FUJIFILM

DICOM Conformance Statement
Fuji Medical Dry Imager
DRYPIX 4000

October 2006
2nd Edition

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897N0542A 2006.10

Revision History

Revision	Date	Revision Description
1st Edition	October, 2004	
2nd Edition	October, 2006	Corrections were made on the following pages. p.i, p.10-12, p.14-15, p.29, p.41-59

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1 Introduction

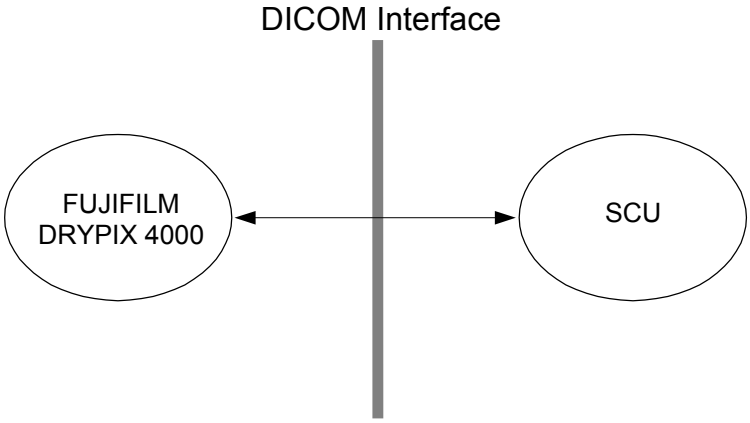
This document provides the DICOM conformance statement for the FUJIFILM DRYPIX 4000 product.

2 Implementation Model

The FUJIFILM DRYPIX 4000 is an Application Entity that provides the services of a DICOM Print Management Service Class.

2.1 Data Flow Diagram

The FUJIFILM DRYPIX 4000 receives images from a DICOM Print Management Service Class User, and prints them accordingly.



2.2 Functional Definitions of Application Entities

The FUJIFILM DRYPIX 4000 provides the DICOM Print Management Service Class support required to print images from one or more SCUs. The following functionalities are supported:

- DICOM Association Management
- Management of DICOM Film Sessions, Film Boxes and Image Boxes
- Print Job Status Tracking
- Image Buffering
- Printing
- Printer Status Tracking

2.3 Sequencing of Real World Activities

Not applicable for Real World Activities.

3 Application Entity Specification

As the SCP, the DRYPIX 4000 conforms to the following DICOM SOP Classes[1].

SOP Class Name	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
Print Job SOP Class	1.2.840.10008.5.1.1.14
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15
Presentation LUT SOP Class (Supplement 22)	1.2.840.10008.5.1.1.23
Print Queue Management SOP Class (Supplement 13)	1.2.840.10008.5.1.1.26

[1] The following Correction Proposals are applied: CP16, 19, 20, 35, 49, 55, 56, 80, 81, 85, 94, 108, 173

4 Association

4.1 Association Establishment Policies

- General
  - The SCU AE attempts to initiate a new Association for each print session.
  - Only the SCU AE shall release an Association.
  - The Association may be aborted by the SCU or the SCP.
  - The Maximum PDU Size for the PDUs offered by the SCP equals 32Kbytes.
- Number of Associations
  - Maximum 10 associations at a time. Further associations will be rejected with the reason 'busy'.
- Asynchronous Nature
  - Not support negotiation of multiple outstanding transactions.
- Implementation ID information
  - Implementation Class UID is 1.2.392.200036.9125.5133.1

4.2 Association Initiation

This application does not initiate any DICOM associations.

4.3 Association Acceptance Policy

This application accepts an association.

- Associated Real-World Activity

  When an association is established, one of the following activities may occur.

  1) The SCU instructs the printing of a set of images. The SCP prints the set of images.

  2) The SCU requires the status of print job or the printer. The SCP will respond it.

  3) The SCU sends a verification request. The SCP will respond it.

- Proposed Presentation Contexts

  The following transfer syntax is acceptable.

  Table-1

Name	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

  The following presentation contexts are acceptable.

No.	Abstract Syntax		Transfer syntax	Role	Extended Negotiation
	Name	UID			
1	Verification SOP Class	1.2.840.10008.1.1	Table-1	SCP	None
2	Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Table-1	SCP	None
3	Print Job SOP Class	1.2.840.10008.5.1.1.14	Table-1	SCP	None
4	Printer SOP Class	1.2.840.10008.5.1.1.16	Table-1	SCP	None
5	Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Table-1	SCP	None

6	Print Queue Management SOP Class	1.2.840.10008.5.1.1.26	Table-1	SCP	None
7	Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Table-1	SCP	None

The 3rd and 4th SOP Classes that have been negotiated so far only by combined with the 2nd SOP Class are now permitted to be negotiated with no combination. The 3rd and 4th SOP Classes may inhibit SCP's resource consumption rather than when negotiated being combined with the 2nd SOP Class, resulting in improving SCP's processing speed (CP-81). The 6th SOP Class can be negotiated solely with no combination or being combined with any other.

♦ SOP Specific Conformance

- The DRYPIX 4000 may return the following error codes in response to any message received.

Code	Status	Meaning
0122H	Failure	SOP class not supported.
0211H	Failure	Unrecognized operation : The command is not supported for the SOP class (e.g. N_CREATE for Image Box SOP class).

- For 0107H, 0116H and B604H Warning Status, it is possible to disregard them and individually specify so that they are processed same as the "Success: (0000H)."
- It is possible to specify so that the N-EVENT-REPORT message is not issued.
- When the same Image Position (2020,0010) has been specified one or more times by N-SET in Basic Grayscale Image BOX, the Image Position specified the last will be effective. N-ACTION for Basic Film Session or Basic Film Box will quit normally, not resulting in C604H error (CP-80).
- In Failure status, no message will be returned by "Attribute List."
- In Success/Warning status when in N-CREATE, all supported attributes included in the instance that has been created as the "Attribute List" will be returned.
- In Success/Warning when in N-SET, items that have been properly updated in the items specified by the SCU will be returned as the "Attribute List." However, Preformatted grayscale image sequence in the Basic Grayscale Image Box will not be returned.
- When Status (0000,0900) = 0107H (Attribute list error), the Attribute Identifier List (0000,1005) will not be returned.
- In certain Failure/Warning status, the Error Comment (0000,0902) will be returned.
  See Appendix D.

5 Verification SOP Class (1.2.840.10008.1.1)

The DRYPIX 4000 provides standard conformance to the DICOM Verification Service Class as an SCP.

Upon receipt from an SCU of a verification of communication request, the DRYPIX 4000 will issue a confirmation.

6 Basic Film Session SOP Class (1.2.840.10008.5.1.1.1)

The following DIMSE services are supported.

- N-CREATE
- N-SET
- N-DELETE
- N-ACTION

6.1 N-CREATE

♦ Description

- Creates a Basic Film Session SOP instance and initializes it using the value sent from the SCU (default if no value is sent from the SCU).
- Creating instance of this SOP is required before creating the Basic Film Box SOP instance.
- An Association may have only one Basic Film Session SOP instance at a time. To use several Basic Film Session SOP instances, delete older ones and create new ones.

♦ Attribute Information

Tag	Name	Usage	Supported	Default
2000,0010	Number of Copies	U/M	1-99	Config
2000,0020	Print Priority	U/M	HIGH, MED LOW	Config
2000,0030	Medium Type	U/M	CLEAR FILM, BLUE FILM	Config
2000,0040	Film Destination	U/M	PROCESSOR BIN_i	Config
2000,0050	Film Session Lable	U/U	Up to 64 characters	Null string
2000,0060	Memory Allocation	U/U	1-131072	None
2100,0160	Owner ID	U/U		None

* (2000,0040) “BIN_i” specifies sorter bins on the printer provided with sorter. “i” is the pin number, ranging from 1 to 4.
* (2000,0060) is used for reserving Disk space in KByte.

♦ Status

- Use defaults and return “Success:0000H” if no element values have been specified.
- Create a UID using SCP and return “Success:0000H” if there is no Affected SOP Instance UID (0000,1000) or it has been sent in length 0.
- If element values exceed specified ranges, use defaults and return “Warning:0116H.”
- “Success:0000H” or “Failure:0110H” will be returned if a film type that is not loaded in the Laser Imager for output has been specified using Medium Type (2000,0030).
- Basic Film Session SOP instance is created even with Warning and processing is possible continuously.
- Basic Film Session SOP instance will not be created in Failure status.

Code	Status	Meaning
0000H	Success	Film session successfully created. The actual values assigned to attributes are returned.
0107H	Warning	Attribute list error. Attributes not applicable to the Basic Film Session SOP instance have been specified.
0110H	Failure	Processing failure. An attempt was made to create the 2nd Basic Film Session SOP instance.
0110H	Failure	Requested medium type does not exist on printer.
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0213H	Failure	Resource Limitation. The requested allocation can temporarily not be provided.

- Remarks
  - The following attributes of Basic Film Session IOD are not open to an SCU. These attributes are set up within an SCP when a Basic Film Box SOP instance is created.

Tag	Name
2000,0500	Referenced Film Box Sequence
0008,1150	> Referenced SOP Class UID
0008,1155	> Referenced SOP Instance UID

6.2 N-SET

- Description
  - Update attributes of the Basic Film Session SOP instance. It is possible to change all attributes that can be specified using N-CREATE.
- Status
  - For a Warning status, attributes will not be updated, remaining in previous values. Processing can be continued.
  - For a Failure status, attributes will not be updated, remaining in previous values. Processing can be continued.

Code	Status	Meaning
0000H	Success	Specified attributes of the SOP instance have been updated. The actual values assigned to attributes are returned.
0107H	Warning	Attribute list emrror. Attributes that cannot be applied to the Basic Film Session SOP Instance have been specified.
0110H	Failure	Requested medium type does not exist on printer.
0116H	Warning	Attribute Value out of Range.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0213H	Failure	Resource Limitation. The requested allocation can temporarily not be provided.

6.3 N-DELETE

- Description
  - Deletes all information hierarchies rooted in the Basic Film Session SOP Instance. Releases assigned resources.

- Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance hierarchy has been deleted.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

6.4 N-ACTION

- Description
  - After copying all information hierarchies rooted in the Basic Film Session SOP Instance, prints all relevant films. If one or more Film Boxes are included, Printing order will, for example, be as follows.
    1-1-2-2-3-3
  - Film Size IDs (2010,0050) of all Basic Film Box SOP Instances related with the Basic Film Session SOP Instance should be the same. If different IDs are included, returns "Failure:0110H" and prints no films. In such a case, N-ACTION should be issued to each Basic Film Box SOP Instance.
  - The SCU will continuously be able to update and/or operate all information hierarchies rooted in the Basic Film Session SOP Instance, which will not affect print operation as instructed by N-ACTION.
  - Creates the Print Job SOP Instance and returns its UID, if agreed according to Association setup.

- Parameters

Action Type Name = PRINT, Action Type ID = 1

Tag	Attribute	Usage	Comment
2100,0500	Referenced Print Job Sequence	-/MC	If Print Job SOP Class or Print Queue Management SOP Class is negotiated.
0008,1150	>Referenced SOP Class UID	-/MC	If Print Job SOP Class is negotiated.
0008,1155	>Referenced SOP Instance UID	-/MC	If Print Job SOP Class is negotiated.
2100,0010	>Print Job ID	-/MC	If Print Queue Management SOP Class is negotiated.

- Status

Code	Status	Meaning
0000H	Success	Films in the film session have been queued for printing.
0110H	Failure	Processing failure. Basic Film Box SOP Instance of different film sizes are present.
0115H	Failure	Invalid Argument Value. Returned if the Action Type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
B602H	Warning	Film Session SOP instance hierachy does not contain Image Box SOP Instance. Empty page will not be printed.
C600H	Failure	Film Session SOP Instance hierachy does not contain Film Box SOP Instances.
C601H	Failure	Unable to create Print Job SOP Instance. Print queue if full.

7 Basic Film Box (1.2.840.10008.5.1.1.2)

The following DIMSE services are supported.

- N-CREATE
- N-SET
- N-DELETE
- N-ACTION

7.1 N-CREATE

♦ Description

- Creates a Basic Film Box SOP instance and initializes it using the value sent from the SCU (default if no value is sent from the SCU).
- Initialization is effected so as to link "2000,0500" (Referenced Film Box Sequence) of Basic Film Session SOP instance to the created Basic Film Box SOP instance.
- Creates Basic Grayscale Image Box SOP Instances as many as necessary in accordance with (2010,0010) (Image Display Format), and specifies them to (2010,0510) (Referenced Image Box Sequence) of the Basic Film Box SOP Instance. Returns these values to the SCU as a Response.
- Creates Basic Annotation Box SOP Instances as many as necessary in accordance with (2010,0030) (Annotation Display Format ID), and specifies (2010,0520) (Referenced Basic Annotation Box Sequence). Returns these values to the SCU as a Response. If the use of a Basic Annotation Box SOP Class in not agreed upon, no Basic Annotation Box SOP instance is created.[2]

♦ Attribute Information

(Basic Film Box Presentation Module)

Tag	Name	Usage	Supported	Default
2010,0010	Image Display Format	M/M	See Appendix A.	
2010,0030	Annotation Display Format ID	U/U	FORMAT1 FORMAT2 FORMAT3 FORMAT4	Config
2010,0040	Film Orientation	U/M	PORTRAIT LANDSCAPE	Config
2010,0050	Film Size ID	U/M	14INX17IN 14INX14IN 10INX14IN 8INX10IN 10INX12IN	Config
2010,0060	Magnification Type	U/M	CUBIC NONE (No magnification/reduction)	Config
2010,0080	Smoothing type	U/U	SHARP SMOOTH MEDIUM	Config

[2] No matter whether this situation arises, annotation Text for which Configuration setup is completed will be recorded onto film.

