,10B1) Supply Magazine Counter2
- (2011,10B2) Receive Magazine Counter
- (2011,10B3) Supply Magazine Counter3
- (2011,10C0) Imager Film Size ID1
- (2011,10C1) Imager Film Size ID2
- (2011,10C2) Imager Film Size ID3
- (2011,10D0) Imager Medium Type1
- (2011,10D1) Imager Medium Type2
- (2011,10D2) Imager Medium Type3
- (2011,10E0) Film Queue Count
- (2011,10F0) Copy Queue Count

5 CONFIGURATION

The following items are to be specified in the environment information file.

- DRYPRO MODEL 793 AE Title (Default: KC_DPRO3_P001)
- DRYPRO MODEL 793 TCP Port No. 100 - 65000 (Default for the receiving port: 104,6000)
- HOST AE Title
- HOST IP Address
- HOST TCP Port No. 100 - 65535 (For N-EVENT-REPORT)

6 SUPPORT OF EXTENDED CHARACTER SETS

For elements in which the VR is SH (short column), LO (long column), ST (short text), LT (long text), or PN (person's name), extended characters can be used by specifying an extended character repertoire in the attribute specific character group (0008,0005) for SC image IOD.

The extended character repertoire uses the following.

- ISO 2022 IR87
- ISO 2022 IR13\ISO 2022 IR87

Appendix.A (Characteristic state code)

A-1 Basic Film Session SOP Class

A-1-1 N-CREATE

SCU can use N-CREAE to request SCP to create Basic Film Session SOP Instance.

<Basic Film Session SOP Class>

N-CREATE Success	DRYPRO MODEL 793 (SCP) produces a Basic Film Box SOP instance and initializes its attribute.
N-CREATE Failure	DRYPRO MODEL 793 (SCP) has not yet produced a Basic Film Box SOP instance.
N-CREATE Warning	DRYPRO MODEL 793 (SCP) was not able to produce a Basic Film Box SOP instance in the specified method.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	
0106H (Warning)	Specified Value was not supported.
0116H (Failure)	Default Value was used.
0120H (Failure)	No Value was specified.
B605H (Failure)	Density Value that cannot be supported was specified.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A-1-2 N-SET

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Basic Film Session SOP Class>

0000H (Success)	
0106H (Warning)	Specified Value was not supported.
0116H (Failure)	Default Value was used.
0120H (Failure)	No Value was specified.
B605H (Failure)	Density Value that cannot be supported was specified.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

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A-1-3 N-ACTION

SCU can use N-ACTION in order to request SCP to print one or more copies of a film session that belongs to a film session.

<Basic Film Session SOP Class>

N-ACTION Success	DRYPRO MODEL 793 (SCP) received a film attributed to a Film Session to print.
N-ACTION Failure	DRYPRO MODEL 793 (SCP) did not print a Film Session.
N-ACTION Warning	DRYPRO MODEL 793 (SCP) did not print a Film Session in the specified method.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

No common status codes in the Print Management Service Class exists.

<Unique status codes>

0000H (Success)	A film attributed in a Film Session was received for printing.
0105H (Failure)	Operation was invalid.
0112H (Failure)	Specified Film Session did not exist.
B605H (Failure)	Print Queue was full.
C605H (Failure)	Instance UID cannot be created since Print Queue is full.
C613H (Failure)	The size of the linked image exceeds that of Image Box.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A-1-4 N-DELETE

SCU can use N-DELETE to request SCP to delete the entire Basic Film Session SOP Instance hierarchical structure.

<Basic Film Session SOP Class>

N-DELETE Success	DRYPRO MODEL 793 (SCP) deleted the specified hierarchical structure of SOP Instance.
N-DELETE Failure	DRYPRO MODEL 793 (SCP) did not delete the specified hierarchical structure of SOP Instance.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

No common status codes in the Print Management Service Class exists.

<Unique status codes>

No unique status code exists.

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A-2 Basic Film Box SOP Class

A-2-1 N-CREATE

SCU can use N-CREAE to request SCP to create Basic Film Box SOP Instance.

