Kodak *digital science™*

Document Archive Writer
Model 4800

Integrator's Guide

1 Introduction

About this guide

This *Kodak Digital Science* Document Archive Writer Integrator's Guide is written for engineers who want to build components and create programs to integrate the Archive Writer into their system(s). This manual addresses the functionality of the Writer, **not its use**. For information on using the Archive Writer, refer to the *Kodak Digital Science* Document Archive Writer User's Guide (A-61038).

In addition to the information in this chapter, the Integrator's Guide contains the following chapters:

- Chapter 2, *Host Communications*, provides a discussion of the interface between the Writer and the host, including: disk emulation, executing a writer command, and communication sequence. Examples are provided.

- Chapter 3, *Commands*, provides a list of commands, their definitions, attributes and specifications.

- Chapter 4, *Error Handling*, includes information on error types, error handler information, and error reporting. Errors are listed for the Archive Writer.

- Appendix A, *Operator Interface,* describes the relationship to the operator interface and discusses the Archive Writer cassette.

- Appendix B, *Archive Writer Cassette*, discusses the Film Information Cassette (FIC).

- Appendix C, *Integrator's Capabilities*, outlines the skills necessary to develop an application that integrates the Archive Writer.

Additional resources

The following publications are available for additional information:

- *Kodak Digital Science* Document Archive Writer User's Guide (A-61038).

- *Kodak Digital Science* Document Archive Writer Digital Document Archive System Installation Planning Guide (A-61055).

- *Kodak Digital Science* Archive Writer Interface Software User's Guide (A-61056).

- *Kodak Digital Science* Archive Writer Interface Software Integrator's Guide (A-61057).

Getting technical support

If you experience problems integrating the Archive Writer with your system, contact the Integrator or Kodak Response Center at one of the following telephone numbers:

Within New York State: 1-800-462-6494

Outside New York State: 1-800-822-1414

Alaska and Hawaii: 1-800-466-1414

For other countries, contact your local Kodak Service Support Center.

When contacting Technical Support, have the following information available:

- The names and models of the computer and the Archive Writer you are using.

- Any memory-resident software installed, including memory managers, with version numbers.

- Any resident anti-virus software.

- Any information and the action taken that can reproduce the problem you experienced. Include the exact text of any error messages you received.

2 Host Communications

Overview

The *Kodak Digital Science* Document Archive Writer is a digital imaging system peripheral capable of receiving digital image files in TIFF format, then writing those images onto *Kodak* Archive Storage Media using an Archive Writer Cassette, Model 66. The images on Archive Storage Media appear as normal microfilm images, complete with image level marks and item addresses.

The Archive Writer receives images to write to film from a host computer through a network interface.* The Archive Writer decompresses the image (if necessary), formats the bitmap of the image (complete with image level mark and alphanumeric character frame annotation), then writes the composite frame image to Archive Storage Media.
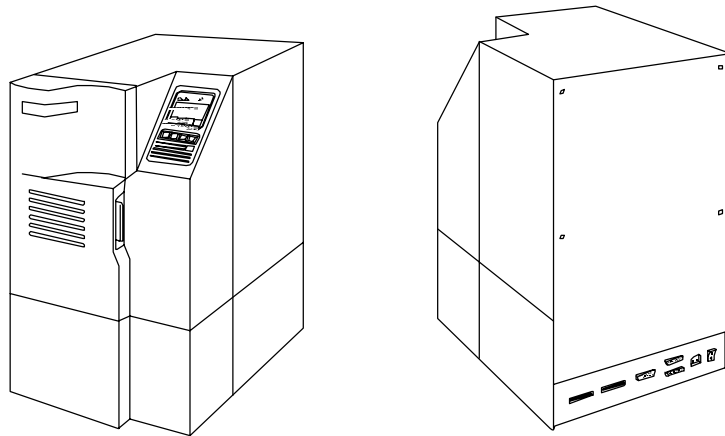

* Refer to publication A-61055, *Digital Document Archive System Installation Planning Guide,* for details concerning the connection of the Archive Writer to the host computer.

The interface on the Archive Writer accepts setup and configuration data as well as operating commands.

The Archive Writer sends status, warning, error messages, run-time data and configuration information to the host. Normal operation of the Archive Writer, including handling of error responses and clearing of errors, is done through the host interface.

Archive Writer block diagram
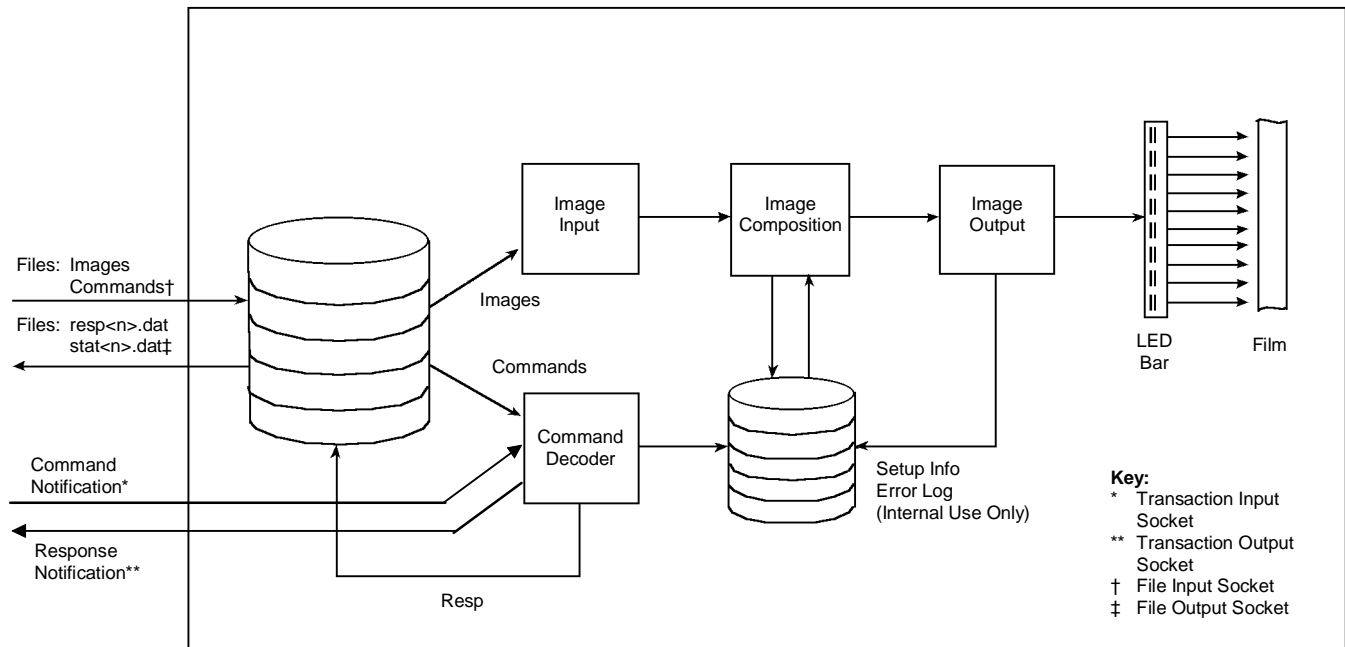
This diagram illustrates the internal flow of information and images through the Archive Writer.

Host/Writer communication

The host and the Archive Writer communicate with each other through TCP/IP sockets. On power-up, the Archive Writer performs the following functions to establish communication with the host:

- **Configures a DOS RAM disk on its controller board**

- **Creates and accepts a connection on a Transaction Input Socket** — by default, the Archive Writer creates and accepts a connection to the Transaction Input Socket on port number 5001. To change the port number use command 43, Set Network specification. If the port number must be changed before an initial connection between the Archive Writer and the host can be established:

  ◊ Attach a dumb terminal or terminal emulator to the status/monitor port

  ◊ Press **Enter** to get the -> prompt

  ◊ Type the command:
    ```
    netIntMgr_SetInSocketPortNumber <port number>
    ```

- **Creates and accepts a connection on an Transaction Output Socket** — by default, the Archive Writer creates and accepts a connection to the Transaction Output Socket on port number 5002. To change the port number, use command 43, Set network specification. If the port number must be changed before an initial connection between the Archive Writer and the host can be established:

  ◊ Attach a dumb terminal or terminal emulator to the status/monitor port

  ◊ Press **Enter** to get the -> prompt

  ◊ Type the command:
    `netIntMgr_SetOutSocketPortNumber <port number>`

- **Creates and accepts a connection on a File Input Socket** — by default, the Archive Writer creates and accepts a connection to the File Input Socket on port number 5003. To change the port number, use command 43, Set network specification. If the port number must be changed before an initial connection between the Archive Writer and the host can be established:

  ◊ Attach a dumb terminal or terminal emulator to the status/monitor port

  ◊ Press **Enter** to get the -> prompt

  ◊ Type the command: `netIntMgr_SetFileInSocketPort Number <port number>`

- **Creates and accepts a connection on a File Output Socket** — by default, the Archive Writer creates and accepts a connection to the File Output Socket on port number 5004. To change the port number, use command 43, Set network specification. If the port number must be changed before an initial connection between the Archive Writer and the host can be established:

  ◊ Attach a dumb terminal or terminal emulator to the status/monitor port

  ◊ Press **Enter** to get the -> prompt

  ◊ Type the command: `netIntMgr_SetFileOutSocketPort Number <port number>`

It is not necessary to change the port numbers unless the default Port IDs (5000 to 5003) conflict with an application already existing on the host PC. Three applications are known to have registered for these Port IDs with Microsoft for Windows NT Server and Workstation:

- Commplex-main
- Commplex-link
- Radio Free Ethernet

If the host PC and Archive Writer are connected in a local network consisting of only these two devices, then the conflict will not occur.

To communicate with the Archive Writer, the host must:

- Create and initiate a connection on the Archive Writer's Transaction Input Socket.

- Create and initiate a connection on the Archive Writer's Transaction Output Socket.

- Create and initiate a connection on the Archive Writer's File Input Socket.

- Create and initiate a connection on the Archive Writer's File Output Socket.

Transaction specification

Synchronization of commands and responses between the host and the Archive Writer are through the Transaction Input and Output sockets. The Archive Writer reads a data stream on its Transaction Input Socket in the following format:

<transaction number><command filename/image filename>null

The above data stream is referred to as the Transaction Definition Packet.

where the transaction number is a single-byte binary value in the range 0 to 255. The transaction number is used as a unique identifier to associate related command and response files. This is necessary since multiple commands can be sent to the Archive Writer at any given time; the host can queue up commands on the Archive Writer's disk.

The command filename/image filename is the name of a file containing Archive Writer commands or the name of an image file using DOS 8.3 notation.

The length of the input data stream is 14 characters (1 byte transaction number, 12-character filename, terminating null character).