2010,0100	Border Density	U/U	BLACK WHITE 0-360	Config
2010,0110	Empty Image Density	U/U	(Not supported)	
2010,0120	Min Density	U/U	0-360	Config
2010,0130	Max Density	U/M	0-400	Config
2010,0140	Trim	U/U	YES NO	Config
2010,0150	Configuration Information	U/M	See Appendix B.	Config
2010,015E	Illumination	U/MC		Config
2010,0160	Reflective Ambient Light	U/MC		Config
2020,0050	Requested Resolution ID	U/U	STANDARD HIGH	Config

(Basic Film Box Relationship Module)

Tag	Name	Usage	Supported	Default
2010,0500	Referenced Film Session Sequence	M/M		
0008,1150	>Referenced SOP Class UID	M/M		
0008,1155	>Referenced SOP instance UID	M/M		
2010,0510	Referenced Image Box Sequence	-/M		
0008,1150	>Referenced SOP Class UID	-/M		
0008,1155	>Referenced SOP instance UID	-/M		
2010,0520	Referenced Basic Annotation Box Sequence	-/MC		
0008,1150	>Referenced SOP Class UID	-/MC		
0008,1155	>Referenced SOP instance UID	-/MC		
2050,0500	Referenced Presentation LUT Sequence	U/MC		
0008,1150	>SOP Class UID	U/MC		
0008,1155	>SOP Instance UID	U/MC		

* Specifying low densities in (2010,0100), (2010,0120) or (2010,0130) will affect film base densities.
* A value larger than 361 can be specified for Max Density (2010,0130) only when the DI-ML type film is used.
* If "HIGH" is specified for (2020,0050) Requested Resolution ID, double-density image recording (20 lines/mm) will be performed.

♦ Status

- If an attribute specified for the Basic Film Box SOP, but not supported by the DRYPIX 4000, returns "Warning:0107H."
- Returns "Success:0000H" with the UID generated using the SCP, if no Affected SOP Instance UID (0000,1000) is available or it has been sent in length 0.
- Returns "Success:0000H" using the defaults, if values of "Usage SCU=U" elements have not been specified.
- Returns "Warning:0116H" using the defaults, if values of "Usage SCU=U" elements exceed the range.
- When a size that has not been loaded was specified for Film Size ID (2010,0050), "Warning: 0166H" or "Failure (an error code can be set up)" will be returned accordingly.

- When an unavailable combination has been specified for Medium Type (2000,0030) and Film Size ID (2010,0050), "Failure:0110H" will be returned.
- Returns "Failure:0102H" if values of "Usage SCU=M" elements have not been specified. This also applies for when no values have been sent as the DataSet.
- Returns "Failure:0116H" if values of "Usage SCU=M" elements exceed the range.
- Even for the Warning status, a Basic Film Box SOP instance will be created, enabling to continue with processing.
- For the Failure status, no Basic Film Box SOP instance will be created. At this time, the Affected SOP Instance UID (0000,1000) will not be returned.
- Returns "Failure:0106H" if a value less than 360 was specified for Max Density (2010,0130) in spite of a setting made according to the Configuration so as not to accept a value less than 360 for Max Density (2010,0130), when the DI-ML type film is used.

Code	Status	Meaning
0000H	Success	Film Box is successfully created. The actual values assigned to attributes are returned.
0106H	Failure	Invalid Attribute Value. Mandatory attribute had illegal value.
0107H	Waring	Attribute list error. An attribute not supported by the DRYPIX 4000 has been specified. An attribute not applicable to the Basic Film Box SOP instance has been specified.
0110H	Failure	Processing failure. Returned if the number of film boxes exceeds 32.
0111H	Failure	Duplicate SOP instance. Instance UID given is already in use.
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0120H	Failure	Missing attribute. Returned if a mandatory attribute is missing.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.

7.2 N-SET

- Description
  - Updates Basic Film Box SOP Instance attributes created the last.
- Attributes that can be updated

Tag	Name	Usage	Supported
2010,0060	Magnification Type	U/M	CUBIC NONE (No magnification /reduction)
2010,0080	Smootihg type	U/U	SHARP SMOOTH MEDIUM
2010,0100	Border Density	U/U	BLACK WHITE 0-360
2010,0110	Empty Image Density	U/U	(Not supported)
2010,0120	Min Density	U/U	0-360
2010,0130	Max Density	U/M	0-400

2010,0140	Trim	U/U	YES NO
2010,0150	Configuration Information	U/M	See Appendix B.
2010,015E	Illumination	U/MC	
2010,0160	Reflective Ambient Light	U/MC	
2050,0500	Referenced Presentation LUT Sequence	U/MC	
0008,1150	>SOP Class UID	U/MC	
0008,1155	>SOP Instance UID	U/MC	

* A value larger than 361 can be specified for Max Density (2010,0130) only when the DI-ML type film is used.

- Status
  - Returns "Failure:0120H" if no values have been sent as a DataSet.
  - For the Warning status, attributes will not be updated, with values remaining unchanged. Processing can be continued.
  - For the Failure status, attributes will not be updated, with values remaining unchanged. Processing can be continued.

Code	Status	Meaning
0000H	Success	Specified attributes of the SOP instance have been updated. The actual values assigned to attributes are returned.
0106H	Failure	Invalid Attribute Value. Mandatory attribute had illegal value.
0107H	Waring	Attribute list error. An attribute not supported by the DRYPIX 4000 has been specified. An attribute not applicable to the Basic Film Box SOP instance has been specified.
0110H	Failure	Processing failure. The instance created the last was not specified.
0116H	Warning	Attribute Value Out of Range.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute. Returend if no DataSet is provided by the SCU.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.

7.3 N-DELETE

- Description
  - Deletes the Basic Film Box SOP instance hierarchy created the last.
  - Deletes the relevant part of (2000,0500) (Referenced Film Box Sequence) of the Basic Film Session SOP Instance.
- Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance hierarchy has been deleted.
0110H	Failure	Processing failure. The instance created the last was not specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

7.4 N-ACTION

- Description
  - After copying all information hierarchies rooted in the specified Basic Film Box SOP Instance, prints all relevant films.
  - The SCU will continuously be able to update and/or operate all information hierarchies rooted in the Basic Film Box SOP Instance, which will not affect print operation as instructed by N-ACTION.
  - Creates the Print Job SOP Instance and returns its UID, if agreed according to Association setup.

- Parameters

  Action Type Name = PRINT, Action Type ID = 1

Tag	Attribute	Usage	Comment
2100,0500	Referenced Print Job Sequence	-/MC	If Print Job SOP Class or Print Queue Management SOP Class is negotiated.
0008,1150	>Referenced SOP Class UID	-/MC	If Print Job SOP Class is negotiated.
0008,1155	>Referenced SOP Instance UID	-/MC	If Print Job SOP Class is negotiated.
2100,0010	>Print Job ID	-/MC	If Print Queue Management SOP Class is negotiated.

- Status

Code	Status	Meaning
0000H	Success	Success is normally returned.
0115H	Failure	Invalid Argument Value. Returned if the Action Type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
B603H	Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page). Empty page will not be printed.
C602H	Failure	Unable to create Print Job SOP Instance. Print queue if full.

8 Basic Grayscale Image Box (1.2.840.10008.5.1.1.4)

The following DIMSE service is supported.

- N-SET

8.1 N-SET

♦ Description

- Updates attribute information of the Basic Grayscale Image Box SOP instance belonging to the Film Box SOP instance created the last.
- (2010,0060) (Magnification Type), (2010,0080) (Smoothing Type) and (2010,0150) (Configuration Information) will prevail over values specified for the Film Box SOP instance.
- It is possible to erase image by sending (2020,0110) (Preformatted Grayscale Sequence) in length 0.
- When "2020,0030" (requested image size) is specified, "2010,0060" (magnification type) is unconditionally processed as CUBIC.
- When two or more images are set in the same Image position (2020,0010), the last one takes effect.

♦ Attributes that can be Specified

(Basic Image Box Presentation Module)

Tag	Name	Usage	Supported	Default
2020,0010	Image position	M/M	1-x (See Appendix A.)	None
2020,0020	polarity	U/M	NORMAL REVERSE	Config
2010,0060	magnification type	U/U	CUBIC NONE (No magnification/reduction)	Basic Film box Value
2010,0080	smoothing type	U/U	SHARP SMOOTH MEDIUM	Basic Film box Value
2010,0120	Min Density	U/U	0-360	Basic Film box Value
2010,0130	Max Density	U/U	0-400	Basic Film box Value
2010,0150	Configuration Information	U/U	See Appendix B.	Basic Film box Value
2020,0030	requested image size	U/U	See Appendix A.	Config
2020,0040	Requested Decimate/Crop Behavior	U/U	DECIMATE,CROP,FAIL	Config
2020,0110	preformatted grayscale image sequence	M/M		
0028,0002	>samples per pixel	M/M	1	None
0028,0004	>photometric interpretation	M/M	MONOCHROME1 MONOCHROME2	None
0028,0010	>rows	M/M	1-8800	None
0028,0011	>columns	M/M	1-8800	None
0028,0034	>pixel aspect ratio	MC/M	R\C (Vertical\Horizontal) R,C=1-65535	1\1
0028,0100	>bits allocated	M/M	8, 16	None
0028,0101	>bits stored	M/M	8, 10, 12	None

0028,0102	>high bit	M/M	7, 9, 11	None
0028,0103	>pixel representation	M/M	0	None
7fe0,0010	>pixel data	M/M	(any)	None

(Basic Image Box Relationship Module)

Tag	Name	Usage	Supported	Default
2020,0130	referenced image overlay box sequence (note).	U/MC	(Not supported)	
0008,1150	>referenced sop class uid	MC/M	(Not supported)	
0008,1155	>referenced sop instance uid	MC/M	(Not supported)	
2050,0500	Referenced Presentation LUT Sequence	U/U		
0008,1150	>SOP Class UID	U/U		
0008,1155	>SOP Instance UID	U/U		

* A value larger than 361 can be specified for Max Density (2010,0130) only when the DI-ML type film is used.

♦ Status

- Returns “Success:0000H” using the defaults, if values of “Usage SCU=U” elements have not been Specified.
- Returns “Warning:0116H” using the defaults, if values of “Usage SCU=U” elements exceed the range.
- Returns “Failure:0120H” if values of “Usage SCU=M” elements have not been specified. This also applies for when no values have been sent as the DataSet.
- Returns “Failure:0106H” if values of “Usage SCU=M” elements exceed the range.
- Returns “Failure:0106H” with regard to (7fe0,0010) (pixel data), if the data length calculated from (0028,0010) (rows), (0028,0011) (columns) and (0028,0100) (bits allocated) does not agree with that of (7fe0,0010) (pixel data).
- For the Warning status, updates attributes. Processing can be continued.
- For the Failure status, does not update attributes, remaining the same. Processing can be continued.
- See Appendix E for the maximum size of (2020,0030) (requested image size) to be determined by (2010,0010) (Image Display Format), (2010,0050) (Film Size ID) and (2020,0010) (Image position), and for the behavior to be specified by (2020,0040) (Requested Decimate/Crop Behavior).
- When “NONE” has been specified for (2010,0060) (Magnification Type), see Appendix E for the maximum size of (0028,0010) (rows) and (0028,0011) (columns) to be determined by (2010,0010) (Image Display Format), (2010,0050) (Film Size ID), (2020,0010) (Image position) and (2010,0040) (Film Orientation), and for the behavior to be specified by (2020,0040) (Requested Decimate/Crop Behavior).

Code	Status	Meaning
0000H	Success	Image instance has been updated successfully.
0106H	Failure	Invalid attribute value. Mandatory attribute has illegal value.
0107H	Warning	Attribute list error.
0110H	Failure	Processing failure. The Basic Grayscale Image Box SOP instance not belonging to the Film Box SOP instance created the last has been specified.
0116H	Warning	Attribute Value Out of Range.

0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.
B604H	Warning	Image size is larger than image box size, the image has been demagnified.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.
B609H	Warning	Image size is larger than the Image Box size. The Image has been cropped to fit.
B60AH	Warning	Image size or Combined Print Image size is larger than the Image Box size. Image or Combined Print Image has been decimated to fit.
C603H	Failure	Image size is larger than image box size.
C605H	Failure	Insufficient memory in printer to store images.

9 Print JOB SOP Class (1.2.840.10008.5.1.1.14)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET

9.1 Overview

- One Print Job SOP Class instance represents one or more film print jobs belonging to the same film session and is possible to monitor execution of the job.
- The Print Job SOP Class instance will be created as requested by N-ACTION for Film Session SOP Class or Film Box SOP Class.
- The Print Job SOP Class instance will be deleted at the completion of the printing job or when Failure status results.

9.2 N-EVENT-REPORT

♦ Description

- As the status changes, N-EVENT-REPORT will be issued to the SCU of the Association that created the relevant instance. (No notice will be issued if the Association has been released.)
- After FAILURE or DONE status results, deletes the instance if the relevant confirmation has been received from the SCU.

♦ Event Types and Attributes

Event type name	Event type ID	Attribute	Tag	Usage
PENDING	1	Print Job ID	2100,0010	U/MC
		Printer Name	2110,0030	U/U
		Film Session Label	2000,0050	U/U
		Excution Status Info	2100,0030	U/M
PRINTING	2	Print Job ID	2100,0010	U/MC
		Printer Name	2110,0030	U/U
		Film Session Label	2000,0050	U/U
		Excution Status Info	2100,0030	U/M
DONE	3	Print Job ID	2100,0010	U/MC
		Printer Name	2110,0030	U/U
		Film Session Label	2000,0050	U/U
		Excution Status Info	2100,0030	U/M
FAILURE	4	Print Job ID	2100,0010	U/MC
		Printer Name	2110,0030	U/U
		Film Session Label	2000,0050	U/U
		Excution Status Info	2100,0030	U/M

* The Print Job ID (2100,0010) will be returned only when the Print Queue Management SOP Class is negotiated.