<Basic Film Box SOP Class>

N-CREATE Success	DRYPRO MODEL 793 (SCP) produces a Basic Film Box SOP instance and initializes its attribute.
N-CREATE Failure	DRYPRO MODEL 793 (SCP) has not yet produced a Basic Film Box SOP instance.
N-CREATE Warning	DRYPRO MODEL 793 (SCP) produced a Basic Film Box SOP instance in the specified method using the initial value.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	
0106H (Warning)	No Value was specified.
B605H (Warning)	Received a density value that exceeds the minimum or maximum density
0116H (Failure)	Default Value was used.
0120H (Failure)	Specified Value was not supported.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A-2-2 N-SET

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	
0106H (Warning)	No Value was specified.
B605H (Warning)	Received a density value that exceeds the minimum or maximum density
0116H (Failure)	Default Value was used.
0120H (Failure)	Specified Value was not supported.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

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A-2-3 N-ACTION

SCU can use N-ACTION in order to request SCP to print one or more copies of one film box of a film session that belongs to a film session.

<Basic Film Box SOP Class>

N-ACTION Success	DRYPRO MODEL 793 (SCP) received a film attributed to a Film Session to print.
N-ACTION Failure	DRYPRO MODEL 793 (SCP) did not print a film box.
N-ACTION Warning	DRYPRO MODEL 793 (SCP) cannot print a film box in the specified method.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCU).

<Common status codes in the Print Management Service Class>

No common status codes in the Print Management Service Class exists.
--

<Unique status codes>

0000H (Success)	A film attributed in a Film Session was received for printing.
0106H (Failure)	Specified Value was not supported.
0116H (Failure)	Default Value was used.
0120H (Failure)	No Value was specified.
C602H (Failure)	Print Queue was full.
C613H (Failure)	The size of the linked image exceeds that of Image Box.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A-2-4 N-DELETE

SCU can use N-DELETE to request SCP to delete the Basic Film Session SOP Instance hierarchical structure.

<Basic Film Box SOP Class>

N-DELETE Success	DRYPRO MODEL 793 (SCP) deleted the specified hierarchical structure of SOP Instance.
N-DELETE Failure	DRYPRO MODEL 793 (SCP) did not delete the specified hierarchical structure of SOP Instance.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCU).

<Common status codes in the Print Management Service Class>

No common status codes in the Print Management Service Class exists.
--

<Unique status codes>

No unique status code exists.

A-3 Basic Grayscale Image Box SOP Class

A-3-1 N-SET

SCU can use N-SET to request SCP to update a Basic Grayscale Image Box SOP Instance. SCU specifies just the Basic Grayscale Image Box SOP Instance UID that is attributed in the Film Box SOP Instance that was last produced and specifies the attribute list which is set with an attribute value.

<Basic Film Box SOP Class>

N-SET Success	DRYPRO MODEL 793 (SCP) updated an attribute specified in the SOP Instance.
N-SET Failure	DRYPRO MODEL 793 (SCP) did not update an attribute specified in the SOP Instance.
N-SET Warning	DRYPRO MODEL 793 (SCP) was not able to operate in the specified method.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	
0106H (Warning)	Specified Value was not supported.
0116H (Failure)	Default Value was used.
0120H (Failure)	No Value was specified.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A-4 Printer SOP Class

A-4-1 N-GET

SCU can use N-GET to request SCP to get SOP Instance.

<Printer SOP Class>

N-GET Success	DRYPRO MODEL 793 (SCP) searched the SOP Instance.
N-GET Failure	DRYPRO MODEL 793 (SCP) did not search the SOP Instance.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	U/M : Imager Status, Imager Status Information U/U : Manufacturer, Model, Installation Serial No., Software Version, Imager Name
-----------------	--

<Unique status codes>

No unique status code exists.

A-5 Annotation Box SOP Class

A-5-1 N-SET

SCU can use N-SET to request SCP to update an Annotation Box SOP Instance. SCU specifies just the Basic Grayscale Image Box SOP Instance UID that is attributed in the Film Box SOP Instance that was last produced and specifies the attribute list which is set with an attribute value.