The Archive Writer notifies the host of completed transactions through its Transaction Output Socket. When a transaction is completed, the Archive Writer writes a data stream on the Transaction Output Socket in the following format:

<transaction number><status byte>

where the transaction number is the transaction number for the command(s) just completed. The transaction number is a binary value in the range of 0 to 255.

The status byte is of the format of the ErrorState defined in the next section.

The length of this output stream is 2 bytes. The output stream is referred to as the Transaction Completion Packet.

The Archive Writer sets up the following directories on the Archive Writer's DOS RAM disk:

\CMD   Contains files that include the Archive Writer commands from the host

\STATUS   Contains status files that report Archive Writer status to the host

\RESP   Contains response files that include command responses to the host

\IMAGE   Contains image files from the host

\DIAG   Contains files for diagnostic purposes

All communication between the host and the Archive Writer, except for the synchronization data, are through the following files.

Command files

Command files contain Archive Writer commands and are written (by the host) to the \CMD directory. Each command file can contain up to 20 commands. Refer to Chapter 3, *Commands,* for a complete listing of all Archive Writer commands.

Command filenames must have a .CMD extension (conforming to the DOS 8.3 notation). There is no unique identifier necessary for command files as the name of the command file must appear in a data stream on the input socket. In addition, command files may be of variable size.

Status files

Status files are used to indicate to the host that an error or warning has occurred on the Archive Writer. The status filename takes the form of STAT<n>.DAT, where *n* is used as a unique identifier to associate a status file with a transaction number previously sent through the Transaction Input Socket.

The format of the status file is as follows:

StatusFileContents
ErrorState + 0 {ErrorInformation} N

ErrorState
This is a bitmapped value indicating the error severity:

1 = warning
2 = recoverable
4 = critical

A value placed in the status file may contain combinations of the above (e.g., the value of 3 indicates both warning and recoverable conditions exist).

ErrorInformation
newline + GenericErrorNumber + Delimiter + UniqueErrorNumber

Newline
hex 12. \n. Whatever you want to call it

GenericErrorNumber
4 bytes representing error number reported to the operator console

Delimiter
':'. A colon

UniqueErrorNumber
4 bytes representing a number unique to every possible error condition that the Writer can report

Response files

Response files contain responses to Archive Writer commands that require a response (e.g., Get film remaining command) and are written (by the Archive Writer) to the \RESP directory. Each response file can contain multiple command responses depending on the contents of the corresponding command file. For a response file containing multiple responses, the command IDs within the response file can be used to correlate a response to a particular command. Refer to Chapter 3, *Commands*, for a complete listing of all Archive Writer commands.

NOTE: Command names starting with the word Get are those that will cause the Archive Writer to generate a response file.

Response filenames take the form of: RESP<n>.DAT where *n* is used as a unique identifier to associate a response file with its transaction number specified in a data stream on the Transaction Input Socket.

Image files

Image files contain a TIFF 6.0 compliant image and are written (by the host) to the \IMAGE directory. Image filenames must conform to the DOS 8.3 notation. There is no unique identifier necessary for image files as the name of the image file must appear in a command file or data stream on the Transaction Input Socket.

Error log file

The Archive Writer maintains an internal error log and allows the host to query the error log as desired. When a status file is received by the host, the error log should be checked. The error log file is written to the \RESP directory in response to the command Get error information or Get unviewed error information.

Reading/writing files

Before writing a command or image data file to the Archive Writer, the host computer must write a FileSpecificationPacket to the FileInputSocket.

Before reading a response or status file from the Archive Writer, the host computer must write a FileSpecificationPacket to the FileOutputSocket.

File specification packet

This quantity provides the definition of a file which is to be transferred to or from the Archive Writer.

FileSpecificationPacket
  fileToAccess = sizeOfFile. The length of every File Specification Packet is 48 bytes.

FileToAccess
  The null-terminated complete path name of the file to access on the Writer. The complete path does **not** include the drive name. For example, a command file could be cmd/cmd3.cmd (backward slashes may also be used).

SizeOfFile
  A null-terminated ASCII string representation of the size of the file that is going to be transferred. This field may be set to "0" if the file is being read and transferred; otherwise, only as many bytes as is specified (or exist) will be read. For writes, the Writer will echo-back the amount specified in this field by the host computer.

File Spec Ack packet

This quantity is provided by the Archive Writer and is read by the host computer. It informs the host computer whether or not a File Specification Packet can be accepted. It is written by the Writer to the same socket in which the Writer received the File Specification Packet.

FileSpecAckPacket
  ackByte + sizeOfFile. The length of every File Spec Ack Packet is 16 bytes. SizeOfFile is as defined for the File Specification Packet.

ackByte
  A single-byte is defined as follows:
  0 = everything is OK with the file specification
  1 = file name is not valid (it is too long; a specified directory does not exist on the Writer, or a read request names a file which does not exist
  2 = file will not fit on the Writer's disk (only for writes)
  3 = OK, but the number of bytes requested are more than exist in the file (only for reads)
  4 = OK, but the number of bytes in the file are more than the number requested (only for reads)

Transferring file data

If the File Specification is OK (as indicated by the File Spec Ack Packet), the file contents should be written to the same File Socket that has been used for the FileSpecification and the FileSpecAckPacket, by the entity that has the file (the host if the file specification was a write, or the Writer if it was a read) and read by the entity that does not have it.

NOTES:

• During writes, the Archive Writer will overwrite any existing file with the same name. There is no Append option.

• Transfers take place in 4K portions until there is less than 4K bytes remaining, then the remaining amount is transferred.

• At the end of the transfer, the recipient returns a FileContentAckPacket to the sender, indicating success or failure.

• During reads, the Archive Writer **only** returns as much data as was originally requested by the host computer.

• Upon successful completion of reads, the Archive Writer **removes** the file that was just read from the RAM disk.

File Content Ack packet

This quantity is provided by the recipient of a file (the host computer during file reads, the Archive Writer during file writes). It is a single byte indicating success (0) or failure (1) to receive the file.

Executing a Writer command

To execute a command on the Archive Writer, follow the steps below.

NOTE: Performing Steps 1 through 10 is referred to as a *transaction.*

1. The host creates a file containing appropriate command characters and data.

2. The host writes the command file to the cmd directory in the Archive Writer's DOS system.

3. If the file contains commands to print image data, the image data files have to be written. The host writes the files to the image directory of the Archive Writer's DOS system.

4. The host writes a TransactionDefinitionPacket to the TransactionInputSocket.

5. The Archive Writer receives the TransactionDefinitionPacket in the socket.

6. The Archive Writer looks in the \cmd or \image directory for the command file indicated in the TransactionDefinitionPacket (based on its extension). When the file is found, it is processed.

   NOTE: If the file is a command file containing commands to print images, the Archive Writer also looks in the \image directory for the image files contained within the command file.

7. If the command file cannot be processed, or if the image data cannot be printed, the Archive Writer writes a status file indicating failure into the \status directory stat<n>.dat where <n> corresponds to the transaction number received in the TransactionDefinitionPacket.

8. If the command requires a response (e.g., if it is retrieving a value), the Archive Writer creates a response data file resp<n>.dat in the \RESP directory, where <n> is the transaction number <n> received in the TransactionDefinitionPacket.

9. Whether or not processing is successful, the Archive Writer removes the image data (if it exists) and the command file, after writing any stat<n>.dat file that needs to be written. The Archive Writer will **not** remove any resp<n>.dat or stat<n>.dat files, until after the host computer has requested to read the files.

10. The Archive Writer writes the transaction number <n> plus the status byte written to the status file (or a "0" if no status file was written) to the TransactionOutputSocket. The host computer system, upon reading this information from the socket, knows the processing associated with this transaction is complete. It can safely request the resp<n>.dat and stat<n>.dat files if they exist.

Special transaction processing cases

Following are some special cases involving transaction processing.

Multiple transaction processing

The host system can queue-up transactions to be processed. After writing the command file, any image files, and the command filename to the Archive Writer's input socket, the host may immediately begin writing another transaction. It must give this transaction a transaction number that is different from the previously written transaction.

Error state transaction processing

When a critical or correctable error occurs, and the system error state is set, the Archive Writer will not process any transaction number but 0 (zero). This gives the host application a chance to clean any pending transactions off the disk, and allows the operator to take the appropriate corrective actions before resuming processing. Command 55 — Restart Writer and Command 45 — Set Next Transaction Number are used to resume normal Archive Writer operations.

NOTE: If the host application starts a transaction with a transaction number = <n>, and attempts to start another transaction with the same transaction number <n>, the Document Archive Writer reports an error.

Reconnecting after connections broken

When the host system closes the input socket, (the host program calls an I/O function that closes the socket, the host program exits, the host system shuts down or reboots unexpectedly, etc.), the Archive Writer begins waiting for another connection from the host.

Transaction number 0

Transaction number 0 serves two purposes:

1. It is the initial transaction number used to start communications with the Archive Writer.

2. It serves as a "priority" command indicator to the Archive Writer.

The host can queue commands on the Archive Writer's disk. If the host needs to alter the sequence of how these commands are processed, it can write a command file and send a transaction number 0 Transaction Definition Packet to the Transaction Input Socket. When the input socket's data stream contains a transaction number 0, that transaction takes precedence over all other transactions. The command associated with transaction number 0 is executed immediately following the command currently being processed.

Transaction number 0 starts the communications with the Archive Writer, and is also used for error recovery. When using transaction number 0, the host must consider other transaction numbers and any command files previously sent to the Archive Writer.

For example, transactions 0 through 5 and their command files have been sent to the Archive Writer, the Archive Writer detects an error with an image file associated with transaction number 2 and reports the error to the host through stat2.dat. In this example, the Archive Writer's disk and Transaction Input Socket might contain:

Input Socket
   Transaction Definition Packet for transactions 3, 4, 5

\CMD
   CMD2.CMD CMD3.CMD CMD4.CMD CMD5.CMD

\STATUS
   STAT2.DAT

\RESP

\IMAGE
   IMAGE1.TIF IMAGE2.TIF . . .

Transaction number 0 can be used to recover from the error. The next transaction the Archive Writer looks for is transaction number 3. As shown in this example, transaction numbers 3, 4 and 5, and their associated command files, are still on the Archive Writer's disk.

The "Flush Writer" command (59) is provided to erase all files from the Archive Writer's disk. During error recovery, or at any other time required by the application, the "Flush Writer" command may be sent to the Writer.

NOTE: The Archive Writer can be directed to look for a transaction that starts with a specific number. See the "Set next transaction number" command description in Chapter 3, *Commands*.

Host communication examples

Following are four host communication examples. Refer to Chapter 3, *Commands*, for more information on specific commands.

NOTE: In all examples, the <> are used to represent a null terminator used to terminate a string.

Example 1

This example shows how to find out how much space the Archive Writer has on its hard disk.

Host: Create a command file (command1.cmd)
File contents:
34
where: 34 = command ID

Host: Write a File Specification Packet to the File Input Socket as follows:
cmd/command1.cmd<>3<>
Remember to pad the size of this field out to 48 bytes.