9.3 N-GET

♦ Description

- Returns instance-specified attribute information, with the assigned UID. Returns all attribute information if the DataSet has not come.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
2100,0020	Execution Status	U/M	PENDING PRINTING DONE FAILURE
2100,0030	Execution Status Info	U/M	Execution Status is DONE NORMAL Execution Status is PRINTING NORMAL Execution Status is FAILURE UNKNOWN Execution Status is PENDING See Appendix C.
2000,0020	Print Priority	U/M	HIGH, MED, LOW
2100,0040	Creation Date	U/U	
2100,0050	Creation Time	U/U	
2110,0030	Printer Name	U/U	Up to 16 characters (set at installation)
2100,0070	Originator	U/U	

♦ Status

- Returns “Warning:0107H” if an attribute defined as an attribute of the Basic Film Box SOP instance, but not supported by the DRYPIX 4000, has been specified.

Code	Status	Meaning
0000H	Success	Print Job information is returned.
0107H	Warning	Attribute list error. An attribute not applicable to the Print Job SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

10 Printer SOP Class (1.2.840.10008.5.1.1.16)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET

10.1 Overview

- Used to represent the printer and to obtain printer status.
- At time of printer startup, the SCP automatically creates instance and awaits the "well known SOP instance UID." The value will be "1.2.840.10008.5.1.1.17."

10.2 N-EVENT-REPORT

♦ Description

- As the printer status changes, N-EVENT-REPORT will be issued to all associated SCUs for using the relevant printer.

♦ Events Types and Attributes

Event type name	Event type ID	Attribute	Tag	Usage
Normal	1			
Warning	2	Printer Name	2110,0030	U/U
		Printer Status Info	2110,0020	U/M
Failure	3	Printer Name	2110,0030	U/U
		Printer Status Info	2110,0020	U/M

10.3 N-GET

♦ Description

- Returns printer-instance-specified attribute information. Returns all attribute information if the DataSet has not come.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
2110,0010	printer status	U/M	NORMAL WARNING FAILURE
2110,0020	printer status info	U/M	Printer Status is NORMAL NORMAL Printer Status is WARNING See Appendix C. Printer Status is FAILURE UNKNOWN
2110,0030	printer name	U/U	Up to 16 characters (set at installation)
0008,0070	manufacture	U/U	FUJI PHOTO FILM CO., LTD
0008,1090	manufacture model name	U/U	DRYPIX 4000

0018,1000	device serial number	U/U	Not supported.
0018,1020	software versions	U/U	
0018,1200	date of last calibration	U/U	Not supported.
0018,1201	time of last calibration	U/U	Not supported.

* (0018,1020) are represented by the "major.minor" format. The "major" represents an alphabet from A to Z and the "minor," a two-digit decimal number from 00 to 99.

♦ Status

- Returns "Warning:0107H" if an attribute defined as an attribute of the Basic Film Box SOP instance, but not supported by the DRYPIX 4000, has been specified.

Code	Status	Meaning
0000H	Success	Printer information is returned.
0107H	Warning	Attribute list error. An attribute not supported by the DRYPIX 4000 has been specified. An attribute not applicable to the Print Job SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

11 Presentation LUT (1.2.840.10008.5.1.1.23)

The following DIMSE services are supported.

- N-CREATE
- N-DELETE

11.1 N-CREATE

♦ Description

- Creates the Presentation LUT SOP instance and initializes it according to values sent by the SCU.
- To combine the instance thus created to the Basic Film Session SOP instance, Basic Film Box SOP instance or Basic Grayscale Image Box SOP instance, it is necessary to set the UID of this instance for each instance using the N-CREATE or N-SET function.
- Settings using the Presentation LUT prevail those using the Configuration Information (2010, 0150).

♦ Attribute Information

Tag	Name	Usage	Supported	Default
2050,0010	Presentation LUT Sequence	MC/M		None
0028,3002	>LUT Descriptor	MC/M	The first value represents the number of elements that (0028,3006) includes. The second value represents the value of pixels to be mapped to the first element of (0028,3006). The third value represents the valid bit numbers of the elements that (0028,3006) includes. Ignore this value.	None
0028,3003	>LUT Explanation	U/U	Any value is OK. Ignore this value.	None
0028,3006	>LUT Data	MC/M		None
2050,0020	Presentation LUT Shape	MC/M	IDENTITY LIN OD	None

* (2050,0020) is valid only when (2050,0010) has not been specified. When both have been specified, make sure to use (2050,0010).

♦ Status

- If values of each element of “Usage SCU=U” have not been specified, uses the default values and returns “Success:0000H.”
- If values of each element of “Usage SCU=MC” have not been specified although needed, returns “Failure:0120H.” This applies also when no DataSet has come.
- If values of each element of “Usage SCU=M” exceed the range, returns “Failure:0106H.”
- The LUT Data (0028,3003) length must be twice as large as the first value of the LUT Descriptor (0028,3002). For other than this, returns “Failure:0106H” to the LUT Descriptor (0028,3002).
- For a Failure case, the Presentation LUT SOP instance will not be created and the Affected SOP Instance UID (0000,1000) will not be returned.
- Returns “Warning:0116H” when an attempt was made to specify to the LUT Explanation (0028,3003) a character string that exceeds 64 characters.

Code	Status	Meaning
0000H	Success	Presentation LUT is successfully created.
0106H	Failure	Invalid attribute LUT value. Mandatory attribute has illegal value.
0107H	Warning	Attribute list error.
0111H	Failure	Duplicate SOP instance. Instance UID given is already in use.
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0120H	Failure	Missing attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.

11.2 N-DELETE

- Description
  - Deletes the Presentation LUT SOP instance, which, however, cannot be deleted when it is referenced by the Basic Film Session SOP instance, Basic Film Box SOP instance or Basic Grayscale Image Box SOP instance.

- Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance has been deleted.
0110H	Failure	Processing failure. An attempt was made to delete an instance that has been referenced to.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

12 Basic Annotation Box SOP Class (1.2.840.10008.5.1.1.15)

The following DIMSE service is supported.

- N-SET

12.1 N-NET

♦ Description

- Updates the Attribute Information of the Basic Annotation Box SOP instance belonging to the Film Box SOP instance that was created the last.
- The Annotation already specified can be deleted if (2030,0020)(Text String) is specified with the length set to 0.
- When a multiple number of settings have been made to the same (2030,0010)(Annotation position), those made the last will be taken valid.

♦ Attribute Information

(Basic Annotation Presentation Module)

Tag	Name	Usage	Supported	Default
0008,0005	Specific Character Set	U/U	ISO_IR 6, ISO_IR 100, ISO_IR 13, ISO 2022 IR 13\ ISO 2022 IR 87	None (ISO_IR 6)
2030,0010	Annotation position	M/M	1-6[3]	None
2030,0020	Text String	U/M		NULL
2031,1020	Annotation Image Sequence	U/U		
0028,0002	>Samples Per Pixel	M/M	1	None
0028,0004	>Photometric Interpretation	M/M	MONOCHROME1 MONOCHROME2	None
0028,0010	>Rows	M/M	1-8800	None
0028,0011	>Columns	M/M	1-8800	None
0028,0034	>Pixel Aspect Ratio	MC/M	R\C(Vertical\Horizontal) R,C=1-65535	1\1
0028,0100	>Bits Allocated	M/M	8,16	None
0028,0101	>Bits Stored	M/M	8,10,12	None
0028,0102	>High Bit	M/M	7,9,11	None
0028,0103	>Pixel Representation	M/M	0	None
7fe0,0010	>Pixel Data	M/M	(any)	None
2031,1021	Annotation Image Polality	U/U	NORMAL REVERSE	None

When both 2030,0020 and 2031,1020 are specified, 2031,1020 will be used.

* "2031,1020 Annotation Image Sequence" is a Private tag to be used between Fuji equipment units. The description above is presented for the purpose of releasing necessary specifications to equipment units for connection to Fuji equipment, and not included in the Conformance Statement that will be on public view.

[3] There are six Annotation Boxes as follows. 1: Top left, 2: Top center, 3: Top right, 4: Bottom left, 5: Bottom center, 6: Bottom right. Character fonts will depend on the configuration settings. Cut the end of a line if it is too long for printing.

- Status
  - When no values have been specified for each element of "Usage SCU=U," uses the defaults and returns "Success:0000H."
  - When no values have been specified for each element of "Usage SCU=M," returns "Failure:0120H." This applies also when no DataSet has come.
  - If values of each element of "Usage SCU=M" exceed the range, returns "Failure:0106H."
  - For a Failure case, attributes will not be updated, with the values remaining the same as before. Processing can be continued.

Code	Status	Meaning
0000H	Success	Annotation Box instance has been updated successfully.
0106H	Failure	Invalid attribute value. Mandatory attribute has illegal value.
0107H	Warning	Attribute list error.
0110H	Failure	Processing failure. The Basic Annotation Box SOP instance not belonging to the Film Box SOP instance that was created the last has been specified.
0116H	Warning	Attribute Value Out of Range.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.

13 Print Queue Management SOP Class (1.2.840.10008.5.1.1.26)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET
- N-ACTION

13.1 Overview

- Used for monitoring the Print Queue and the print job. Also used for deleting the print job and changing the order of job priority.
- When the printer is started up, the SCP automatically creates the Print Queue. As the "well known SOP Instance UID," this queue will be provided with the value of "1.2.840.10008.5.1.1.25."
- Jobs remaining in the Print Queue when the printer was shut down the last time will be restored automatically.

13.2 N-EVENT-REPORT

♦ Description

- Notifies status changes in the print queue, issuing the N-EVENT-REPORT, when status actually changes, to all SCUs that have agreed on with regard to the Print Queue Management SOP Class.

♦ Event Type

Event type name	Event type ID	Description	Attribute	Tag	Usage
HALTED	1	Queue operation is halted.	—	—	U/M
FULL	2	Queue is full.	—	—	U/M
NORMAL	3	Queue is operational.	—	—	U/M

13.3 N-GET

♦ Description

- Acquires information on all print jobs included in the Print Queue. Information on a job that has been deleted from the Print Queue because the job processing was completed will not be returned.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
2120,0010	Queue Status	U/M	NORMAL FULL HALTED
2120,0050	Print Job Description Sequence	U/MC	
2100,0010	>Print Job ID	U/MC	

2100,0020	>Execution Status	U/MC	PENDING PRINTING DONE FAILURE
2100,0030	>Execution Status Info	U/MC	Execution Status is DONE. NORMAL Execution Status is PRINTING. NORMAL Execution Status is FAILURE. UNKOWN Execution Status is PENDING. See Appendix C.
2100,0040	>Creation Date	U/U	
2100,0050	>Creation Time	U/U	
2000,0020	>Print Priority	U/MC	HIGH MED LOW
2100,0070	>Origin AE	U/U	
2100,0140	>Destination AE	U/U	
2110,0030	>Printer Name	U/MC	Up to 16 characters (set at installation)
2000,0040	>Film Destination	U/U	Not supported
2000,0050	>Film Session Label	U/U	
2000,0030	>Medium Type	U/U	CLEAR FILM BLUE FILM
2100,0170	>Number Of Films	U/U	
2120,0070	>Referenced Print Job Sequence	U/MC	
0008,1150	>>Referenced SOP Class UID	U/MC	
0008,1155	>>Referenced SOP Instance UID	U/MC	

♦ Status

- Returns “Warning:0107H” if an attribute not supported by the DRYPIX 4000 has been specified, even though it is specified as the attribute of the Print Queue Management SOP instance.

Code	Status	Meaning
0000H	Success	Print Queue information is returned.
0107H	Warning	Attribute list error. An attribute that is not applied to the Print Queue Management SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

13.4 N-ACTION

- Description
  - Changes the order of priority for print jobs specified.
  - Deletes print jobs specified.

- Parameters

Action type name	Action type ID	Description	Attribute	Tag	Usage
PRIORITIZE	1	Change priority of queue entry	Print Job ID	2100,0010	M/M
			Print Priority	2000,0020	M/M
			Owner ID	2100,0160	M/M
DELETE	2	Delete queue entry	Print Job ID	2100,0010	M/M
			Owner ID	2100,0160	M/M

- Status

Code	Status	Meaning
0000H	Success	Operation successfully completed.
0106H	Failure	Invalid Attribute Value. Returned if illegal print job ID is set.
0107H	Warning	Attribute list error. An attribute not supported by the DRYPIX 4000 has been specified.
0115H	Failure	Invalid argument value. Returned if the Action type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing Attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.
C651H	Failure	Print queue is halted.
C652H	Failure	Mismatch of owner ID.
C653H	Failure	Action failed because the job was in process.

14 Communication Profiles

14.1 Supported Communication Stacks

The DRYPIX 4000 Print Server provides DICOM V3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM Standard.

15 Extensions / Specializations / Privatizations

SOP Class : Basic Grayscale Image Box

- Attribute : bits stored (0028,0101)
  10 bits stored is supported. DICOM only specifies 8 and 12 for number of bits stored.
- Attribute : high bit (0028,0102)
  High bit position 9th is supported. DICOM specifies 7th or 11th bit.
- Attribute: magnification type (2010,0060)
  If Requested Image Size (2020,0030) is specified, this SOP Class will be processed unconditionally as a CUBIC.

General

After the session has been established, initiates monitoring “time for data transmission timeout” set in Configuration. The timeout monitoring will be reset every time a piece of data is received from the SCU. The session closes when a data transfer timeout occurs.

Reserves the following attributes using the Basic Annotation Box SOP class function.