<Basic Film Box SOP Class>

N-SET Success	DRYPRO MODEL 793 (SCP) updated an attribute specified in the SOP Instance.
N-SET Warning	DRYPRO MODEL 793 (SCP) was not able to operate in the specified method.

DRYPRO MODEL 793 (SCP) returns one of the following status codes to the Host (SCP).

<Common status codes in the Print Management Service Class>

0000H (Success)	
0106H (Warning)	Specified Value was not supported.

<Unique status codes>

No unique status code exists.

* DRYPRO MODEL 793 sends A-ABORT in case of that an internal error or unknown error happened.

A maximum of 64 characters can be set in a text string. Furthermore, the value specified in the Host (SCU) is not applied as the position for displaying the annotation text string. Instead, the value specified in DRYPRO MODEL 793 (SCP) is applied.

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Appendix-B (Imager Format)

B-1 Imager Format

<Standard Format - Same for Portrait and Landscape (1/2)>

FOTMAT	8X10	10X12	11X14	14X14	14X17
STANDARD\ 1,1	O	O	O	O	O
STANDARD\ 1,2	O	O	O	O	O
STANDARD\ 2,1	O	O	O	O	O
STANDARD\ 1,3	O	O	O	O	O
STANDARD\ 3,1	O	O	O	O	O
STANDARD\ 2,2	O	O	O	O	O
STANDARD\ 2,3	O	O	O	O	O
STANDARD\ 3,2	O	O	O	O	O
STANDARD\ 2,4	O	O	O	O	O
STANDARD\ 4,2	O	O	O	O	O
STANDARD\ 3,3	O	O	O	O	O
STANDARD\ 3,4	O	O	O	O	O
STANDARD\ 4,3	O	O	O	O	O
STANDARD\ 3,5	O	O	O	O	O
STANDARD\ 5,3	O	O	O	O	O
STANDARD\ 4,4	O	O	O	O	O
STANDARD\ 3,6	O	O	O	O	O
STANDARD\ 6,3	O	O	O	O	O
STANDARD\ 4,5	O	O	O	O	O
STANDARD\ 5,4	O	O	O	O	O
STANDARD\ 4,6	O	O	O	O	O
STANDARD\ 6,4	O	O	O	O	O
STANDARD\ 5,5	O	O	O	O	O
STANDARD\ 4,7	O	O	O	O	O
STANDARD\ 7,4	O	O	O	O	O
STANDARD\ 5,6	O	O	O	O	O
STANDARD\ 6,5	O	O	O	O	O
STANDARD\ 4,8	O	O	O	O	O
STANDARD\ 8,4	O	O	O	O	O
STANDARD\ 5,7	O	O	O	O	O
STANDARD\ 7,5	O	O	O	O	O
STANDARD\ 6,6	O	O	O	O	O
STANDARD\ 5,8	O	O	O	O	O
STANDARD\ 8,5	O	O	O	O	O
STANDARD\ 6,7	O	O	O	O	O
STANDARD\ 7,6	O	O	O	O	O
STANDARD\ 6,8	O	O	O	O	O
STANDARD\ 8,6	O	O	O	O	O
STANDARD\ 7,7	O	O	O	O	O
STANDARD\ 6,9	O	O	O	O	O
STANDARD\ 9,6	O	O	O	O	O
STANDARD\ 7,8	O	O	O	O	O
STANDARD\ 8,7	O	O	O	O	O

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<Standard Format - Same for Portrait and Landscape (2/2)>

FOTMAT	8X10	10X12	11X14	14X14	14X17
STANDARD\ 6,10	O	O	O	O	O
STANDARD\ 10,6	O	O	O	O	O
STANDARD\ 7,9	O	O	O	O	O
STANDARD\ 9,7	O	O	O	O	O
STANDARD\ 8,8	O	O	O	O	O

* The above formats are supported regardless of the film size or direction.