Writer: Detect File Specification Packet at the File Input Socket. Assuming there is room on the disk for the file, respond with a File Spec Ack Packet as follows:
02<>
Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Input Socket. Since the "ack byte" indicates the file may be written, write the contents of command1.cmd to the File Input Socket.

Writer: Detect file contents at File Input Socket. Create a file cmd/command1.cmd and write the data from the File Input Socket to the file. Send File Content Ack Packet (a "0") to indicate successful reception of the file.

Host: Detect File Content Ack Packet at File Input Socket. Send a Transaction Definition Packet to the Transaction Input Socket as follows:
1cmd/command1.cmd<>
1 indicates transactionNumber and the rest is the file name.

Writer: Detect Transaction Definition Packet at File Input Socket. Process the command indicated by the Transaction Definition Packet. It is command 34 which retrieves the Writer's internal disk's specification. Create a response file resp/resp1.dat containing the specification.

Assuming typical values, the contents would be as follows:
34 0 512 1 C: 3 Spfrflpy 5 S 6 1455104

Writer: Write Transaction Completion Packet to the Transaction Output Socket as follows:

10
1 indicates transactionNumber and 0 indicates no errors.

Host: Detect Transaction Completion Packet at the Transaction Output Socket.

NOTES:

- Since the original command was 34, a response is expected.
- If the status byte indicated errors, the host should request stat1.dat by the same mechanisms described to transfer all files here.

Host: Write a File Specification Packet to the File Output Socket as follows:
resp/resp1.dat<>0<>
The file size of 0 indicates the entire file should be transmitted. Pad the length of the File Specification Packet to 48 bytes.

Writer: Detect File Specification Packet at the File Output Socket. Determine the size of the resp/resp1.dat.file, and put it into a File Spec Ack Packet, as follows (leading 0 to indicate file can be successfully read).
038<>
Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Output Socket. Since the "ack bytes" indicate the file may be read, start to read data from the File Output Socket.

Writer: Write the contents of resp/resp1.dat to the File Output Socket.

Host: Detect contents at File Output Socket. Process data, however, is desired (a local file does not need to be created). Write File Content Ack Packet to File Output Socket as follows:
0

Writer: Detect File Content Ack Packet at File Output Socket. Remove resp/resp1.dat.

Example 2

This example shows how to print an image. Assume an image file "image1.tif" is to be printed and the size of the file is 10,000 bytes.

Host: Write a File Specification Packet to the File Input Socket as follows:
image/image1.tif<>10000<>
Remember to pad the size of this field out to 48 bytes.

Writer: Detect File Specification Packet at the File Input Socket. Assuming there is room on the disk for the file, respond with a File Spec Ack Packet as follows:
02<>
Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Input Socket. Since the "ack bytes" indicate the file may be written, write the contents of image1.tif to the File Input Socket.

> NOTE: If 10,000 bytes is not available on the disk, the Write sends a File Specification Ack Packet indicating this fact ('2'). The host does whatever is appropriate (i.e., pause of a period of time, read response and/or status files that may exist on the Writer, etc.) before retrying the original File Specification Packet.

Writer: Detect file contents at File Input Socket. Create a file image/image1.tif and write the data from the File Input Socket to the file. Send File Content Ack Packet (a "0") to indicate successful reception of the file.

Host: Create a command file (command1.cmd)
File contents (assuming the logical drive returned from the Get Disk Specification command "C:")
12 0 C:image/image1.tif
Where:
12 = command ID
0 = parameter ID
C:image/image1.tif = parameter 0 data

Host: Write a File Specification Packet to the File Input Socket as follows:
cmd/command1.cmd<>22<>
Remember to pad the size of this field out to 48 bytes.

Writer: Detect File Specification Packet at the File Input Socket. Assuming there is room on the disk for the file, respond with a File Spec Ack Packet as follows:
02<>
Remember to pad the size of this field out to 48 bytes.

Host: Detect File Spec Ack Packet at the File Input Socket. Since the "ack byte" indicate the file may be written, write the contents of command1.cmd to the File Input Socket.

Writer: Detect file contents at File Input Socket. Create a file cmd/command1.cmd and write the data from the File Input Socket to the file. Send File Content Ack Packet (a "0") to indicate successful reception of the file.

Host: Detect File Content Ack Packet at the File Input Socket. Send a Transaction Definition Packet to the Transaction Input Socket as follows:
1cmd/command1.cmd<>
1 indicates transactionNumber and the rest is the file name.

Writer: Detect Transaction Definition Packet at File Input Socket. Process the command indicated by the Transaction Definition Packet. It is command 12, which is a command to print an image. Print the image. Create a response file resp/resp1.dat containing the print image results.

Writer: Write Transaction Completion Packet to the Transaction Output Socket as follows:
10
1 indicates transactionNumber and 0 (the status byte) indicates no errors.

Host: Detect Transaction Completion Packet at the Transaction Output Socket.

NOTES:

- Since the original command was 12, print an image, a response is expected.
- If the status byte indicated errors, the host should request stat1.dat by the same mechanisms described to transfer all files here.

Host: Write a File Specification Packet to the File Output Socket as follows:
resp/resp1.dat<>0<>
The file size of 0 indicates the entire file should be transmitted. Pad the length of the File Specification Packet to 48 bytes.

Writer: Detect File Specification Packet at the File Output Socket. Determine the size of the resp/resp1.dat.file, and put it into a File Spec Ack Packet (leading 0 to indicate file can be successfully read). Assuming the size of the response file is 48 bytes, the packet is as follows:
048<>
Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Output Socket. Since the "ack bytes" indicate the file may be read, start to read data from the File Output Socket.

Writer:	Write the contents of resp/resp1.dat to the File Output Socket.
Host:	Detect contents at File Output Socket. Process data however is desired (a local file does not need to be created). Write File Content Ack Packet to File Output Socket as follows: 0
Writer:	Detect File Content Ack Packet at File Output Socket. Remove resp/resp1.dat.

Example 3

This example shows how to execute a film advance.

Host:	Create a command file (command1.cmd) File contents 1 0 12 Where: 1 = command ID 0 = parameter ID 12 = parameter 0 data
Host:	Write a File Specification Packet to the File Input Socket as follows: cmd/command1.cmd<>7<> Remember to pad the size of this field out to 48 bytes.
Writer:	Detect File Specification Packet at the File Input Socket. Assuming there is room on the disk for the file, respond with a File Spec Ack Packet as follows: 02<> Remember to pad the size of this field out to 16 bytes.
Host:	Detect File Spec Ack Packet at the File Input Socket. Since the "ack byte" indicates the file may be written, write the contents of command1.cmd to the File Input Socket.
Writer:	Detect file contents at File Input Socket. Create a file cmd/command1.cmd and write the data from the File Input Socket to the file. Send File Content Ack Packet (a "0") to indicate successful reception of the file.
Host:	Detect File Content Ack Packet at the File Input Socket. Send a Transaction Definition Packet to the Transaction Input Socket as follows: 1cmd/command1.cmd<> 1 indicates transactionNumber and the rest is the file name.
Writer:	Detect Transaction Definition Packet at File Input Socket. Process the command indicated by the Transaction Definition Packet. It is command 1, which is a command to perform a film advance. Perform the film advance.

Writer: Write Transaction Completion Packet to the Transaction Output Socket as follows:
10
1 indicates transactionNumber and 0 (the status byte) indicates no errors.

Host: Detect Transaction Completion Packet at the Transaction Output Socket.

NOTES:

- Since the original command was 1, perform film advance, no response file is expected.
- If the status byte indicated errors, the host should request stat1.dat by the same mechanisms described to transfer all files here.

Example 4

This example shows how to determine the amount of film remaining in each cassette.

Host: Create a command file (command1.cmd)
File contents
8
Where:
8 = command ID

Host: Write a File Specification Packet to the File Input Socket as follows:
cmd/command1.cmd<>2<>
Remember to pad the size of this field out to 48 bytes.

Writer: Detect File Specification Packet at the File Input Socket. Assuming there is room on the disk for the file, respond with a File Spec Ack Packet as follows:
02<>
Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Input Socket. Since the "ack byte" indicates the file may be written, write the contents of command1.cmd to the File Input Socket.

Writer: Detect file contents at File Input Socket. Create a file cmd/command1.cmd and write the data from the File Input Socket to the file. Send File Content Ack Packet (a "0") to indicate successful reception of the file.

Host: Detect File Content Ack Packet at the File Input Socket. Send a Transaction Definition Packet to the Transaction Input Socket as follows:
1cmd/command1.cmd<>
1 indicates transactionNumber and the rest is the file name.

Writer: Detect Transaction Definition Packet at File Input Socket.
Process the command indicated by the Transaction
Definition Packet. It is command 8, which is a command to
retrieve film remaining. Create a response file resp/resp1.dat
containing the film remaining data. Assuming two cassettes
are installed, an example response film would contain:
8 0 1200 1 1800 2 5 3 7
Where
8 = command ID
0 = parameter 0 ID (upper cassette film remaining)
1200 = film remaining in upper cassette
1 = parameter 1 ID (lower cassette film remaining)
1800 = film remaining in lower cassette
2 = parameter 2 ID (upper cassette film supply indicator level
5 = parameter 2 value
3 = parameter 3 ID (lower cassette film supply indicator level)
7 = parameter 3 value

NOTE: The film supply indicators are the two film
remaining symbols shown in the upper left corner
of the operator interface. Valid values are from 0
to 10.

Writer: Write Transaction Completion Packet to the Transaction
Output Socket as follows:
1 0
1 indicates transactionNumber and 0 (the status byte)
indicates no errors.

Host: Detect Transaction Completion Packet at the Transaction
Output Socket.

NOTES:

- Since the original command was 8, retrieve remaining
film, a response is expected.

- If the status byte indicated errors, the host should
request stat1.dat by the same mechanisms described to
transfer all files here.

Host: Write a File Specification Packet to the File Output Socket
as follows:
resp/resp1.dat<>0<>
The file size of 0 indicates the entire file should be
transmitted. Pad the length of the File Specification Packet
to 48 bytes.

Writer: Detect File Specification Packet at the File Output Socket. Determine the size of the resp/resp1.dat.file, and put it into a File Spec Ack Packet (leading 0 to indicate file can be successfully read). Assuming the size of the response file is 23 bytes, the packet is as follows:

023<>

Remember to pad the size of this field out to 16 bytes.

Host: Detect File Spec Ack Packet at the File Output Socket. Since the "ack bytes" indicate the file may be read, start to read data from the File Output Socket.

Writer: Write the contents of resp/resp1.dat to the File Output Socket.

Host: Detect contents at File Output Socket. Process data however is desired (a local file does not need to be created). Write File Content Ack Packet to File Output Socket as follows:

0

Writer: Detect File Content Ack Packet at File Output Socket. Remove resp/resp1.dat.