- (2031,1020)
- (2031,1021)

16 Configuration

- Specifying the entire DRYPIX 4000
  - Host Name
  - IP Address
  - Subnet Mask
  - TCP Port Number used y SCP
  - AE title (the two types for standard density and double density can be handled.)
  - Data transmission timeout
  - Annotation Text & Font

- Specifying for each SCU AE title (defaults are used for unregistered AEs)
  - Whether 0107H status is effective or not
  - Whether 0116H status is effective or not
  - Whether B604H status is effective or not

- Whether N-EVENT-REPORT is effective or not
- Film substitution
- Whether data transmission timeout is applied or not
- Whether Presentation LUT is applied or not
- Whether precede picking up is applied or not
- Whether density (Max/Min Density) is specified or not
- Number of Copies (2000,0010)
- Medium Type (2000,0030)
- Film orientation (2010,0040)
- Film Size ID (2010,0050)
- Smoothing type (2010,0080)
- Border Density (2010,0100)
- Min Density (2010,0120)
- Max Density (2010,0130)
- Trim (2010,0140)
- Configuration Information (2010,0150)
- Polarity (2020,0020)
- Requested Decimate/Crop Behavior (2020,0040)
- Annotation Text & Font

17 Support of Extended Character Sets

For elements whose VR is SH, LO, ST, PN, LT or UT, there are cases where extended characters are used by specifying a range for extended characters to Specific Character Set (0008,0005).

A supported range of extended characters includes the following.

ISO_IR 6,

ISO_IR 100,

ISO_IR 13,

ISO 2022 IR 13\ISO 2022 IR 87

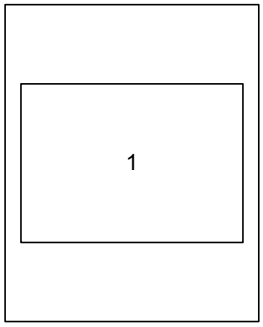
Appendix A

■ Image Display Format (2010,0010)

Image Position (2020,0010)

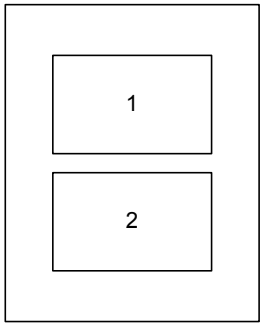
1. 14"× 17" (35cm × 43cm) PORTRAIT

STANDARD\1.1



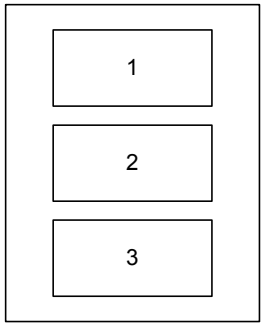
HP01

STANDARD\1.2



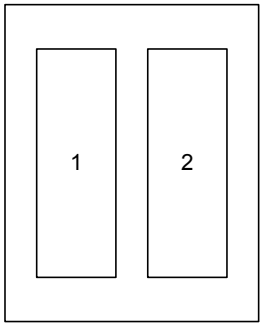
HP02

STANDARD\1.3

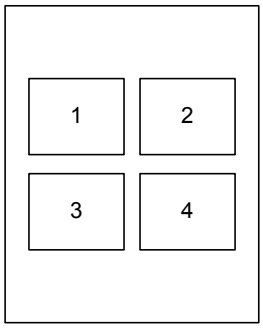


HP03

STANDARD\2.1

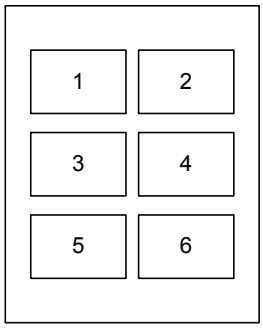


STANDARD\2.2



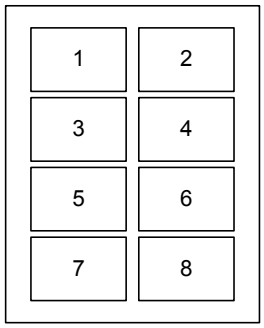
HP04

STANDARD\2.3



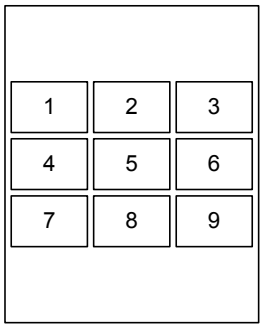
HP06

STANDARD\2.4



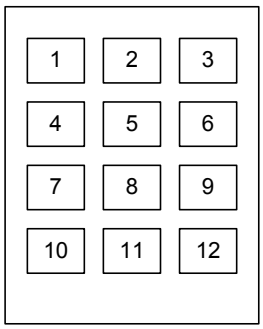
HP08

STANDARD\3.3



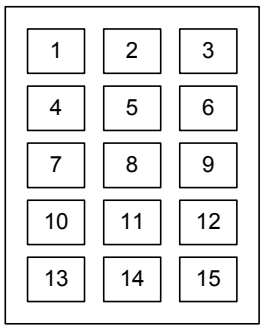
HP09

STANDARD\3.4



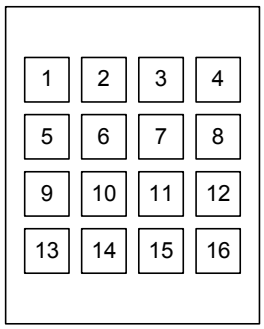
HP12

STANDARD\3.5



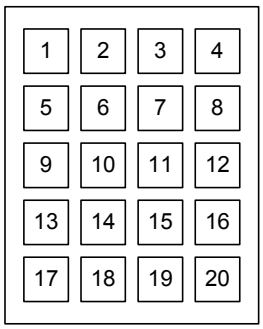
HP15

STANDARD\4.4



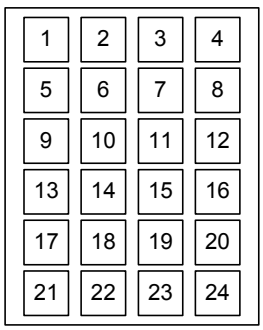
HP16

STANDARD\4.5



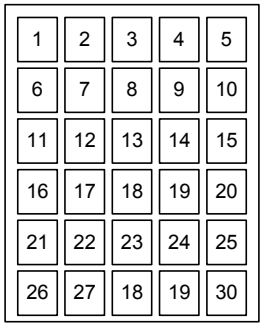
HP20

STANDARD\4.6



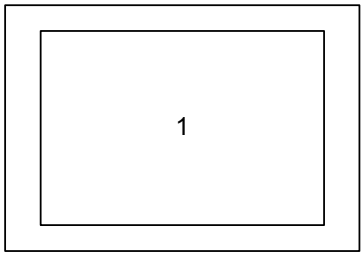
HP24

STANDARD\5.6



2. 14" × 17" (35cm × 43cm) LANDSCAPE

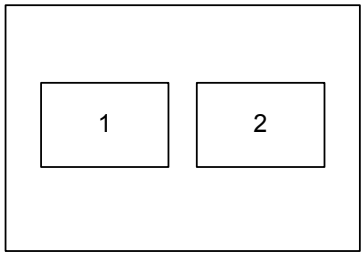
STANDARD\1.1



HL01

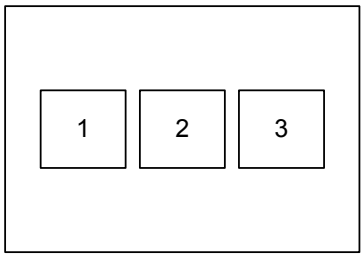
STANDARD\1.2

STANDARD\2.1



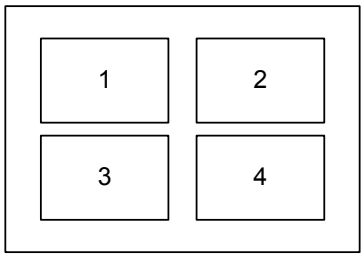
HL02

STANDARD\3.1



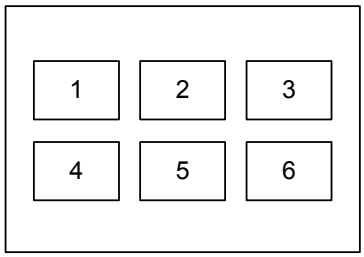
HL03

STANDARD\2.2



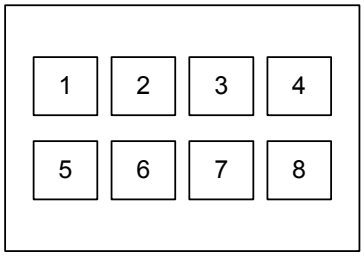
HL04

STANDARD\3.2



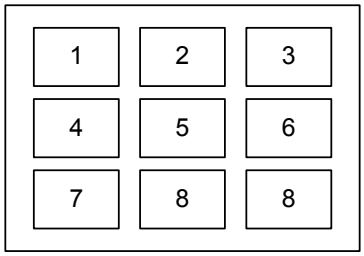
HL06

STANDARD\4.2



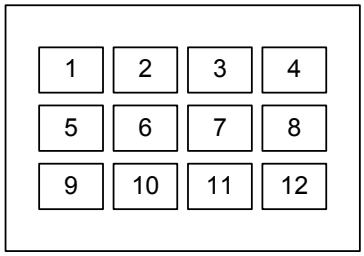
HL08

STANDARD\3.3



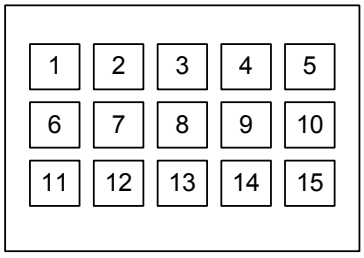
HL09

STANDARD\4.3



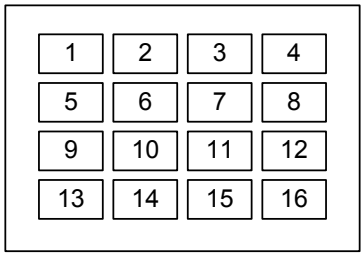
HL12

STANDARD\5.3



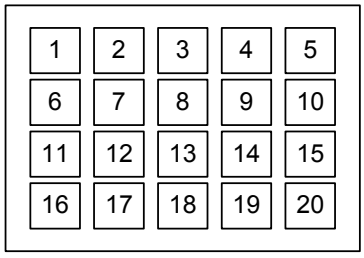
HL15

STANDARD\4.4



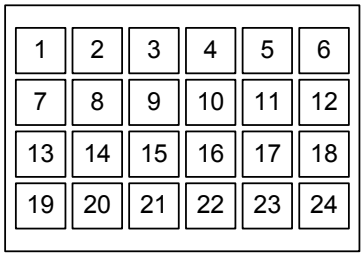
HL16

STANDARD\5.4



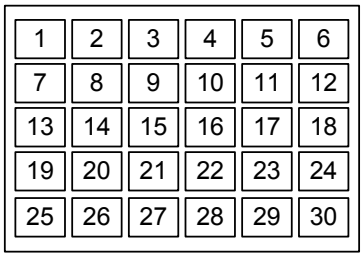
HL20

STANDARD\6.4



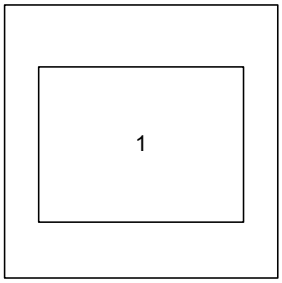
HL24

STANDARD\6.5



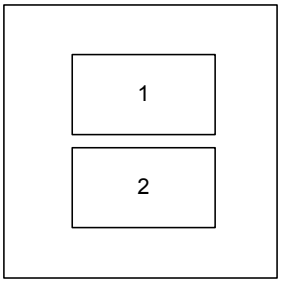
3. 14" × 14" (35cm × 35cm)