<Mixed Format - Same for Portrait and Landscape>

FOTMAT	8X10	10X12	11X14	14X14	14X17
ROW\ 3,2	O	O	O	O	O
ROW\ 2,3	O	O	O	O	O
ROW\ 3,3,2	O	O	O	O	O
ROW\ 2,3,3	O	O	O	O	O
ROW\ 4,4,2	O	O	O	O	O
ROW\ 2,4,4	O	O	O	O	O
ROW\ 3,3,3,2	O	O	O	O	O
ROW\ 2,3,3,3	O	O	O	O	O
ROW\ 3,1	O	O	O	O	O
ROW\ 1,3	O	O	O	O	O
ROW\ 2,2,1	O	O	O	O	O
ROW\ 1,2,2	O	O	O	O	O
ROW\ 3,3,1	O	O	O	O	O
ROW\ 1,3,3	O	O	O	O	O
ROW\ 3,3,3,1	O	O	O	O	O
ROW\ 1,3,3,3	O	O	O	O	O

* The above formats are supported regardless of the film size or direction.

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B-2 Other restriction on the image data

<Number of Valid Print Pixels>

Stamp Character Direction: Same as the film direction.

Film Size	Film Orientation	Columns	Row
14x17 (43.75µm)	PORTRAIT	7805(8079)	9336(9725)
	LANDSCAPE	9542(9725)	7599(8079)
14x14 (43.75µm)	PORTRAIT	7805(8079)	7599(7988)
	LANDSCAPE	7805(7988)	7599(8079)
11x14 (43.75µm)	PORTRAIT	6090(6273)	7599(8079)
	LANDSCAPE	7805(8079)	5885(6273)
10x12 (43.75µm)	PORTRAIT	5492(5766)	6438(6826)
	LANDSCAPE	6644(6826)	5286(5766)
8x10 (43.75µm)	PORTRAIT	4321(4596)	5286(5674)
	LANDSCAPE	5492(5674)	4116(4596)
11x14 (25µm)	PORTRAIT	10660(10980)	13300(14140)
	LANDSCAPE	13660(14140)	10300(10980)
10x12 (25µm)	PORTRAIT	9612(10092)	11268(11948)
	LANDSCAPE	11628(11948)	9252(10092)
8x10 (25µm)	PORTRAIT	7564(8044)	9252(9932)
	LANDSCAPE	9612(9932)	7204(8044)

Stamp Character Direction: Opposite to the film direction.

Film Size	Film Orientation	Columns	Row
14x17 (43.75µm)	PORTRAIT	7736(8079)	9428(9725)
	LANDSCAPE	9450(9725)	7668(8079)
14x14 (43.75µm)	PORTRAIT	7736(8079)	7690(7988)
	LANDSCAPE	7713(7988)	7668(8079)
11x14 (43.75µm)	PORTRAIT	5999(6273)	7668(8079)
	LANDSCAPE	7736(8079)	5976(6273)
10x12 (43.75µm)	PORTRAIT	5423(5766)	6529(6826)
	LANDSCAPE	6552(6826)	5354(5766)
8x10 (43.75µm)	PORTRAIT	4253(4596)	5377(5674)
	LANDSCAPE	5400(5674)	4184(4596)
11x14 (25µm)	PORTRAIT	10500(10980)	13420(14140)
	LANDSCAPE	13540(14140)	10460(10980)
10x12 (25µm)	PORTRAIT	9492(10092)	11428(11948)
	LANDSCAPE	11468(11948)	9372(10092)
8x10 (25µm)	PORTRAIT	7444(8044)	9412(9932)
	LANDSCAPE	9452(9932)	7324(8044)

* The values in the parentheses are for the CR mode.

* Number of maximum input pixels: 78M pixels (upon 43.75µm) / 139M pixels (upon 25µm)

The values in the above table are used as the number of specified input pixels in order to realize a one frame format life size. Furthermore, a life size can also be obtain with a value less than the ones in the above table by specifying "Magnification Type (2010,0060) = NONE".