3   Commands

Command format

All *Kodak Digital Science* Document Archive Writer application commands follow a similar format.

That format is illustrated in the following example, which shows a command that sets up the Archive Writer for duplex film format and also sets the level-to-follow-level rules.
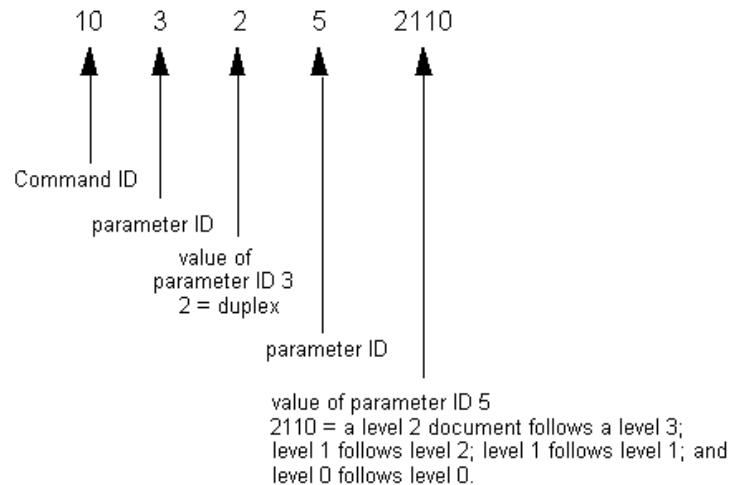
Command attributes

Maintainability

Commands and command parameters can be added, changed and removed from future versions of Writer firmware. To ensure backward compatibility, the following guidelines are applied:

- New commands are assigned new command IDs.

- New parameters are assigned new parameter IDs.

- Modified commands and parameters are treated as new commands.

- As commands and parameters are deleted, their identifiers are not reused.

Flexibility

The specification supports flexibility, allowing parameters to be omitted from commands. The same command can be reused to set various parameters, and it is not necessary to retransmit all of the parameters with each invocation of the command.

Command specifications

This section describes each of the Archive Writer commands.

There are two types of command requests:

- A request for action, which is referred to as a "set" request or command. A "set" causes a configurable parameter to be set or an image to be filmed.

- A request for a parameter value, which is referred to as a "get" request or command. A "get" causes the current setting of all parameters associated with the command to be retrieved from the Writer. There are no parameters specified with the "get" request.

It is not necessary to specify all parameters with each command; parameters can be omitted as desired. The values used for all omitted parameters are those most recently specified for the same command. The default value is used for all parameters that have not been specified by a "set" request.

Some commands take or return measurement data (e.g., the Advance Film command). The values specified for measurement data are interpreted by the Writer as English or metric units depending on the setting of command Set system parameters (parameter ID 3).

Advance film

Command ID	1
Allowed error states	critical, correctable, warning
Allowed offline	no
Description	
parameter ID 0	ASCII character string representing distance to advance film. Measurement is in inches or millimeters.

Range (inches):	1 to 99
Range (millimeters):	0.254 to 25.15
Default:	1 inch (0.254 mm)

Stop film advance

Command ID	2
Allowed error states	critical, correctable, warning
Allowed offline	yes

Set leader length

Command ID	3
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	
Parameter ID 0	ASCII character string representing the distance to advance film for the make leader command. Units are the current measurement system setting (inches or meters)

Range (inches):	36 to 120
Range (millimeters):	0.9144 to 3.048
Default:	36 inches

Get leader length

Command ID	4
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each parameter field described in Set Leader Length.

Set fixed length

Command ID	5
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	
Parameter ID 0	ASCII character string representing the distance to advance film from the Operator Interface for the fixed length command. Measurement is in inches or millimeters.

Range (inches):	1 to 99
Range (millimeters):	0.254 to 25.15
Default:	1 inch (0.254 mm)

Get fixed length

Command ID	6
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each parameter field described in Set Fixed Length. Measurement is in inches or millimeters.

Make leader

Command ID	7
Allowed error states	critical, correctable, warning
Allowed offline	no
Description	Requests the Writer to advance the film by leader length. Refer to Set Leader Length command.

Report film remaining

Command ID	8
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Response message is interpreted as follows:
parameter ID 0	Upper Cassette Film remaining. Measurement is in inches or millimeters.
parameter ID 1	Lower Cassette Film remaining. Measurement is in inches or millimeters.
parameter ID 2	Upper Cassette Supply Level. Decimal ASCII character string representation of the film remaining indicator setting.
	Range: 0 (empty) to 10 (full).
parameter ID 3	Lower Cassette Supply Level. Decimal ASCII character string representation of the film remaining indicator setting.
	Range: 0 (empty) to 10 (full).

Start run film to end of roll

Command ID	9
Allowed error states	critical, correctable, warning
Allowed offline	no
Description	Response message is interpreted as follows:
parameter ID 0	0 run to end stopped
	1 run to end started
	2 run to end complete

Set setup of next image frame

Command ID	10
Allowed error states	correctable, warning
Allowed offline	no
Description	
parameter ID 0	ASCII character 0, 1, 2, or 3, representing image levels 0 to 3 of the next image to be printed.
	Default: Initially 1, based on level-to-follow-level rules once filming starts. A host request to set the value overrides whatever exists via level-to-follow-level rules.
parameter ID 1	ASCII character string (maximum length 256 bytes), which is changed into a bitmap and exposed on film along with the next image printed. This is the annotation string.
	Default: NULL
parameter ID 2	ASCII character representing file type: 2 = TIFF.
	Default: 2
parameter ID 3	ASCII character string representing image composition and polarity.
	1 = simplex, normal polarity
	2 = duplex, normal polarity
	1r = simplex, reverse polarity
	2r = duplex, reverse polarity
	Default: 1
parameter ID 4	Image address for next image. Four-field ASCII character string with periods separating the fields. (maximum length: 15 bytes including the periods).
	Default: 0.0.0.1 initially, based on level-to-follow-level rules once filming starts. A host request to set the value overrides whatever exists via level-to-follow-level rules.

parameter ID 5	Level-to-follow-level rules for next image. ASCII character string containing level-to-follow-level for each level 0, 1, 2, and 3 in order (e.g., 2112 would mean 2 follows levels 0 and 3, and 1 follows levels 1 and 2.
	Default: 2112
parameter ID 6	Field definition for all four IA fields. ASCII character string containing one F, 1, 2, 3, or 0 for each of fields 1, 2, 3, and 4 in order. For example, F321 means that the left-most field is a fixed field, the second is level 3, the third level 2 and the fourth level 1. Any zero width fields (as specified by parameter 9) must follow all non-zero field widths.
	Default: F321
parameter ID 9	Field width specification for all four IA fields. ASCII character string containing characters representing the width (0 through 9) of each field within the image address. The minimum width size is 0. The maximum is 9. The total of all fields together cannot exceed 12. The ordering of the width specifiers is Fixed, Level 1, Level 2, and Level 3 (e.g., 5021 would specify the following field widths: Fixed = 5, Level 1 = 0, Level 2 = 2, Level 3 = 1).
	Default: 3333
parameter ID 10	ASCII character 0 or 1 representing whether offset addressing is to be used. 1 = offset addressing, 0 = normal addressing.

parameter ID 11	Scaling type, 7-byte ASCII character string. Indicates type of scaling and scaling by what value. The first character is the scale type:

0 = no scaling
1 = automatic scaling
2 = fixed scaling

The next three characters are representations of the first scaling value (value is based on the type of scaling selected). The last three characters are representations of the second scaling value (value is based on the type of scaling selected).

Values for scaling type 0:

    1st value: 000
    2nd value: 000

Values for scaling type 1:

    1st value: reduction ratio (024=24x, 050=50x)
    2nd value: 000

Values for scaling type 2:

    1st value: raw image scaling ratio

    2nd value: scaled image scaling ratio (001002 - 1:2 is 2x scaling, 002001 - 2:1 is 1/2x scaling).

Default: 0000000 for no scaling

NOTE: Parameter ID 0, 1, 3, 4, and 11 settings are also provided in the command Set next image to be printed. Either command can be used for setting these values.

Get setup of next image frame

Command ID	11
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each parameter field described in Set setup of next image frame command, with the following exception:
parameter ID 4	Image address for last image. Up to four-field ASCII character string with periods separating the fields. The number of fields returned matches the current IA configuration. Maximum length: 15 bytes including the periods.

Set next image to be printed

Command ID	12	
Allowed error states	warning	
Allowed offline	no	
Description	This command automatically generates a response. See Set next image to be printed response following this command description.	

parameter ID 0

ASCII character string representing name of file (including complete path) which contains the next image to be printed.

Default: NULL

parameter ID 1

Image address for next image. Four-field ASCII character string with periods separating the fields (maximum length: 15 bytes including the periods).

Default: 0.0.0.1 initially, based on level-to-follow-level rules once filming starts. A host request to set the value overrides whatever exists via level-to-follow-level rules.

parameter ID 2

ASCII character 0, 1, 2, or 3 representing image levels 0-3 of the next image to be printed.

Default: 1 initially, based on level-to-follow-level rules once filming starts. A host request to set the value overrides whatever exists via level-to-follow-level rules.

parameter ID 3

ASCII character string (maximum length 80 bytes), which is changed into a bit map and exposed on film along with the next image printed. This is the annotation string.

Default: NULL

parameter ID 5

ASCII character string representing image composition and polarity.

   1 = simplex, normal polarity
   2 = duplex, normal polarity
   1r = simplex, reverse polarity
   2r = duplex, reverse polarity

Default: 1

parameter ID 7   Scaling type, 7-byte ASCII character string. Indicates type of scaling and scaling by what value. The first character is the scale type:

       0 = no scaling
       1 = automatic scaling
       2 = fixed scaling

The next three characters are representations of first scaling value (value is based on the type of scaling selected). The last three characters are representations of second scaling value (value is based on the type of scaling selected).

Values for scaling type 0:

       1st value: 000
       2nd value: 000

Values for scaling type 1:

       1st value: reduction ratio (24= 24x, 50=50x)
       2nd value: 000

Values for scaling type 2:

       1st value: raw image scaling ratio

       2nd value: scaled image scaling ratio
       (001002 - 1:2 is 2x scaling,
       002001 - 2:1 is 1/2x scaling)

Default: 0000000 for no scaling

parameter ID 8   Film remaining/level request. Indicates whether or not the host is requesting a film remaining update along with the other response data associated with the command.

Values:

       0 = do not report film remaining (this is the default if the field is not included.

       1 = include cassette film remaining and supply levels for both cassettes.

NOTE: Parameter ID 1 through 7 settings are also provided in the command Set setup of next image frame. Either command may be used for setting these values.