STANDARD\1.1



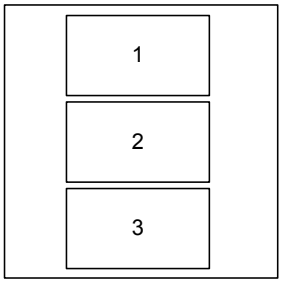
DP01

STANDARD\1.2



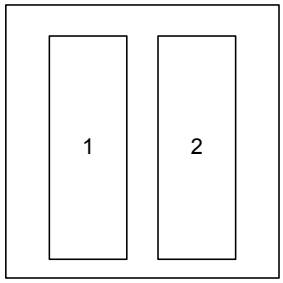
DP02

STANDARD\1.3

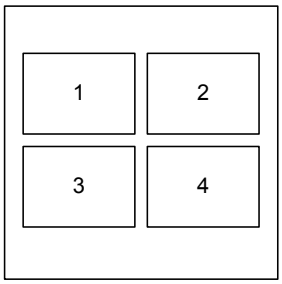


DP03

STANDARD\2.1

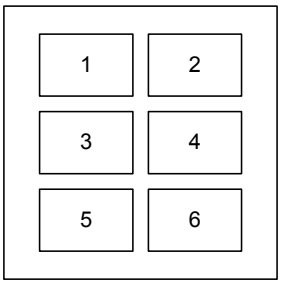


STANDARD\2.2



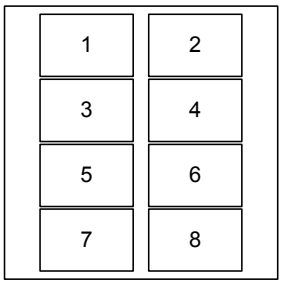
DP04

STANDARD\2.3



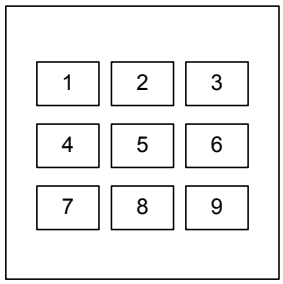
DP06

STANDARD\2.4



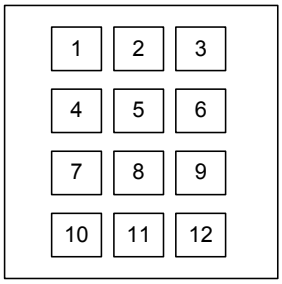
DP08

STANDARD\3.3



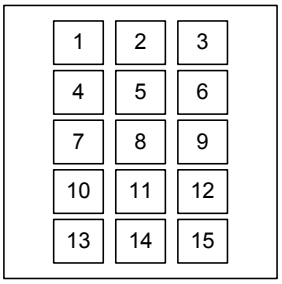
DP09

STANDARD\3.4



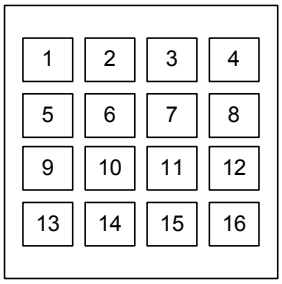
DP12

STANDARD\3.5



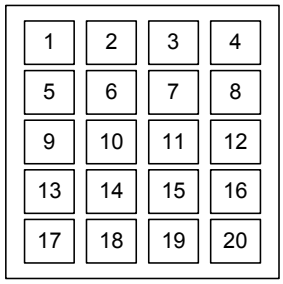
DP15

STANDARD\4.4



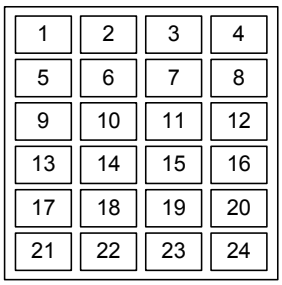
DP16

STANDARD\4.5



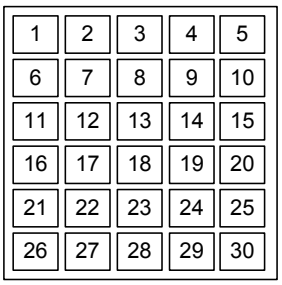
DP20

STANDARD\4.6



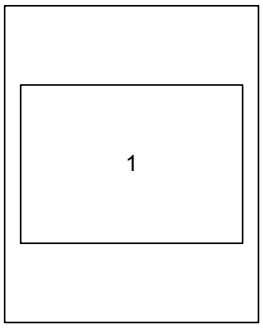
DP24

STANDARD\5.6



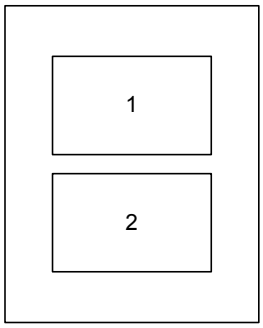
4. 10" × 14" (26cm × 36cm) PORTRAIT

STANDARD\1.1



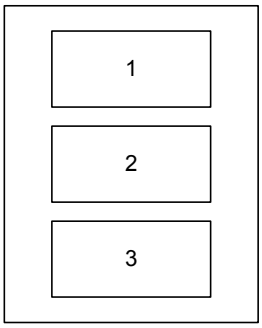
BP01

STANDARD\1.2



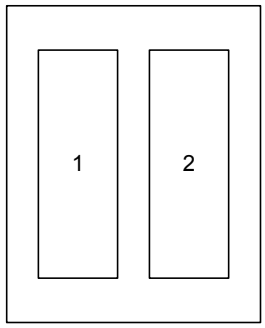
BP02

STANDARD\1.3

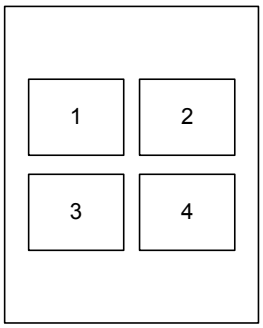


BP03

STANDARD\2.1

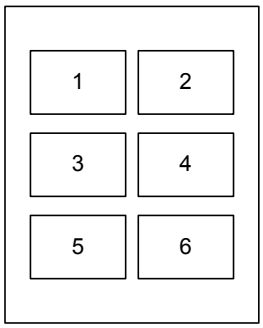


STANDARD\2.2



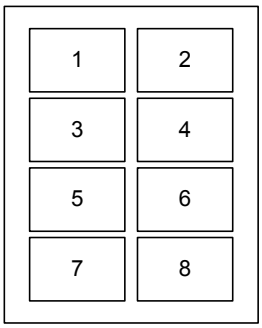
BP04

STANDARD\2.3



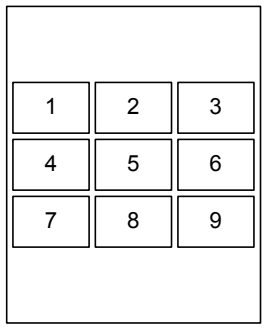
BP06

STANDARD\2.4



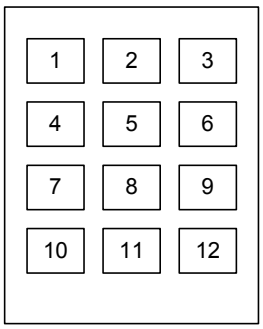
BP08

STANDARD\3.3



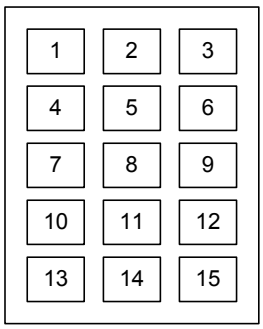
BP09

STANDARD\3.4



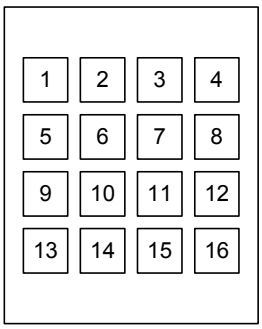
BP12

STANDARD\3.5



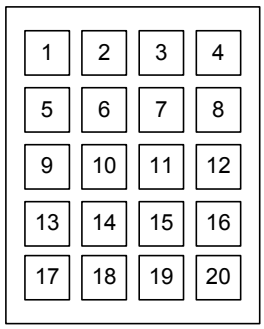
BP15

STANDARD\4.4



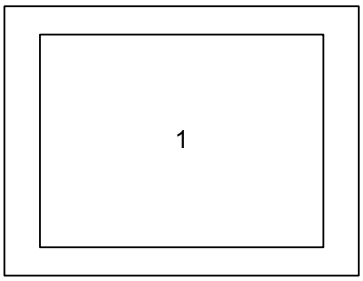
BP16

STANDARD\4.5



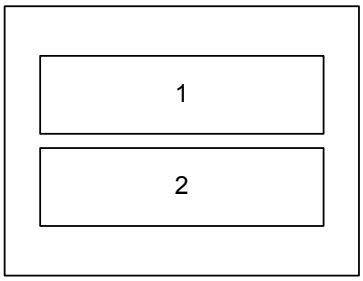
5. 10" × 14" (26cm × 36cm) LANDSCAPE

STANDARD\1.1

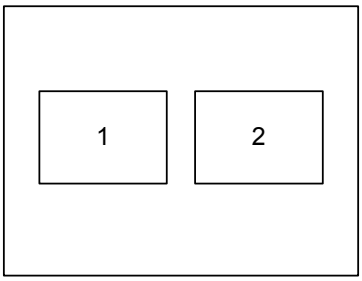


BL01

STANDARD\1.2

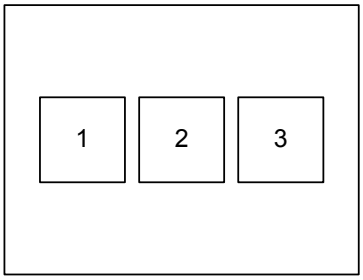


STANDARD\2.1



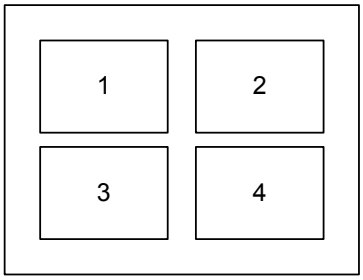
BL02

STANDARD\3.1



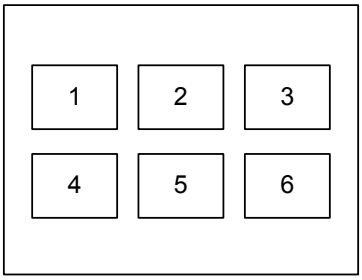
BL03

STANDARD\2.2



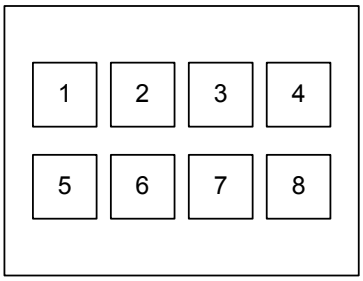
BL04

STANDARD\3.2



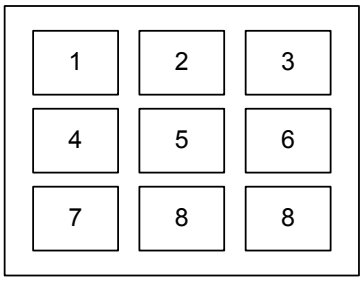
BL06

STANDARD\4.2



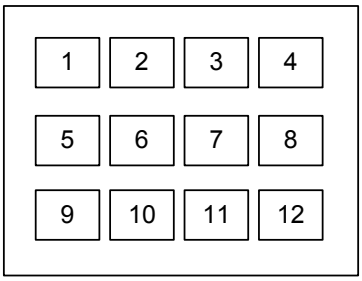
BL08

STANDARD\3.3



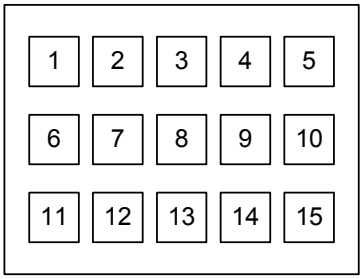
BL09

STANDARD\4.3



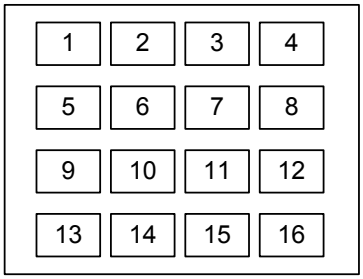
BL12

STANDARD\5.3



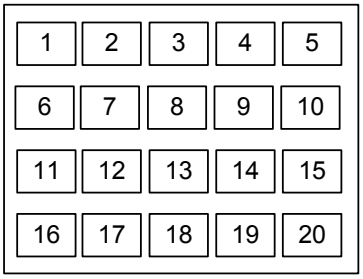
BL15

STANDARD\4.4



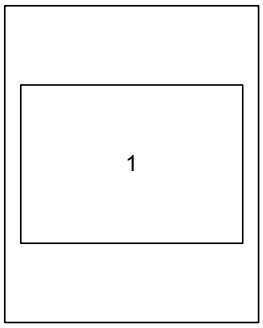
BL16

STANDARD\5.4



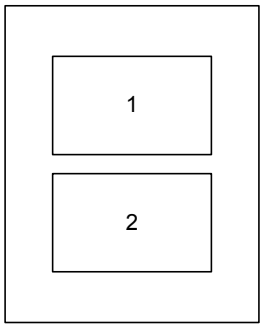
6. 8" × 10" (20cm × 25cm) PORTRAIT

STANDARD\1.1



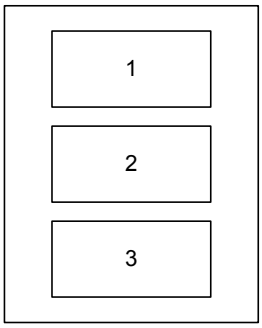
BP01

STANDARD\1.2



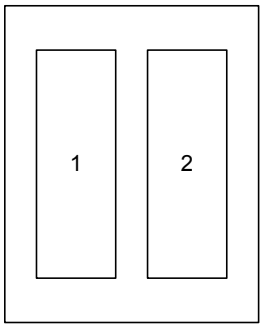
BP02

STANDARD\1.3

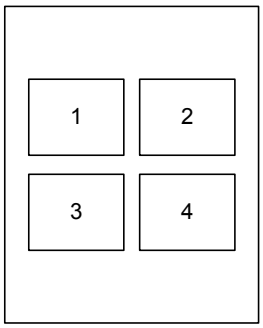