The number of maximum input pixels (upon 43.75µm) in one frame of each format is obtained with the following calculations.

$$\text{Number of maximum input horizontal pixels} = (PP - 29 * (Nh - 1)) / Nh$$

$$\text{Number of maximum input vertical pixels} = (PP - 29 * (Nv - 1)) / Nv$$

(PP: Number of print valid pixels / Nh: Number of frames in horizontal direction / Nv: Number of frames in vertical direction)

e.g. The number of maximum input pixels in one frame for 14 x 17, 3 x 4 (12 frame format), and Portrait is obtained as shown below.

$$\text{Number of maximum input horizontal pixels} = (7805 - 29 * (3 - 1)) / 3 = 2582$$

$$\text{Number of maximum input vertical pixels} = (9336 - 29 * (4 - 1)) / 4 = 2312$$

The number of maximum input pixels (upon 43.75µm) in one frame of each format is obtained with the following calculations.

$$\text{Number of maximum input horizontal pixels} = (PP - 51 * (Nh - 1)) / Nh$$

$$\text{Number of maximum input vertical pixels} = (PP - 51 * (Nv - 1)) / Nv$$

(PP: Number of print valid pixels / Nh: Number of frames in horizontal direction / Nv: Number of frames in vertical direction)

e.g. The number of maximum input pixels in one frame for 11 x 14, 3 x 4 (12 frame format), and Portrait is obtained as shown below.

$$\text{Number of maximum input horizontal pixels} = (10660 - 51 * (3 - 1)) / 3 = 3519$$

$$\text{Number of maximum input vertical pixels} = (13300 - 51 * (4 - 1)) / 4 = 3286$$

Appendix-C (Status Information)**C-1 Imager Status Information**

<Imager Status Information>

NO	Value	Description
1	COVER OPEN	The cover, drawer, or door of the imager is open.
2	ELEC DOWN	The imager cannot operate due to an electrical hardware problem.
3	ELEC SW ERROR	The imager cannot operate due to a software error.
4	EMPTY 8×10	8x10 Film EMPTY
5	EMPTY 8×10 CLR	8x10 Clear Film EMPTY
6	EMPTY 8×10 BLUE	8x10 Blue Film EMPTY
7	EMPTY 8×10 DR C	8x10 DR Clear Film EMPTY
8	EMPTY 8×10 DR B	8x10 DR Blue Film EMPTY
9	EMPTY 10×12	10x12 Film EMPTY
10	EMPTY 10×12 CLR	10x12 Clear Film EMPTY
11	EMPTY 10×12 BLUE	10x12 Blue Film EMPTY
12	EMPTY 10×12 DR C	10x12 DR Clear Film EMPTY
13	EMPTY 10×12 DR B	10x12 DR Blue Film EMPTY
14	EMPTY 11×14	11x14 Film EMPTY
15	EMPTY 11×14 CLR	11x14 Clear Film EMPTY
16	EMPTY 11×14 BLUE	11x14 Blue Film EMPTY
17	EMPTY 11×14 DR C	11x14 DR Clear Film EMPTY
18	EMPTY 11×14 DR B	11x14 DR Blue Film EMPTY
19	EMPTY 14×14	14x14 Film EMPTY
20	EMPTY 14×14 CLR	14x14 Clear Film EMPTY
21	EMPTY 14×14 BLUE	14x14 Blue Film EMPTY
22	EMPTY 14×14 DR C	14x14 DR Clear Film EMPTY
23	EMPTY 14×14 DR B	14x14 DR Blue Film EMPTY
24	EMPTY 14×17	14x17 Film EMPTY
25	EMPTY 14×17 CLR	14x17 Clear Film EMPTY
26	EMPTY 14×17 BLUE	14x17 Blue Film EMPTY
27	EMPTY 14×17 DR C	14x17 DR Clear Film EMPTY
28	EMPTY 14×17 DR B	14x17 DR Blue Film EMPTY
29	EXPOSURE FAILURE	An unknown problem has occurred in the exposure section.
30	FILM JAM	A film jam has occurred in the imager.
31	FILM TRANSP ERR	A film transport error has occurred.
32	CHECK PRINTER	The imager is not ready.
33	PRINTER INIT	The imager is still not ready even after warming up normally.
34	PRINTER DOWM	The imager cannot operate for an unknown reason.
35	UNKNOWN	An unknown problem has occurred.

* Shaded items are extended error code.



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