Set next image to be printed response

Command ID	12
Description	Response message is interpreted as follows:
parameter ID 0	TimeStamp+'*'+ImageFileName+'*'+Status Field+'*'+ImageAddressPageEntry
	TimeStamp is an ASCII character string representing the time at which the image was printed (month, day, year, hour, minute, second).
	ImageFileName is an ASCII character string read from the command file indicating the name of the file that was printed.
	Status Field is 1 - n bytes containing the status associated with this entry. Currently, only the first field is defined (0 = Image print error, 1 = Image print OK)
	ImageAddressPageEntry = ImageAddress+IAPageDelimiter+ PageNumber
	IAPageDelimiter = ":"
	PageNumber is an ASCII byte stream representing the page number within a multi-page TIFF image file where the image appears.
	ImageAddress is an ASCII character string representing the various image address fields. This will contain the same image address string that would be used to annotate the film image (independent of whether annotation is enabled). See the Software Requirements Specification for a description of how this string is put together.
parameter ID 8	Film remaining response. Only appears if film remaining request parameter (see Command ID 12, Set next image to be printed command) is set to something other than "0".
	Values: Upper cassette*Lower cassette*Upper supply*Lower supply

Get last image printed

Command ID	13	
Allowed error states	critical, correctable, warning	
Allowed offline	yes	
Description	Response message is interpreted as follows:	
parameter ID 0	ASCII character string representing the name of the file (not including the complete path; just the DOS 8.3 file name) containing the last image successfully printed.	
	Default: If no image has been printed since the Archive Writer was last powered up, the value in this field is undefined.	
parameter ID 1	Image address of last image successfully printed, along with page number of image printed. Five-field ASCII character string with periods separating the fields in the image address and a colon separating the image address from the page number. Maximum length: 22 bytes, including the periods and the colon.	
	Default: If no image has been printed since the Archive Writer was last powered up, the value in this field is undefined.	

Set system parameters

Command ID	18
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	
parameter ID 1	ASCII character string representing the system clock month, day, and year. First 2 bytes are for the month, 01 to 12. Second 2 bytes are for the day, 11 to 31. The last 4 bytes are for the year, 0000 - 9999.
	Default: 01011996 (January 1, 1996)
parameter ID 2	ASCII character string representing the system clock hour, minute, and second. First 2 bytes are for the hour, 00 to 23. The second 2 bytes are for the minute, 00 to 59. The last 2 bytes are for the second, 00 to 59.
	Default: 000000 (12 midnight)
parameter ID 3	Single-byte ASCII character representing measurement unit. E = English; M = Metric.
	Default: E
parameter ID 4	ASCII character representing the number of cassettes required. 1 = one cassette, 0 = two cassettes.
	Default: 1 (one cassette)

Get system parameters

Command ID	19
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each field described in Set system parameters.

Get version numbers

Command ID	20	
Allowed error states	critical, correctable, warning	
Allowed offline	yes	
Description	Response message is interpreted as follows:	
parameter ID 0	ASCII character string representing embedded controller software version number. Maximum length 11 bytes (aaa.bbb.ccc) where:	

        aaa = major version number
        bbb = minor version number
        ccc = patch release number

parameter ID 1   Operator Interface subsystem software version number. ASCII character string maximum length 11 bytes (aaa.bbb.ccc) where:

        aaa = major version number
        bbb = minor version number
        ccc = patch release number

parameter ID 2   Film Drive Servo version number. Four-digit ASCII character string.

parameter ID 3   DCSM version number. Four-digit ASCII character string.

parameter ID 4   WRIB version number (hardware version number). Four-digit ASCII character string.

Host: Get error information

Command ID	21
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used when a status returned to the host indicates an error in the system. The response returned to the host will contain as many parameters as there are errors in the system. It is possible to report multiple error occurrences within a single command. Errors are listed from oldest to newest.
	Default: None
	Response message is interpreted as follows:
parameter ID 0	The error output is an ASCII character string consisting of a generic error number (first four bytes), A colon (:) and a unique error number (second four bytes). For example, 0120:4568.
parameter ID 1	Error information ASCII character string for second error.
parameter ID 2	Error information ASCII character string for third error.
parameter ID n-1	Contains the error information for the nth error.

Host: Get unviewed error information

Command ID	22
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Same as above, except the parameter data returned will only be those errors not already reported to the host.

Set image writing configuration

Command ID	27
Allowed error states	critical, correctable, warning
Allowed offline	yes

Description

parameter ID 0   Nominal LED brightness. ASCII character string representing the nominal brightness value to drive the LED bar.

Range: Cardinal value between 5 and 50, inclusive.

Default: 14

Get image writing configuration

Command ID	28
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each field described in Set image writing configuration.

Film status request

Command ID	29
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used by the host to request information as to the status of the *Kodak Digital Science* Archive Writer Cassette.
	Response message is interpreted as follows:
parameter ID 0	Present/Side for upper cassette.

0 = Cassette not present
1 = Cassette on side 1
2 = Cassette on side 2
3 = Cassette is dead and film present
4 = Cassette is inserted improperly
5 = Cassette access door is open

parameter ID 1	Present/Side for lower cassette

0 = Cassette not present
1 = Cassette on side 1
2 = Cassette on side 2
3 = Cassette is dead and film present
4 = Cassette is inserted improperly
5 = Cassette access door is open

Cassette data request

Command ID	30
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used by the host to request information as to the status and data contained on the *Kodak Digital Science* Archive Writer Cassette.
	Response message is interpreted as follows:
parameter ID 0	Cassette status for upper cassette.

        0 = no cassette data
        1 = new cassette
        2 = cassette not up-to-date
        3 = new roll of film
        4 = previous power fail
        5 = cassette data OK

parameter ID 1	Last image address written to film in upper cassette. 15-byte ASCII character string.
parameter ID 2	Last image mark level written to film in upper cassette. ACSII character: 0, 1, 2 or 3.
parameter ID 3	Roll number of film within cassette in upper cassette. Nine MAX Null terminated ASCII characters.
parameter ID 4	Job number. Two ASCII characters.
parameter ID 5 - 9	Cassette status for lower cassette. Same format as the upper cassette parameter IDs 0 to 4.
	NOTE: If the parameter ID 0 value = 5, the command data is valid; otherwise, it is undefined. Refer to the Film Status Request command for more information.

Cassette data update

Command ID	31
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used by the host to specify information as to the status and data contained on the *Kodak Digital Science* Cartridge.
parameter ID 3	Roll number for the upper and lower cassettes. 9-byte ASCII character string.
	Default: 000000000
parameter ID 4	Job number - upper and lower cassettes. 2-byte ASCII character string.
	Default: 00

Disk emulation specify setup

Command ID	33
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to specify the parameters for the emulated disk implemented on the Archive Writer.
parameter ID 5	Physical device model.
	Data: Single-character representing model type to use to build RAM disk used for storing files. Valid values are: Small model: S Large model: L Default: S

Disk emulation retrieve setup

Command ID	34
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each parameter field described in Disk emulation specify setup.
parameter ID 0	Maximum number of root directory entries.
	Data: ASCII string representing number of entries.
parameter ID 1	Logical device name for DOS RAM disk.
	Data: ASCII string representing identifier to use in reference to block device created.
parameter ID 3	Physical device name.
	Data: ASCII string representing identifier used by Writer to reference data used to create RAM disk.
parameter ID 5	Physical device model;
	Data: Single character representing model type to use to build RAM disk used for storing files. Valid values are: Small model: S Large model: L
parameter ID 6	Disk space available.
	Data: ASCII string representing number of bytes available for use on disk.

Set image management code

Command ID	37
Allowed error states	correctable, warning
Allowed offline	no
Description	Used by the host to specify information on composition of IMC code.
parameter ID 0	IMC type. ASCII character specifying the type of IMC to produce.

0 = Disable IMC
1 = Enable for IL70 code
2 = Enable for RIM2000 code

Default: 1

parameter ID 1	Roll number of film within cassette in upper cassette. Up to a 9-byte ASCII character string. Leading zeros not required.

Range: 0 to 999999999

Default: 0

parameter ID 2	Search program number. Up to 2-byte ASCII character string. Leading zeros not required.

Range: 0 to 31

Default: 18

parameter ID 3	Operator number. Up to a 9-byte ASCII character string. Leading zeros not required.

Range: 0 to 999999999

Default: 0

parameter ID 4	Splice definition. Single-byte ASCII character.

Range: 0 to 3

0 = ignore splice
1 = count splice as a level 1 image mark
2 = count splice as a level 2 image mark
3 = count splice as a level 3 image mark

Default: 0

parameter ID 5	Duplex front location. Single-byte ASCII character.

Range: 0 - 1

0 = duplex front location is channel A
1 = duplex front location is channel B

Default: 0

parameter ID 6	Blip author. One null-terminated ASCII character.
	Range: 0 to 1
	0 = Kodak standard image marks 1 = other image marks
	Default: 0
parameter ID 7	Image orientation. One null-terminated ASCII character.
	Range: 0 - 1
	0 = portrait (edge of image parallel with edge of film) 1 = landscape (end of document parallel with edge of film)
	Default: 0
parameter ID 8	Image Offset (offset of top of image relative to top edge of image mark). Up to 3-byte ASCII character string. Leading zeros not required.
	Range: 0 to 128
	Default: 0
parameter ID 9	Print polarity. One null-terminated ASCII character.
	Range: 0 - 1
	0 = opposite of image mark 1 = same as image mark
	Default: 1
parameter ID 10	Reduction ratio (camera magnification). Up to 2-byte ASCII character string. Leading zeros not required.
	Range: 0 to 99
	Default: 24
parameter ID 11	Image address for next image. Four-field ASCII character string with periods separating the fields. (maximum length: 15 bytes including the periods.)
	Default: None, an Image Address must be specified with this command.

Get image management code

Command ID	38
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Values are returned for each parameter field described in Set image management code.

Print remaining image

Command ID	39
Allowed error states	warning
Allowed offline	no
Description	Used to indicate the single image pending in duplex mode is the final image of the series.

Get On/Off line status

Command ID	40
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to report the Archive Writer's online/offline status.
parameter ID 0	On/Off line status. ASCII character representing the status of the device.
	0 = offline
	1 = online

Set frame annotation

Command ID	41
Allowed error states	warning
Allowed offline	no
Description	Used by the host to enable or disable frame annotation.
parameter ID 0	Frame annotation setting. ASCII character indicating enable or disable.
	0 = disable annotation
	1 = enable annotation
	Default: 1

Get frame annotation

Command ID	42
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Value is returned for the field described in Set frame annotation.