BP03

STANDARD\2.1

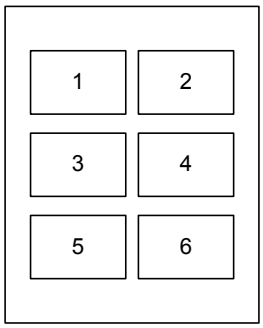


STANDARD\2.2



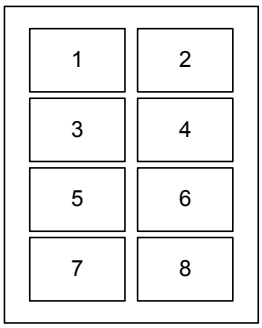
BP04

STANDARD\2.3



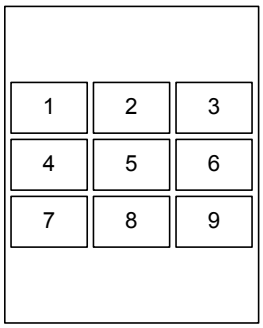
BP06

STANDARD\2.4



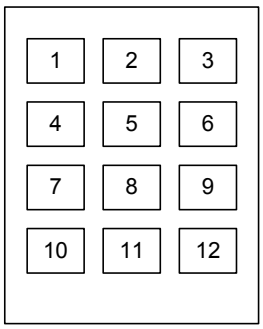
BP08

STANDARD\3.3



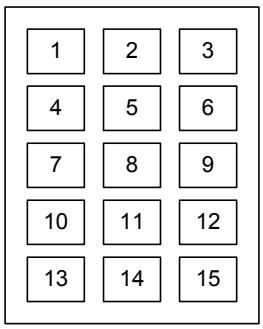
BP09

STANDARD\3.4



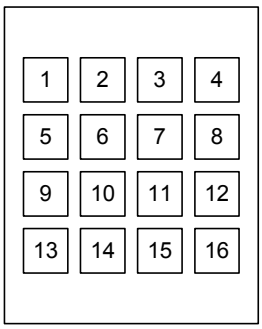
BP12

STANDARD\3.5



BP15

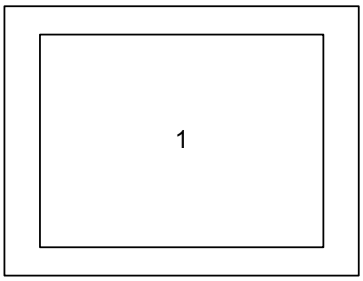
STANDARD\4.4



BP16

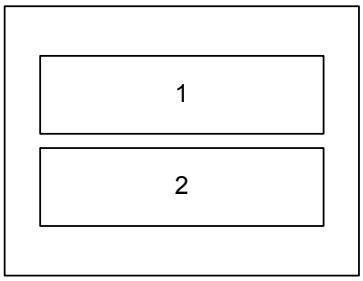
7. 8" × 10" (20cm × 25cm) LANDSCAPE

STANDARD\1.1

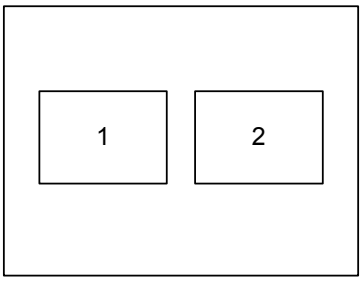


BL01

STANDARD\1.2

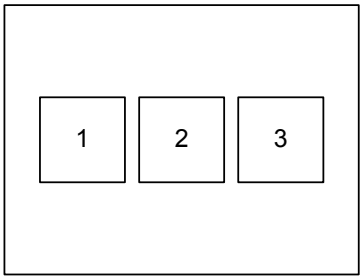


STANDARD\2.1



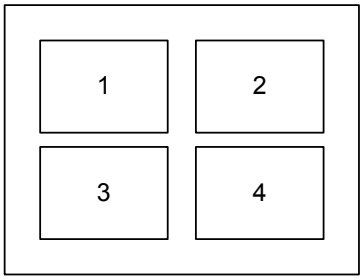
BL02

STANDARD\3.1



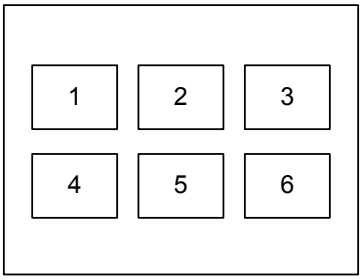
BL03

STANDARD\2.2



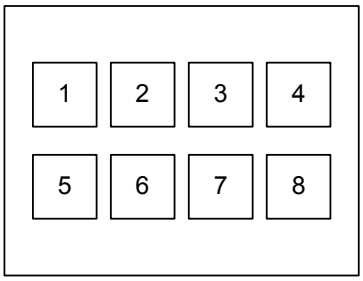
BL04

STANDARD\3.2



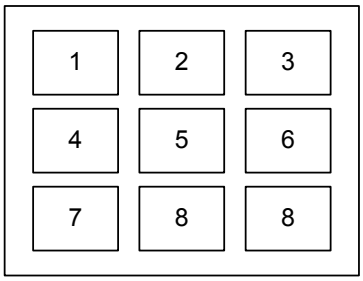
BL06

STANDARD\4.2



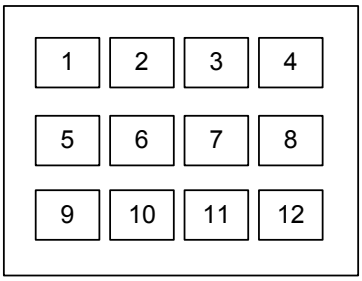
BL08

STANDARD\3.3



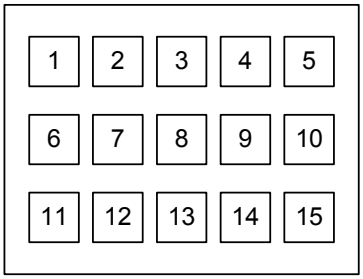
BL09

STANDARD\4.3



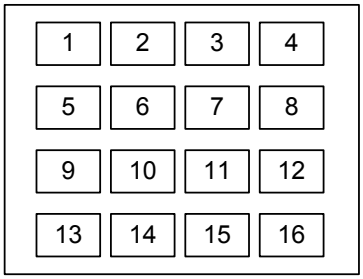
BL12

STANDARD\5.3



BL15

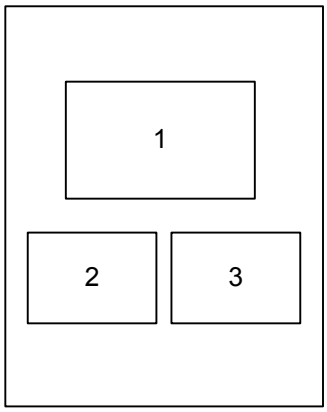
STANDARD\4.4



BL16

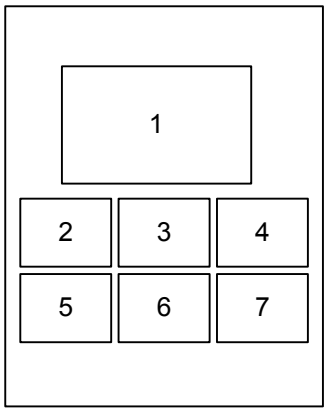
8. 14" × 17" (35cm × 43cm) PORTRAIT MIXED FORMAT

ROW\1.2



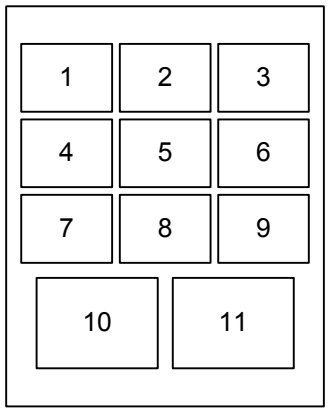
HPM1

ROW\1.3.3



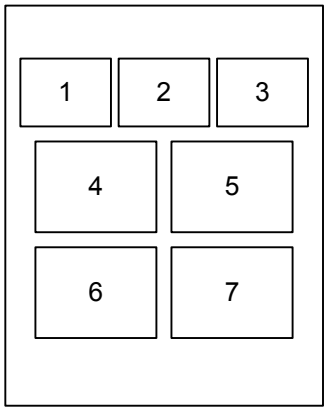
HPM2

ROW\3.3.3.2



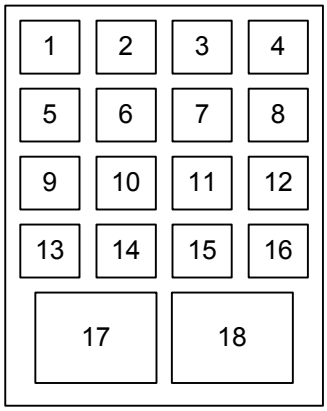
HPM4

ROW\3.2.2



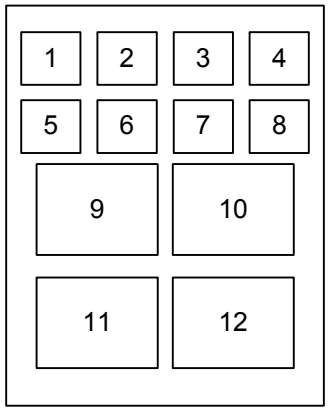
HPM5

ROW\4.4.4.4.2



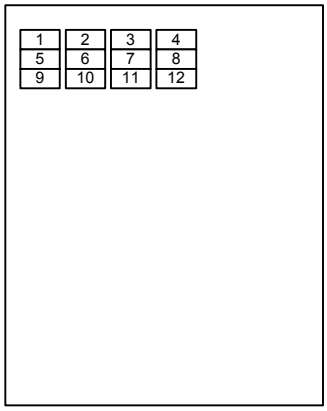
HPM6

ROW\4.4.2.2



HPM7

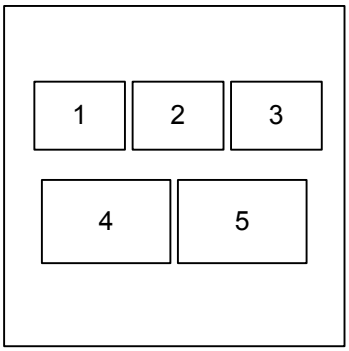
Portrait Slide Format
SLIDE



HPS1

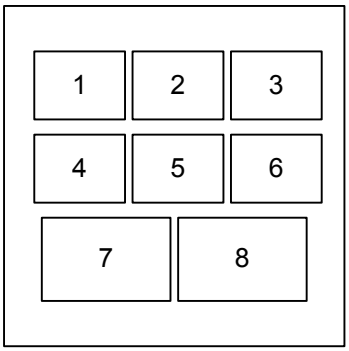
9. 14" × 14" (35cm × 35cm) MIXED FORMAT

ROW\3.2



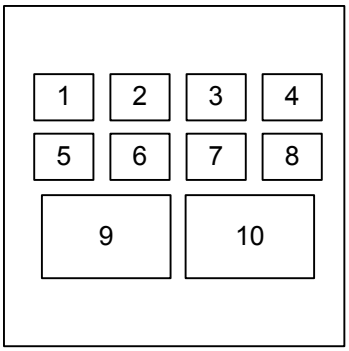
DPM1

ROW\3.3.2



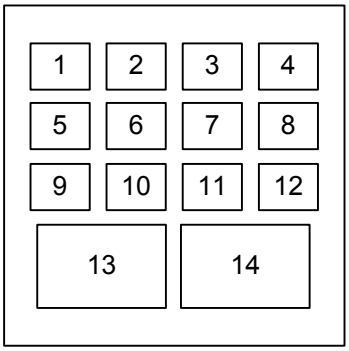
DPM2

ROW\4.4.2



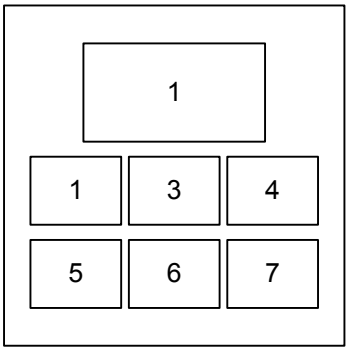
DPM3

ROW\4.4.4.2



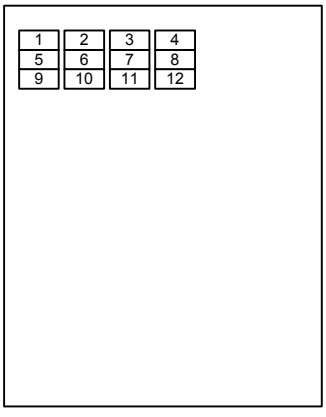
DPM4

ROW\1.3.3



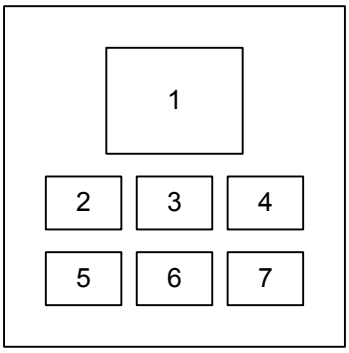
DPM5

Portrait Slide Format
SLIDE



DPS1

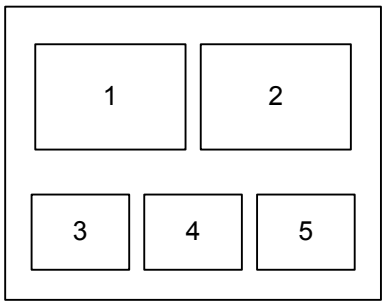
10. 10" × 14" (26cm × 36cm) PORTRAIT MIXED FORMAT



BPM1

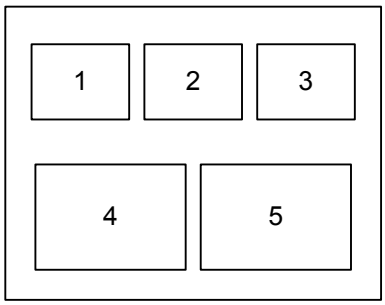
11. 10" × 14" (26cm × 36cm) PORTRAIT MIXED FORMAT

ROW\2.3



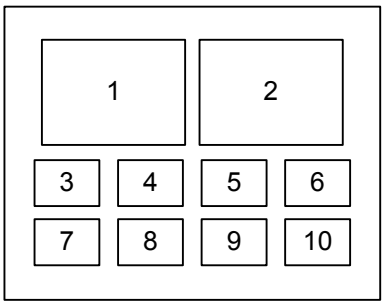
BLM1

ROW\3.2



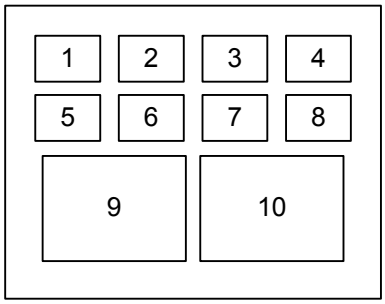
BLM2

ROW\2.4.4



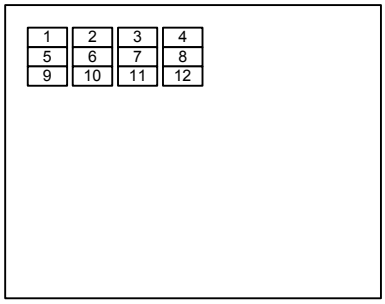
BLM3

ROW\4.4.2



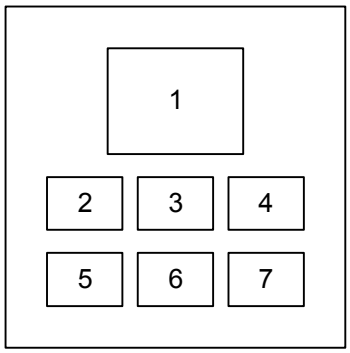
BLM4

Portrait Slide Format
SLIDE



BLS1

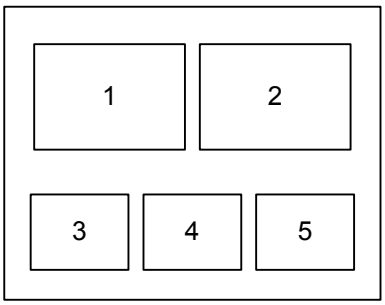
12. 8" × 10" (20cm × 25cm) PORTRAIT MIXED FORMAT