Set network specification

Command ID	43
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used by the host to specify the network connection parameters to be used for the Archive Writer.
parameter ID 0	Host name. ASCII character string, (maximum length 32 characters) representing the host system the Archive Writer is talking to.
	Default: host
parameter ID 1	Target name. ASCII character string (maximum length 32 characters) representing name host system uses to refer to the Archive Writer.
	Default: Spitfire
parameter ID 2	Host Internet address. ASCII character string (maximum length 128 characters) representing internet IP address of host named above.
	Default: 90.0.0.3 (This is not a valid default; set the Internet address as appropriate.)
parameter ID 3	Target Internet address. ASCII character string (maximum length 128 characters) representing Internet IP address of target named above.
	Default: 90.0.0.50 (This is not a valid default; set the Internet address as appropriate.)
parameter ID 5	Transaction Input Socket number. Four ASCII digits representing port number to use for socket used to input transaction definition packets to the Archive Writer.
	Default: 5001
parameter ID 6	Transaction Output Socket number. Four ASCII digits representing port number to use for socket used to accept transaction completion packets from the Archive Writer.
	Default: 5002

	parameter ID 7	FTP login. Character string representing login name to use when accessing the host for files.
		Default: Kodak
	parameter ID 8	FTP Password. Character string representing password to use when accessing the host for files.
		Default: Kodak
	parameter ID 9	Boot file name. Complete path and file name where Central Controller application resides on the host computer.
		Default: DAW4800/DAW4800.exe
	parameter ID 10	File Input Socket number. Four ASCII digits representing port number to use for socket used to implement file writes.
		Default: 5003
	parameter ID 11	File Output Socket number. Four ASCII digits representing port number to use for socket used to implement file reads.
		Default: 5004

Get network specification

Command ID	44	
Allowed error states	critical, correctable, warning	
Allowed offline	yes	
Description	Values are returned for each field described in Set network specification.	

Set next transaction number

Command ID	45	
Allowed error states	critical, correctable, warning	
Allowed offline	yes	
Description		
parameter ID 0	ASCII character string, any value between 1 and 255.	
	Default: 1 (indicates original setting target used for transaction number)	

Get next transaction number

Command ID	46	
Allowed error states	critical, correctable, warning	
Allowed offline	yes	
Description	Value is returned for the field described in Set next transaction number.	

Set language file command

Command ID	53
Allowed error states	critical, correctable, warning
Allowed offline	no
Description	Informs the Archive Writer that a new language file has been copied to the Writer and specifies its name.
parameter ID 0	ASCII character representing the language files to be loaded, the following languages have been defined:

0 = English
1 = French
2 = German

Get writer error state

Command ID	54
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to retrieve the system error state.
	Response message is interpreted as follows:
parameter ID 0	Not set by host.

1 = warning of an abnormal situation and may be ignored

2 = correctable error, but corrective action must be taken before many commands can be executed

4 = critical error; no further recovery is possible without powering down the Archive Writer

NOTE: The status file contents may indicate more than one error state. For example, 3, 6 and 7 are also valid error states that indicate combinations of the above situations.

Restart writer

Command ID	55
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to start the Writer recognizing transactions again after a critical or correctable error.

Set power down interval

Command ID	56
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to set the interval of system activity after which the Archive Writer automatically powers itself down.
parameter ID 0	An ASCII character string representing the interval in minutes of inactivity before the system automatically powers itself down.
	Range: 10 to 999 (An interval of 0 disables auto-power down.) Minimum auto-power downtime is 10 minutes.
	Default: 0

Get power down interval

Command ID	57
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to get the interval of system activity after which the Archive Writer automatically powers itself down.
	Value is returned for the field described in Set power down interval.

Flush writer

Command ID	58
Allowed error states	critical, correctable, warning
Allowed offline	yes
Description	Used to remove all files from the disk, except for the current command and semaphore files.

Set interdocument gap

Command ID	59
Allowed error states	correctable, warning
Allowed offline	no
Description	
parameter ID 0	Minimum interdocument gap size in millimeters. The gap size is expressed as a real number (usually to one decimal place).

Get interdocument gap

Command ID	60
Allowed error states	correctable, warning
Allowed offline	no
Description	
parameter ID 0	Minimum interdocument gap size in millimeters. The gap size is expressed as a real number (usually to one decimal place).

4   Error Handling

This chapter describes how the Archive Writer handles errors.

Types of errors

The Writer recognizes and handles three types of errors:

- **Critical** — an error which leaves the system useless, corrupted, or in a permanent error state. Examples of this type of error:

  ◊ Hardware errors

  ◊ Hardware status indicating a hardware failure for a device being used

- **Correctable/Recoverable** — an error in which recovery is possible via the operator interface or host interface. The Writer will stop when a recoverable error is encountered and will wait for further directions from the host or operator interface. Examples of correctable errors are:

  ◊ Invalid command or image input

  ◊ Any condition for which operator correction is feasible or operator acknowledgment is required

- **Warning** — an error which a warning message will suffice. The Writer will issue the warning and continue processing. An example of a warning condition is:

  ◊ Low battery warning

Determining error type

The same condition could be considered critical, correctable, or a warning depending on the context in which it occurs. The determining factor will be whether the item in question is installed/available, and used or not used. For example, if a hardware option is installed, but not configured for use and it is determined there is something wrong with it, it is reported as a warning. Conversely, if it is installed and configured for use, but not working, it is flagged as critical.

Error handler operation

The error handler responds according to the type of error.

Critical errors

When a critical error occurs, the error handler will:

1. Display and/or inform the host of the error.
2. Bring the system to a safe, or known, state.
3. Log the error in NVRAM.
4. Write the error to film with the next document if the error caused premature film stoppage.

Correctable/recoverable errors

When a correctable error occurs, the error handler will:

1. Display and/or inform the host of the error.
2. Log the error in NVRAM.
3. Suspend operation until the correctable error is corrected/acknowledged.

Warning errors

When a warning condition occurs, the error handler will:

- Display and/or inform the host of the error.

No error recovery is required by either the error handler or the application reporting the warning.

Error reporting

The Archive Writer allows for errors to be reported to the status monitor port, host, and operator interface. Errors are reported as described below.

Operator interface

The error output consists of:

- An error number (e.g., E445:254, where 445 indicates the error being reported and 254 indicates the specific location in firmware that detected the error).
- Date/time
- Error message

Errors are reported to the operator interface as they occur. Since the operator interface display is limited in the number of error messages that can be displayed simultaneously, the Writer provides a method for scrolling through the error messages displayed to the OI. Additionally, functionality is provided through the OI to acknowledge errors displayed to the OI. Acknowledgment of errors on the OI removes the errors from the display, but does not necessarily clear the situation.

Error log

The Writer maintains an internal error log. The error log records all critical and correctable errors and warnings.

The error log records the error number, specific location error number (e.g., E445:254), and the time and date the error occurred. For errors that occur relative to processing a specific file, the file's name is recorded with the error.

The error log contains a maximum of 200 entries. For overflow conditions, the error log wraps, overwriting previous errors (starting with the oldest).

Archive Writer errors

The listing below defines Archive Writer error numbers with an explanation of what each error signifies. In some cases, actions are listed to correct the problem. If an action is not associated with a particular error number that you receive, call your Service Representative.

Code	Description	Action
103	The cassette access door was closed.	
200	The film remaining in the upper cassette is equal to or less than 3 feet (0.9 m).	Place a new roll of film in the cassette.
201	The film remaining in the upper cassette is equal to or less than 10 feet (3 m).	Place a new roll of film in the cassette.
202	The film remaining in the upper cassette is equal to or less than 15 feet (3 m).	Place a new roll of film in the cassette.
203	The film drive servo reported a loss of motion on the upper cassette's film encoder. Either the cassette is out of film or it is a legitimate hardware error.	Place a new roll of film in the cassette.
204	The film drive servo reported a loss of motion on the lower cassette's film encoder. Either the cassette is out of film or it is a legitimate hardware error.	Place a new roll of film in the cassette.
205	The film remaining in the upper cassette is equal to or less than 5 feet (1.5 m).	Place a new roll of film in the cassette.
206	The film remaining in the lower cassette is equal to or less than 5 feet (1.5 m).	Place a new roll of film in the cassette.
207	The battery in the upper cassette is low.	Replace the battery.
208	The battery in the lower cassette is low.	Replace the battery.
209	The battery in the upper cassette is dead or there is a hardware problem.	Replace the battery. If the problem persists, call your Service Representative.
210	The battery in the lower cassette is dead or there is a hardware problem.	Replace the battery. If the problem persists, call your Service Representative.

Code	Description	Action
211	The cassette access door was opened.	Close the door.
212	The upper cassette was inserted improperly.	Turn the cassette over.
213	The lower cassette was inserted improperly.	Turn the cassette over.
214	Configuring the number of cassettes required with an invalid number.	Consult the manual for proper command format.
215	Configuring the fixed length advance with an invalid length.	Consult the manual for proper command format.
216	Command Processor: error in message data invalid data was passed with a command.	Resend the message with valid data.
217	Command Processor: invalid command received	Send a valid command.
218	Unknown film drive request.	Consult the manual for proper command format.
219	Advancing film or setting the Leader Length with an invalid amount.	Consult the manual for proper command format.
220	Setting the Tension Length with an invalid amount.	Consult the manual for proper command format.
221	The film amounts between the upper and lower cassettes differ by more than 6 feet (18 m).	Remove the cassette with the smaller amount and advance a leader on the other cassette, or ignore the error.
222	The upper and lower cassettes' image addresses differ.	Reset the image address.
223	The upper and lower cassettes' roll numbers differ.	Reset the roll number.
224	The upper cassette is on side 1 and lower cassette is on side 2.	Insert two identical cassettes.
225	The upper cassette is on side 2 and lower cassette is on side 1.	Insert two identical cassettes
228	The system is configured for 2 cassettes and the upper cassette is not present or the system is configured for one cassette and both cassettes are not present.	Insert a cassette into the transport.
229	The system is configured for 2 cassettes and the lower cassette is not present or the system is configured for one cassette and both cassettes are not present.	Insert a cassette into the transport.
230	WRIB error: PM2 K value too big.	Reformat image for a smaller K value and resend the image.

Code	Description	Action
231	WRIB error: Cannot process tiled images.	Reformat image in strips instead of tiled, and then resend the image.
232	WRIB error: Cannot process group 4 multi-strip images.	Reformat image for group 4 single strip and resend the image.
233	An invalid roll number was entered. Either it was non-numeric or too long.	Enter a valid roll number.
234	An invalid job number was entered. Either it was non-numeric or too long.	Enter a valid job number.
236	The Writer cannot open one of the files on its RAM disk.	Verify the image is valid and conforms to the TIFF specification.
237	Usually caused by an invalid tag in the TIFF header.	Verify the image is valid and conforms to the TIFF specification.
238	Image Composition invalid image X, Y origin.	Resend the image with valid data.
239	Image Composition invalid image scaling.	Resend the image with valid data.
240	Image Composition scaled image too long.	Rescale image to fit in the available space and resend the image.
241	Image Composition scaled image is too wide for frame.	Rescale image to fit in the available space and resend the image.
242	Image Composition: invalid image frame limits.	Resend the image with valid data.
243	Image Composition: invalid image orientation.	Resend the image with valid data.
244	Image Composition: invalid image polarity.	Resend the image with valid data.
245	Image Composition: invalid image resolution.	Resend the image with valid data.
246	Image Composition: invalid image scaling factor.	Resend the image with valid data.
250	Cannot open the host application interface manager's command file that they wrote.	Make sure that the command file created is readable by the target system.
251	Command ID for a command is not one of the support command IDs.	Consult the manual.
252	Parameters not valid for a command (e.g., wrong parameter IDs).	Consult the manual for proper parameter format.
253	No command ID contained in the command file.	Consult the manual for proper command file format
255	Invalid image address format.	Restart the job. If the problem persists, call the host software provider.
256	Invalid image address data.	Restart the job. If the problem persists, call the host software provider.

Code	Description	Action
257	Address field overflow.	Restart the job. If the problem persists, call the host software provider.
258	Address field too wide.	Restart the job. If the problem persists, call the host software provider.
259	Image address length too long.	Restart the job. If the problem persists, call the host software provider.
260	Incompatible image address format.	Restart the job. If the problem persists, call the host software provider.
261	Invalid number of address fields.	Restart the job. If the problem persists, call the host software provider.
262	The Archive Writer was unable to read the language file	Restart the job. If the problem persists, call the host software provider.
263	The requested power down interval was invalid.	Enter a valid interval.
264	The time parameter entered was in an incompatible format.	Place data into proper format and resend.
265	The date parameter entered was in an incompatible format.	Place data into proper format and resend.
266	The Writer received a command while it was offline that is not allowed off line.	Put the Archive Writer on-line.
267	A command was received after the Archive Writer reported a critical error but before the error was corrected.	Clear the critical error.
268	A command was received after the Archive Writer reported a correctable error but before the error was corrected	Clear the correctable error.
269	A command was received after the Archive Writer reported a warning but before the warning was corrected.	Clear the warning error.
270	No image file was specified with the print image command.	Specify an image file with the print image command.
271	The image log file is at its maximum size.	Rename the log file and remove the old log file.

Code	Description	Action
272	Couldn't add a host to the existing host table. Error reported from the Set Network Specification command	Check the command file being used for Set Network Specification and make sure it contains a valid host name.
273	A cassette is inserted in the upper film bay of the Archive Writer that has not been previously used in an Archive Writer. It is possible that the cassette is an IL30/70 cassette.	Verify that the cassette inserted in the upper film bay is the proper cassette, or verify that DAW film is in the upper cassette.
274	A cassette is inserted in the lower film bay of the Archive Writer that has not been previously used in an Archive Writer. It is possible that the cassette is an IL30/70 cassette.	Verify that the cassette inserted in the lower film bay is the proper cassette, or verify that DAW film is in the lower cassette.
276	The host is attempting to print a job with IMC enabled before sending the Archive Writer the IMC parameters and `Make IMC' command.	Command the Archive Writer to write IMC via the host application.
277	An invalid film format was received from the host. Simplex or duplex should be specified.	Restart the job. If the problem persists, contact the host software provider.
278	An invalid scaling value was received from the host.	Restart the job. If the problem persists, contact the host software provider.
279	An invalid image origin was received from the host.	Restart the job. If the problem persists, contact the host software provider.
280	An attempt to set the image level to an invalid value occurred.	Enter a value between 0 and x. Where x is the number of image levels used.
290	Failed to receive data packet before watchdog timed-out.	Restart the host application and retry.
298	Approaching the end of a roll of film.	Perform end-of-roll processing. Place a new roll of film in the cassette.
299	Approaching the end of a roll of film.	Perform end-of-roll processing. Place a new roll of film in the cassette.
300	Command Decoder: command being over-written.	Call service.
301	Command Processor: initialization error.	Call service.
302	Command Processor: error getting message from QUEUE.	Call service.
303	Timeout occurred waiting for message from QUEUE.	Call service.
304	Unknown return code received for messageGet.	Call service.

Code	Description	Action
305	Command Processor: command function not initialized.	Call service.
306	Command Processor: error checking function not initialized.	Call service.
307	Index is not within the list of functions.	Call service.
308	Command parameter length exceeds CD message size.	Call service.
309	Initializing a film drive message with data longer than the buffer size.	Call service.
310	Cassette data semaphoreTake failed.	Call service.
311	Cassette data semaphoreGive failed.	Call service.
312	Cassette index is out of range.	Call service.
313	Cassette status semaphoreTake failed.	Call service.
314	Cassette status semaphoreGive failed.	Call service.
315	Cassette index out of range.	Critical error shutdown.
316	Error sending to message QUEUE.	Call service.
317	Film Drive Command Processor Task initialization Error	Call service.
318	Film Drive Command Processor error getting message from QUEUE.	Call service.
319	Command response timer timed-out.	Call service.
320	Film Drive Command Processor is in an illegal state.	Reissue the command. If the problem persists, call service.
322	An internal message queue contained an invalid return code	Call service.
323	Application Message Queue messageGet returned an invalid status.	Call service.
324	No room in the queue for the current commands response parameters (command ID; requesters ID; response required; and response timeout).	Call service.
325	The command terminator received does not match one of the valid commands in the film drive.	Call service.
326	The film drive servo sent a message longer than the embedded controllers receive buffer.	Call service.
327	Embedded Controller error reading a character from the serial port.	Call service.
328	Film Drive Response Handler task reported an error sending a message to a message queue.	Call service.

Code	Description	Action
329	WRIB error: DOS reserve failed.	Call service.
330	WRIB error: DOS release failed.	Call service
331	WRIB error: DOS file read error.	Call service
332	WRIB error: Unknown semaphore unblock reason.	Call service
333	WRIB error: memory semaphore take.	Call service
334	WRIB error: memory semaphore give.	Call service
335	WRIB error: RAM memory malloc failure.	Call service
336	WRIB frame failure: maximum images per frame exceeded.	Call service
337	WRIB error: memory malloc failure.	Call service.
338	WRIB memory warning: frame to delete not found.	Call service.
339	Image Output message queue length too small.	Call service.
341	Image Output log open failure, file could not be opened.	Call service.
342	Image Output log close failure, file could not be closed.	Call service.
343	Image Output log write failure, write error.	Call service.
344	Image Output initialization error.	Call service.
345	Image Output message queue send error.	Call service.
346	Image Output message queue receive error.	Call service.
347	Image Output message queue timeout error.	Call service.
348	Image Output invalid message queue return value.	Call service.
353	Image Output frame image address string is too long.	Call service.
354	Image Output frame image filename string is too long.	Call service.
355	Image Output frame contains too many image files.	Call service.
356	Image Output invalid frame message index.	Call service.
357	An error occurred while trying to allocate internal memory.	Call service.
358	Internal function cannot reserve the RAM disk.	Call service.
359	Image Composition message queue send error.	Call service.
360	Image Composition initialization failure.	Call service.
361	Image Composition message queue receive error.	Call service.
362	Image Composition message queue time-out error.	Call service.

Code	Description	Action
363	Image Composition invalid message queue return code.	Call service.
364	Image Composition unknown message command.	Call service.
365	Image Composition message queue length too small.	Call service.
366	Image Composition unknown image scaling type.	Call service.
367	Image Composition overlapping images in frame.	Call service.
368	Image Composition DOS reserve failed.	Call service.
369	Image Composition DOS release failed.	Call service.
370	Image Composition image file delete error.	Call service.
372	Image Composition too many images in the frame.	Call service.
373	Image Composition trying to insert too many images into frame.	Call service.
374	Image composition invalid blip type.	Call service.
375	Image Composition memory allocation error.	Call service.
376	Image Composition invalid blip index level.	Call service.
379	Host application interface manager received a response from the Archive Writer system when a command was not being processed.	Call service.
380	Host application interface manager error in receiving message from queue.	Call service.
381	Host application interface manager error is not receiving response from Archive Writer system to a command within a specified period of time.	Call service.
382	Host application interface manager unknown status in receiving from message queue.	Call service.
383	Can't create the sem; image; cmd; stat; and/or resp directories.	Call service.
384	Can't create the DOS file system.	Call service.
386	Can't reserve the DOS file system; can't take semaphore protecting the file system.	Call service.
387	Can't release the DOS file system; can't give semaphore protecting the file system.	Call service.
388	Invalid instruction reported from SCSI I/O controller.	Call service.

Code	Description	Action
389	Internal programming error; could not determine what instruction the SCSI I/O controller should execute next.	Call service.
390	SCSI target driver error in receiving message from queue.	Call service.
391	Internal programming error; determined that an instruction for the SCSI I/O controller to execute is not a valid instruction.	Call service.
392	Invalid SCSI I/O Processor instruction reported from the I/O processor.	Call service.
394	Error handler index out of range.	Call service.
396	Cannot process negative index.	Call service.
397	Error entering IA critical region.	Call service.
398	Error exiting IA critical region.	Call service.
399	Unable to allocate memory for IA field.	Call service.
403	Error sending to message QUEUE.	Call service.
404	Messaged data is longer than the message buffer size.	Call service.
406	.	Call service.
414	A failure occurred while creating the annotation frame.	Call service.
415	Error sending message to queue.	Call service.
417	Window index is larger than the number of declared windows.	Call service.
418	Key state received is larger than the number of declared states.	Call service.
419	Key index received is larger that the number of declared keys.	Call service.
420	OI message processor initialization error.	Call service.
421	OI message processor error getting message from queue.	Call service.
422	OI message processor timeout occurred waiting for message from queue.	Call service.
423	OI message processor unknown return code received from messageGet.	Call service.
424	UI send: error getting message from queue.	Call service.

Code	Description	Action
425	UI send: timeout occurred waiting for message from queue.	Call service.
426	UI send: unknown return code received from messageGet.	Call service.
427	UI send: timeout waiting for command response from the UI.	Call service.
428	Error sending message to queue.	Call service.
429	Receive task initialization error.	Call service.
430	Embedded controller error reading the UI serial port.	Call service.
431	Receive unknown key code from the user interface.	Call service.
432	Parameter data not found in the message received.	Call service.
433	Parameter data not found in the message received.	Call service.
434	Parameter data not found in the message received.	Call service.
435	Parameter data not found in the message received.	Call service.
436	Parameter data not found in the message received.	Call service.
437	Parameter data not found in the message received.	Call service.
438	Error log memory malloc failed.	Call service.
440	Image output could not append to the image log file.	Call service.
441	A failure occurred while initializing the system.	Call service.
442	A failure occurred while releasing the internal configuration file.	Call service.
443	A failure occurred while reserving the internal configuration file.	Call service.
444	A failure occurred while setting an internal environment variable.	Call service.
445	An invalid parameter was received by the WRIB.	Call service.
449	The image parameter data structure could not be created.	Call service.
450	The image parameter data field could not be created	Call service.
451	Unable to give semaphore to indicate system activity.	Call service.
452	Couldn't add a gateway to the gateway table that exists in the gateway destination list.	Call service.