MPM1

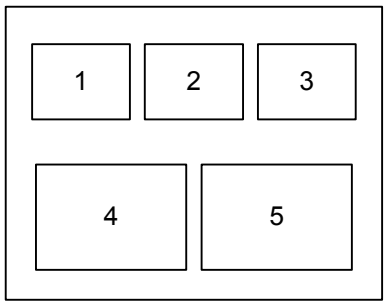
13. 8" × 10" (20cm × 25cm) LANDSCAPE MIXED FORMAT

ROW\2.3



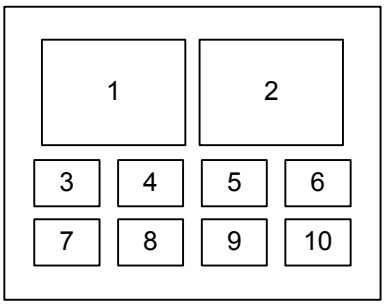
MLM1

ROW\3.2



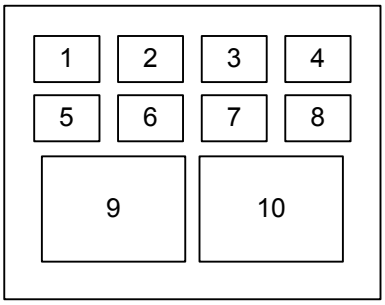
MLM2

ROW\2.4.4



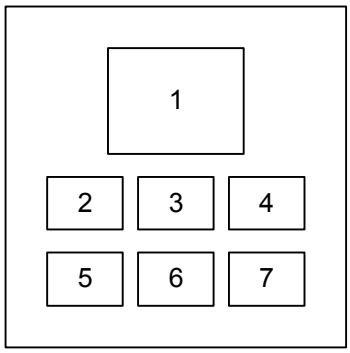
MLM3

ROW\4.4.2



MLM4

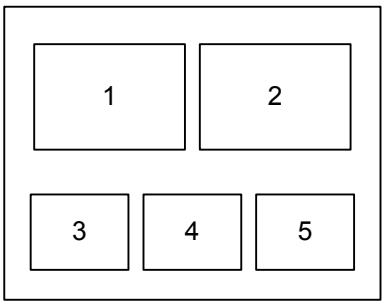
14. 10" × 12" (25cm × 30cm) PORTRAIT MIXED FORMAT



YPM1

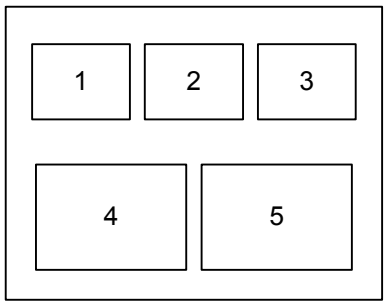
15. 10" × 12" (25cm × 30cm) LANDSCAPE MIXED FORMAT

ROW\2.3



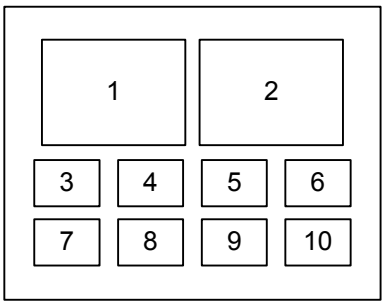
YLM1

ROW\3.2



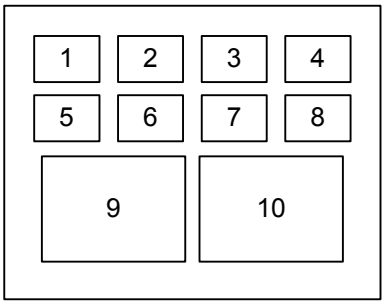
YLM2

ROW\2.4.4



YLM3

ROW\4.4.2



YLM4

Requested Image Size (2020,0030)

- Requested Image Size

  The tables presented herein show the maximum number of pixels that can be recorded without reducing the image size. Calculate the maximum value of the requested image size[4] based on values shown in the Column of those tables.

  Image recording in standard density pixel size ..... A value divided by 10
  (the printer's image recording density is 10 lines/mm.)

  Image recording in double density pixel size..... A value divided by 20
  (the printer's image recording density is 20 lines/mm.)

  The above values are given on the assumption that the frame width to be 0 and interval between each image data to be 20 for the configuration settings with the DRYPIX 4000.
  Increasing the frame width by 1 will reduce the size by 2. If interval between each image data is changed, such a change will be reflected or assigned equally to each image data.
  Note that values shown in "Column" are applicable to the X dimension (horizontal) and "Row", the Y dimension (vertical).

[4] It used to be specified "Length in mm that Image rows of the Image are to be printed". But, it has been changed to "Width (X-dimension) in mm of the image to be printed" according to CP108. Thus, calculate it based on the values shown in Column.

♦ 14"×17" Portrait

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		3500	4170	6999	8339
STANDARD\1,2		3500	2075	6999	4159
STANDARD\1,3		3500	1376	6999	2766
STANDARD\2,1		1740	4170	3489	8339
STANDARD\2,2		1740	2075	3489	4159
STANDARD\2,3		1740	1376	3489	2766
STANDARD\2,4		1740	1027	3489	2069
STANDARD\3,3		1153	1376	2319	2766
STANDARD\3,4		1153	1027	2319	2069
STANDARD\3,5		1153	818	2319	1651
STANDARD\3,6		1153	678	2319	1373
STANDARD\4,4		860	1027	1734	2069
STANDARD\4,5		860	818	1734	1651
STANDARD\4,6		860	678	1734	1373
STANDARD\4,7		860	578	1734	1174
STANDARD\4,8		860	503	1734	1024
STANDARD\5,5		684	818	1383	1651
STANDARD\5,6		684	678	1383	1373
STANDARD\5,7		684	578	1383	1174
STANDARD\5,8		684	503	1383	1024
STANDARD\6,6		566	678	1149	1373
STANDARD\6,7		566	578	1149	1174
STANDARD\6,8		566	503	1149	1024
STANDARD\6,9		566	445	1149	908
STANDARD\6,10		566	399	1149	815
STANDARD\7,7		482	578	982	1174
STANDARD\7,8		482	503	982	1024
STANDARD\7,9		482	445	982	908
STANDARD\7,10		482	399	982	815
STANDARD\8,8		420	503	857	1024
STANDARD\8,9		420	445	857	908
STANDARD\8,10		420	399	857	815
ROW\1,2	1	3500	2076	6999	4151
	2-3	1740	2074	3489	4147
ROW\1,3,3	1	3500	2066	6999	4131
	2-7	1153	1032	2319	2073
ROW\3,3,3,2	1-9	1153	948	2319	1909
	10-11	1740	1266	3489	2531
ROW\3,2,2	1-3	1153	1204	2319	2407
	4-7	1740	1463	3489	2985
ROW\4,4,4,4,2	1-16	860	682	1734	1378
	17-18	1740	1362	3489	2723
ROW\4,4,2,2	1-8	860	685	1734	1379
	9-12	1740	1370	3489	2749

♦ 14"×17" Landscape

	Standard Density Recording		Double Density Recording	
Format	Column	Row	Column	Row
STANDARD\1,1	4240	3442	8479	6883
STANDARD\2,1	2110	3442	4229	6883
STANDARD\3,1	1400	3442	2813	6883
STANDARD\1,2	4240	1711	8479	3431
STANDARD\2,2	2110	1711	4229	3431
STANDARD\3,2	1400	1711	2813	3431
STANDARD\4,2	1045	1711	2104	3431
STANDARD\3,3	1400	1134	2813	2281
STANDARD\4,3	1045	1134	2104	2281
STANDARD\5,3	832	1134	1679	2281
STANDARD\6,3	690	1134	1396	2281
STANDARD\4,4	1045	845	2104	1705
STANDARD\5,4	832	845	1679	1705
STANDARD\6,4	690	845	1396	1705
STANDARD\7,4	588	845	1194	1705
STANDARD\8,4	512	845	1042	1705
STANDARD\5,5	832	672	1679	1360
STANDARD\6,5	690	672	1396	1360
STANDARD\7,5	588	672	1194	1360
STANDARD\8,5	512	672	1042	1360
STANDARD\6,6	690	557	1396	1130
STANDARD\7,6	588	557	1194	1130
STANDARD\8,6	512	557	1042	1130
STANDARD\9,6	453	557	924	1130
STANDARD\10,6	406	557	829	1130
STANDARD\7,7	588	474	1194	966
STANDARD\8,7	512	474	1042	966
STANDARD\9,7	453	474	924	966
STANDARD\10,7	406	474	829	966
STANDARD\8,8	512	412	1042	842
STANDARD\9,8	453	412	924	842
STANDARD\10,8	406	412	829	842

♦ 14"×14"

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		3500	3410	6999	6819
STANDARD\1,2		3500	1695	6999	3399
STANDARD\1,3		3500	1123	6999	2259
STANDARD\2,1		1740	3410	3489	6819
STANDARD\2,2		1740	1695	3489	3399
STANDARD\2,3		1740	1123	3489	2259
STANDARD\2,4		1740	837	3489	1689
STANDARD\3,3		1153	1123	2319	2259
STANDARD\3,4		1153	837	2319	1689
STANDARD\3,5		1153	666	2319	1347
STANDARD\3,6		1153	551	2319	1119
STANDARD\4,4		860	837	1734	1689
STANDARD\4,5		860	666	1734	1347
STANDARD\4,6		860	551	1734	1119
STANDARD\4,7		860	470	1734	957
STANDARD\4,8		860	408	1734	834
STANDARD\5,5		684	666	1383	1347
STANDARD\5,6		684	551	1383	1119
STANDARD\5,7		684	470	1383	957
STANDARD\5,8		684	408	1383	834
STANDARD\6,6		566	551	1149	1119
STANDARD\6,7		566	470	1149	957
STANDARD\6,8		566	408	1149	834
STANDARD\6,9		566	361	1149	739
STANDARD\6,10		566	323	1149	663
STANDARD\7,7		482	470	982	957
STANDARD\7,8		482	408	982	834
STANDARD\7,9		482	361	982	739
STANDARD\7,10		482	323	982	663
STANDARD\8,8		420	408	857	834
STANDARD\8,9		420	361	857	739
STANDARD\8,10		420	323	857	663
ROW\3,2	1-3	1153	1412	2319	2823
	4-5	1740	1978	3489	3955
ROW\3,3,2	1-6	1153	842	2319	1693
	7-8	1740	1686	3489	3371
ROW\4,4,2	1-8	860	842	1734	1693
	9-10	1740	1686	3489	3371
ROW\4,4,4,2	1-12	860	609	1734	1231
	13-14	1740	1523	3489	3045
ROW\1,3,3	1	3500	1392	6999	2783
	2-7	1153	989	2319	1988

♦ 26×36cm Portrait

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		2538	3522	5075	7043
STANDARD\1,2		2538	1751	5075	3511
STANDARD\1,3		2538	1160	5075	2334
STANDARD\2,1		1259	3522	2527	7043
STANDARD\2,2		1259	1751	2527	3511
STANDARD\2,3		1259	1160	2527	2334
STANDARD\2,4		1259	865	2527	1745
STANDARD\3,3		832	1160	1678	2334
STANDARD\3,4		832	865	1678	1745
STANDARD\3,5		832	688	1678	1392
STANDARD\3,6		832	570	1678	1157
STANDARD\4,4		619	865	1253	1745
STANDARD\4,5		619	688	1253	1392
STANDARD\4,6		619	570	1253	1157
STANDARD\4,7		619	486	1253	989
STANDARD\4,8		619	422	1253	862
STANDARD\5,5		491	688	999	1392
STANDARD\5,6		491	570	999	1157
STANDARD\5,7		491	486	999	989
STANDARD\5,8		491	422	999	862
STANDARD\6,6		406	570	829	1157
STANDARD\6,7		406	486	829	989
STANDARD\6,8		406	422	829	862
STANDARD\6,9		406	373	829	764
STANDARD\6,10		406	334	829	686
STANDARD\7,7		345	486	707	989
STANDARD\7,8		345	422	707	862
STANDARD\7,9		345	373	707	764
STANDARD\7,10		345	334	707	686
STANDARD\8,8		299	422	616	862
STANDARD\8,9		299	373	616	764
STANDARD\8,10		299	334	616	686
ROW\1,3,3	1	2538	1722	5075	3443
	2-7	832	885	1678	1780

♦ 26×36cm Landscape

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		3600	2460	7199	4919
STANDARD\2,1		1790	2460	3589	4919
STANDARD\3,1		1186	2460	2386	4919
STANDARD\1,2		3600	1220	7199	2449
STANDARD\2,2		1790	1220	3589	2449
STANDARD\3,2		1186	1220	2386	2449
STANDARD\4,2		885	1220	1784	2449
STANDARD\3,3		1186	806	2386	1626
STANDARD\4,3		885	806	1784	1626
STANDARD\5,3		704	806	1423	1626
STANDARD\6,3		583	806	1183	1626
STANDARD\4,4		885	600	1784	1214
STANDARD\5,4		704	600	1423	1214
STANDARD\6,4		583	600	1183	1214
STANDARD\7,4		497	600	1011	1214
STANDARD\8,4		432	600	882	1214
STANDARD\5,5		704	476	1423	967
STANDARD\6,5		583	476	1183	967
STANDARD\7,5		497	476	1011	967
STANDARD\8,5		432	476	882	967
STANDARD\6,6		583	393	1183	803
STANDARD\7,6		497	393	1011	803
STANDARD\8,6		432	393	882	803
STANDARD\9,6		382	393	782	803
STANDARD\10,6		342	393	701	803
STANDARD\7,7		497	334	1011	685
STANDARD\8,7		432	334	882	685
STANDARD\9,7		382	334	782	685
STANDARD\10,7		342	334	701	685
STANDARD\8,8		432	290	882	597
STANDARD\9,8		382	290	782	597
STANDARD\10,8		342	290	701	597
ROW\2,3	1-2	1790	1424	3589	2847
	3-5	1186	1016	2386	2031
ROW\3,2	1-3	1186	1016	2386	2031
	4-5	1790	1424	3589	2847
ROW\2,4,4	1-2	1790	1210	3589	2419
	3-10	885	605	1784	1219
ROW\4,4,2	1-8	885	605	1784	1219
	9-10	1790	1210	3589	2419

♦ 8"×10" Portrait

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		1954	2410	3907	4819
STANDARD\1,2		1954	1195	3907	2399
STANDARD\1,3		1954	790	3907	1593
STANDARD\2,1		967	2410	1943	4819
STANDARD\2,2		967	1195	1943	2399
STANDARD\2,3		967	790	1943	1593
STANDARD\2,4		967	587	1943	1189
STANDARD\3,3		638	790	1289	1593
STANDARD\3,4		638	587	1289	1189
STANDARD\3,5		638	466	1289	947
STANDARD\3,6		638	385	1289	786
STANDARD\4,4		473	587	961	1189
STANDARD\4,5		473	466	961	947
STANDARD\4,6		473	385	961	786
STANDARD\4,7		473	327	961	671
STANDARD\4,8		473	283	961	584
STANDARD\5,5		374	466	765	947
STANDARD\5,6		374	385	765	786
STANDARD\5,7		374	327	765	671
STANDARD\5,8		374	283	765	584
STANDARD\6,6		309	385	634	786
STANDARD\6,7		309	327	634	671
STANDARD\6,8		309	283	634	584
STANDARD\6,9		309	250	634	517
STANDARD\6,10		309	223	634	463
STANDARD\7,7		262	327	541	671
STANDARD\7,8		262	283	541	584
STANDARD\7,9		262	250	541	517
STANDARD\7,10		262	223	541	463
STANDARD\8,8		226	283	470	584
STANDARD\8,9		226	250	470	517
STANDARD\8,10		226	223	470	463
ROW\1,3,3	1	1954	1155	3907	2309
	2-7	638	608	1289	1225

♦ 8"×10" Landscape

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		2466	1898	4931	3795
STANDARD\2,1		1223	1898	2455	3795
STANDARD\3,1		808	1898	1630	3795
STANDARD\1,2		2466	939	4931	1887
STANDARD\2,2		1223	939	2455	1887
STANDARD\3,2		808	939	1630	1887
STANDARD\4,2		601	939	1217	1887
STANDARD\3,3		808	619	1630	1251
STANDARD\4,3		601	619	1217	1251
STANDARD\5,3		477	619	970	1251
STANDARD\6,3		394	619	805	1251
STANDARD\4,4		601	459	1217	933
STANDARD\5,4		477	459	970	933
STANDARD\6,4		394	459	805	933
STANDARD\7,4		335	459	687	933
STANDARD\8,4		290	459	598	933
STANDARD\5,5		477	363	970	743
STANDARD\6,5		394	363	805	743
STANDARD\7,5		335	363	687	743
STANDARD\8,5		290	363	598	743
STANDARD\6,6		394	299	805	615
STANDARD\7,6		335	299	687	615
STANDARD\8,6		290	299	598	615
STANDARD\9,6		256	299	530	615
STANDARD\10,6		228	299	475	615
STANDARD\7,7		335	254	687	525
STANDARD\8,7		290	254	598	525
STANDARD\9,7		256	254	530	525
STANDARD\10,7		228	254	475	525
STANDARD\8,8		290	219	598	456
STANDARD\9,8		256	219	530	456
STANDARD\10,8		228	219	475	456
ROW\2,3	1-2	1223	1082	2455	2163
	3-5	808	797	1630	1593
ROW\3,2	1-3	808	761	1630	1521
	4-5	1223	1118	2455	2235
ROW\2,4,4	1-2	1223	914	2455	1827
	3-10	601	472	1217	954
ROW\4,4,2	1-8	601	454	1217	918
	9-10	1223	950	2455	1899

♦ 10"×12" Portrait

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		2460	2916	4919	5831
STANDARD\1,2		2460	1448	4919	2905
STANDARD\1,3		2460	958	4919	1930
STANDARD\2,1		1220	2916	2449	5831
STANDARD\2,2		1220	1448	2449	2905
STANDARD\2,3		1220	958	2449	1930
STANDARD\2,4		1220	714	2449	1442
STANDARD\3,3		806	958	1626	1930
STANDARD\3,4		806	714	1626	1442
STANDARD\3,5		806	567	1626	1150
STANDARD\3,6		806	469	1626	955
STANDARD\4,4		600	714	1214	1442
STANDARD\4,5		600	567	1214	1150
STANDARD\4,6		600	469	1214	955
STANDARD\4,7		600	399	1214	815
STANDARD\4,8		600	347	1214	711
STANDARD\5,5		476	567	967	1150
STANDARD\5,6		476	469	967	955
STANDARD\5,7		476	399	967	815
STANDARD\5,8		476	347	967	711
STANDARD\6,6		393	469	803	955
STANDARD\6,7		393	399	803	815
STANDARD\6,8		393	347	803	711
STANDARD\6,9		393	306	803	630
STANDARD\6,10		393	273	803	565
STANDARD\7,7		334	399	685	815
STANDARD\7,8		334	347	685	711
STANDARD\7,9		334	306	685	630
STANDARD\7,10		334	273	685	565
STANDARD\8,8		290	347	597	711
STANDARD\8,9		290	306	597	630
STANDARD\8,10		290	273	597	565
ROW\1,3,3	1	2460	1420	4919	2839
	2-7	806	728	1626	1466

♦ 10"×12" Landscape

		Standard Density Recording		Double Density Recording	
Format		Column	Row	Column	Row
STANDARD\1,1		2972	2404	5943	4807
STANDARD\2,1		1476	2404	2961	4807
STANDARD\3,1		977	2404	1967	4807
STANDARD\1,2		2972	1192	5943	2393
STANDARD\2,2		1476	1192	2961	2393
STANDARD\3,2		977	1192	1967	2393
STANDARD\4,2		728	1192	1470	2393
STANDARD\3,3		977	788	1967	1589
STANDARD\4,3		728	788	1470	1589
STANDARD\5,3		578	788	1172	1589
STANDARD\6,3		478	788	973	1589
STANDARD\4,4		728	586	1470	1186
STANDARD\5,4		578	586	1172	1186
STANDARD\6,4		478	586	973	1186
STANDARD\7,4		407	586	831	1186
STANDARD\8,4		354	586	725	1186
STANDARD\5,5		587	464	1172	945
STANDARD\6,5		478	464	973	945
STANDARD\7,5		407	464	831	945
STANDARD\8,5		354	464	725	945
STANDARD\6,6		478	384	973	784
STANDARD\7,6		407	384	831	784
STANDARD\8,6		354	384	725	784
STANDARD\9,6		312	384	642	784
STANDARD\10,6		279	384	576	784
STANDARD\7,7		407	326	831	669
STANDARD\8,7		354	326	725	669
STANDARD\9,7		312	326	642	669
STANDARD\10,7		279	326	576	669
STANDARD\8,8		354	283	725	583
STANDARD\9,8		312	283	642	583
STANDARD\10,8		279	283	576	583
ROW\2,3	1-2	1476	1392	2961	2783
	3-5	977	993	1967	1985
ROW\3,2	1-3	977	993	1967	1985
	4-5	1476	1392	2961	2783
ROW\2,4,4	1-2	1476	1183	2961	2365
	3-10	728	771	1470	1191
ROW\4,4,2	1-8	728	591	1470	1191
	9-10	1476	1183	2961	2365

Appendix B

■ Configuration Information (2010,0150)

Specifies gradation tables in the DRYPIX 4000. Eight types of gradation tables can be registered for each SCU AE, which will be specified by “1” to “8” or “CS000” to “CS999.” For the latter, used LUTs are as follows.

Specified Value	Used LUT
CS000–CS199	1
CS200–CS299	2
CS300–CS399	3
CS400–CS499	4
CS500–CS599	5
CS600–CS699	6
CS700–CS799	7
CS800–CS999	8

Appendix C

■ 2100,0030/2110,0020 Values

Applicable to (2100,0030) and (2110,0020) when (2100,0020)=PENDING and (2110,0010)=WARNING/FAILURE.

BAD RECEIVE MGZ	There is a problem with the film receive magazine. Films from the printer cannot be transported into the magazine.
BAD SUPPLY MGZ	There is a problem with a film supply magazine. Films from this magazine cannot be transported into the printer.
COVER OPEN	One or more printer or processor covers, drawers, doors are open.
FILM JAM	A film transport error has occurred and a film is jammed in the printer or processor.
PRINTER OFFLINE	The printer has been disabled by an operator or service person.
QUEUED	Print job in Queue
SUPPLY EMPTY	The printer is out of film
UNKNOWN	There is an unspecified problem.

Appendix D

■ Error Comment

Specify Error Comment (0000,0902) when returning the following Status. (Maximum 64 characters)

Code	Description	Error Comment (0000,0902)
0110H	An attempt was made to create 2nd Basic Film Session SOP instance.	Unable to handle multiple film session (BFS, N-CREATE)
0110H	No films of base color specified by BFS N-CREATE have been loaded.	Requested medium type does not exist on printer(BFS, N-CREATE)
0110H	No films of base color specified by BFS N-SET have been loaded.	Requested medium type does not exist on printer(BFS, N-SET)
0110H	The number of instances exceeded 32 in BFB N-CREATE.	Number of film boxes exceeds 32 (BFB, N-CREATE)
0110H	The instance created the last using BFB N-SET has not been specified.	Unable to handle a instance not created lastly (BFB, N-SET)
0110H	The instance created the last using BFB N-DELETE has not been specified.	Unable to handle a instance not created lastly (BFB, N-DELETE)
0110H	The instance not belonging to the BFB created the last using the BIB N-SET has been specified.	The instance doesn't belong to the last created FB (BIB, N-SET)
0110H	The instance that should be referred to by Presentation LUT N-DELETE has been specified.	Can't delete a instance which is referred to (LUT, N-DELETE)
0110H	BFBs of different film sizes were present in BFS N-ACTION.	Unable to print mixed film size Basic Film Boxes (BFS, N-ACTION)
0110H	No films of specified size are loaded.	Requested film size does not exist on printer (BFB, N-CREATE)
0110H	No films in combination of specified base color and film size have been loaded.	Requested medium type or film size does not exist on printer.
0122H	A SOP class that is not supported has been specified.	SOP class not supported.
B602H	There were no Image Boxes while executing BFS N-ACTION.	No Image Box SOP instance (BFS, N-ACTION)
B603H	There were no Image Boxes while executing BFB N-ACTION.	No Image Box SOP instance (BFB, N-ACTION)
B604H	As the image is larger than the image size box, it should be reduced while executing BIB N-SET.	Image size is larger than image box demagnified (BIB, N-SET)
B605H	Maximum and minimum densities exceeded the specified ranges.	Requested Min Density or Max Density outside of printer's range.
C600H	There were no Film Boxes while executing BFS N-ACTION.	No Film Box SOP instance (BFS, N-ACTION)
C601H	Because the print queue was full, jobs could not be created while executing BFS N-ACTION.	Unable to create Print Job: Resource limitation (BFS, N-ACTION)
C602H	Because the print queue was full, jobs could not be created while executing BFB N-ACTION.	Unable to create Print Job: Resource limitation (BFB, N-ACTION)
C605H	No image storage areas were available while executing BIB N-SET.	Unable to store image data : Resource limitation (BIB, N-SET)

Appendix E

■ Behaviors as Specified by (2020,0040) (Requested Decimate/Crop Behavior)

Parameters		(2020,0040) specified			
		Not specified particularly	**DECIMATE**	**CROP**	**FAIL**
(2010,0060)=CUBIC		Returns (0000H)(S). CUBIC interpolation is applied.			
(2010,0060)=NONE	When the image size is larger than the image frame.	Returns (B604H)(W).*1 CUBIC interpolation is applied by (2010,0060)=CUBIC.	Returns (B60AH)(W).*2 CUBIC interpolation is applied by (2010,0060)=CUBIC.	Returns (B609H)(W).*2 Image edges are cut off by matching the specified image with the image frame at their centers.	Returns (C603H)(F). No images are received.
	When the image size is smaller than the image frame.	Returns (0000H)(S). No interpolation processing is applied.			
Size specified by (2020,0030).	When the specified size is larger than the image frame.	Returns (0116H)(W). (2020,0030) is disregarded, applying CUBIC interpolation.		Returns (B609H)(W).*2 An image is created based on the specified image size, and the edges are cut off by matching the two images at their centers.	Returns (C603H)(F). No images are received.
	When the specified size is smaller that the image frame.	Returns (0000H)(S). CUBIC interpolation is applied.			

*1) (0000H)(S) is returned when the (B604H)(W) notification of reducing an image that cannot be accommodated within the image frame is disregarded, as determined by Config settings.

*2) (0000H)(S) is returned when both (B60AH)(W) and (B609H)(W) disregard (B604H)(W).

FUJIFILM

FUJIFILM Corporation

26-30, NISHIAZABU 2-CHOME, MINATO-KU, TOKYO 106-8620, JAPAN