Code	Description	Action
453	Failure of nfsdInit within NetworkInitializationManager.	Call service.
454	Failure of nfsExport within NetworkInitializationManager.	Call service.
455	The embedded firmware could not read/set the system clock. An error was returned from one of the system time/date routines.	Call service.
456	The embedded firmware could not read/set the system clock. An error was returned from one of the system time/date routines.	Call service.
457	The embedded firmware could not read/set the system clock. An error was returned from one of the system time/date routines.	Call service.
458	The embedded firmware could not read/set the system clock. An error was returned from one of the system time/date routines.	Call service.
459	Diagnostic serial port read error.	
460	LT MP initialization error	
461	LT MP MSGQ receive error.	
462	MP invalid MSGQ return code.	
463	LT APP data receive error.	
464	LT APP data invalid MSGQ return code.	
465	LT MP unknown SCC request.	
466	LT MSGQ send error.	
467	LT MP CMD TIME OUT.	
468	LT MP unknown MSG 55 prog num.	
469	LT MP unknown MSG 52 data type.	
470	Unable to take AIM semaphore.	Call service.
471	Unable to release AIM semaphore.	Call service.
472	Writer is expecting a priority transaction and host sent normal transaction.	Initiate host error recovery.
473	The host tried to initiate a command using a transaction number of a currently active transaction.	Call service.
474	Writer lost communication with host.	Re-establish communications with host.
475	Failure to add gateway to gateway table.	Call service.
476	Failure to create socket.	Call service.

Code	Description	Action
477	Failure to accept connection on the input or output socket.	Call service.
478	Failure to read from the input socket.	Call service.
479	Failure to write to the output socket.	Call service.
480	Too many image FDS.	
481	Cannot transfer file.	Restart the host application and retry.
700	WRIB PM2 unexpected status.	Call service.
701	WRIB unexpected Image Decompression Done.	Call service.
702	WRIB unknown interrupt.	Call service.
703	WRIB unexpected Image Print Error.	Call service.
704	WRIB unexpected input FIFO half full.	Call service.
705	WRIB download found no images in frame.	Call service.
706	WRIB download failure: memory full.	Call service.
707	WRIB download failure: frame dimensions outside limits.	Call service.
708	WRIB error: invalid memory result.	Call service.
709	WRIB error: unknown download status change.	Call service.
710	WRIB download failure: image download timeout.	Call service.
711	WRIB download failure: image decompression timeout.	Call service.
712	WRIB download failure: image decompression failure.	Call service.
713	WRIB download failure: FIFO full timeout.	Call service.
714	WRIB download failure: PM2 status error.	Call service.
715	WRIB error: decompress exception.	Call service.
716	WRIB error: FIFO exception.	Call service.
717	WRIB error: retry error.	Call service.
718	WRIB error: frame output unknown status change.	Call service.
719	Image Output failure: frame printing timeout.	Call service.
720	Image Output failure: WRIB print error.	Call service.
721	Invalid film remaining parameter value.	
722	The annotation string was too long and will be truncated.	

Code	Description	Action
901	1700 board hardware motor failure. The error is reported if any of the motor voltage, current, or speed signals is active (logic 0).	Call service.
902	Unknown or unimplemented command received by film drive servo from the embedded controller.	Call service.
903	1700 board hardware failure.	Call service.
904	1700 board hardware failure.	Call service.
905	1700 board hardware failure.	Call service.
906	1700 board hardware failure.	Call service.
907	1700 board hardware failure.	Call service.
908	1700 board hardware failure.	Call service.
909	1700 board hardware failure.	Call service.
910	1700 board hardware failure.	Call service.
911	The 1700 pcb's dip switch pack S2 switch 1 was moved to the on position.	Call service and/or turn the switch off.
912	1700 board hardware failure.	Call service.
913	1700 board hardware failure.	Call service.
914	1700 board hardware failure.	Call service.
915	The shutter did not open within the specified time interval.	Call service.
916	The shutter did not close within the specified time interval.	Call service.
917	Unexpected change in the shutter position.	Call service.
918	An invalid motor speed setting was sent to the film drive servo.	Call service.
919	A cassette reported an error with the data sent by the film drive servo. The problem could be caused by a weak battery in the cassette or a dirty IR transmitter or receiver.	Replace the cassette's battery. If the problem persists, call service.
920	Either the reset button was pressed or the film drive servo reset due to loss of power or a hardware error.	Call service.
921	1700 board hardware/software error.	Call service.
922	Cannot close command file.	Call service.
923	Cannot write status file.	Call service.
924	Cannot write response to a file.	Call service
925	Cannot delete command file.	Call service.
927	Invalid status reported from SCSI I/O controller.	Call service.

Code	Description	Action
928	Unknown status reported from SCSI I/O controller.	Call service.
929	Invalid status reported from SCSI I/O controller.	Call service.
930	Error retrieving message from AIM message queue.	Call service.
931	Error sending message to AIM message queue.	Call service.
933	Aimwd cannot start watchdog.	Call service.
934	Aimwd cannot stop watchdog.	Call service.
935	Aimwd Reservation failed.	Call service.
936	Aimwd Release failed.	Call service.
937	Aimwd cannot give timeout semaphore.	Call service.
938	FTP Buffer malloc failed.	Call service.
938	FTP connection failed.	Call service.
940	FTP Data malloc failed.	Call service.
941	FTP transfer failed.	Call service.
942	FTP local file create failed.	Call service.
943	Cannot create FT Daemon.	Reboot the Archive Writer. If the problem persists, call service.
944	Cannot delete FT Daemon.	Reboot the Archive Writer. If the problem persists, call service.
945	Cannot create FT watchdog.	Reboot the Archive Writer. If the problem persists, call service.
946	Cannot delete FT watchdog.	Reboot the Archive Writer. If the problem persists, call service.
947	FT Cannot close file.	Reboot the Archive Writer. If the problem persists, call service.
948	FT Cannot delete file.	Reboot the Archive Writer. If the problem persists, call service.
949	FT Cannot start transfer timer.	Reboot the Archive Writer. If the problem persists, call service.
950	FT Cannot stop transfer timer.	Reboot the Archive Writer. If the problem persists, call service.

Appendix A   Operator Interface

NOTE: For more information on the use of the Operator Interface, refer to the *Kodak Digital Science* Document Archive Writer User's Guide (A-61038).

The Operator Interface (OI) is a simple user interface to the Archive Writer that can do the following:

- Indicate that the device is busy (image in Writer) or idle

- Display warning and error messages

- Allow clearing/acknowledgment of warnings and errors

- Provide ability to make a film leader

- Display film remaining

- Provide for performing a film advance

- Provide for performing a run-to-end

- Provide audible and visual alarms

- Provide the ability to take the Writer offline or put it online

- Provide the ability to power the Writer on and off

Online/offline modes

The *Kodak Digital Science* Document Archive Writer is a digital imaging system peripheral capable of receiving digital image files in TIFF format, then writing those images onto *Kodak* Archive Storage Media using an Archive Writer Cassette, Model 66. The images on Archive Storage Media appear as normal microfilm images, complete with image level marks and item addresses.

The Writer is equipped with online and offline modes to prevent operator interference when the Writer is processing images. The mode is set at the Operator Display Panel; the default upon power-up is online.

If you want to advance film or perform other offline functions, press the online/offline button on the Display Panel to take the Writer offline.

Once offline, the Writer does not respond to the host, and the host is informed of the offline status. In offline mode, the Display Panel displays more keys, offering more functionality. When online, fewer keys are displayed because the work is being performed automatically.

Press the online/offline button again to bring the Writer back online.

Warning and error messages

Warning and error messages are indicated on the Operator Interface; they will display the specific error number(s) along with local language text for each error.

Clearing of error and warning messages

The Operator Interface allows the clearing of error messages and warnings. This interface is restricted to erasing each error or warning message individually from the OI display; there is no mechanism via the OI for actually correcting the error. If the error condition persists, (not cleared through the host, or otherwise), then the error or warning message will reappear on the OI.

Film remaining

The Operator Interface displays the amount of film remaining when requested through the OI.

Appendix B   Archive Writer Cassette

The Archive Writer Cassette contains an intelligent microprocessor called the Film Information Cassette (FIC). The FIC holds information specific to the cassette such as the image address of the last image filmed on the cassette, cassette ID, and roll number.

The Writer has access to the Film Information Cassette through the film drive controller. The FIC display contains setup information regarding that cassette.

FIC — new roll of film

When a new roll of film is loaded into the Archive Writer, the contents of the FIC are cleared. This occurs automatically when you open the cassette. A cleared FIC displays alternating bars in the "Film Remaining" graphic.

When this FIC is inserted into the Writer, the film is automatically advanced the configured leader length (usually 3 to 6 feet).

FIC — partially exposed roll of film

A partially exposed FIC contains the image address of the last image exposed on the film contained in the cassette.

To maintain the correct image address (and image marking) sequence on that roll of film, the host should read the image address (IA) from the cassette (via a cassette data command to the Writer) for use in determining the IA for the job about to be initiated. To inform the Writer that it should use this IA, the host must send this image address back to the Writer as part of the set setup for the next image frame command.

Roll number and cassette ID

The roll number and cassette ID are stored in the FIC for information purposes only.

The FIC display indicates the cassette ID or roll number if they were set previously. The cassette ID is a unique way of identifying the cassette, if it is required.

The roll number is generally used for accounting purposes. Sometimes it is necessary to know the roll number when inserting a partially exposed roll of film.

Appendix C   Integrator's Capabilities

This appendix outlines the skills necessary to develop an application that integrates the *Kodak Digital Science* Document Archive. It is strongly recommend that an integrator read this and be sure they have the required skills before starting a project. A development effort that is undertaken by competent programmers who have read this guide and have these skills will run smoothly. A development effort that is undertaken by programmers that haven't read this guide and lack one or more of the required skills will be painful and protracted. While Kodak is happy to help with questions on integrating the Archive Writer, we cannot provide support for programming in general. Repeated calls for support on prerequisite skills will be chargeable.

Required skills

The integrator must be:

- Familiar with software development cycles and software engineering practices (i.e., waterfall lifecycle including requirements definition and detailed design, or an interactive development model; software configuration management, etc.)

- Experienced, competent programmers — equivalent to having a 2- or 4-year degree in Computer Science (Programming) and having developed business applications for Windows previously.

- Experienced with microfilmer applications including image addressing, blipping, and indexing.

If an integrator lacks the skills listed above they will compound their development problems by an order of magnitude.

Integrator support

Kodak can provide support for developers integrating the Digital Archive Writer to their applications. Support is available from 9:00 a.m. to 5:00 p.m. EST by calling (800) 3KODAK3. This support does not, however, extend to providing support on the knowledge base covered above. Integrators who do not have the competencies listed above are encouraged to either hire personnel with those skills or reconsider their development efforts.

The development process is often complex. The primary reason is that most developers must come up-to-speed on microfilm indexing and retrieval and the Archive Writer before being able to program without struggling.

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