



# TWAIN Data Source Specifications Programming Guide



S008983 Rev. A

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## 1 UPDATE HISTORY

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| Date        | Author         | Description                    |
|-------------|----------------|--------------------------------|
| Mar 10/2009 | Mihail Mikov   | Created                        |
| Nov 19/2009 | Roland Simonis | Final review; driver rev. 1.18 |

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## 2 INTRODUCTION

This document provides a complete description of the TWAIN Data Source (herein TDS) to support the BBH Ngenuity scanner.

### 2.1 DESCRIPTION

The BBH Ngenuity TDS implementation is designed to expose all necessary scanner functionality while adhering to the TWAIN 2.0 specification and achieving compatibility with all TWAIN compliant applications.

### 2.2 RELATED DOCUMENTS

TWAIN Specification, Version 2.0 as ratified by the TWAIN Working Group Committee as of February 2008

### 2.3 KEY FEATURES

- TWAIN 2.0
- A Programmatic TWAIN interface that provides all functions necessary to operate the Scanner without un-necessary user intervention for advanced TWAIN Applications
- Interactive Exception Handling using the scanner Control Panel keys, in GUI mode

### 2.4 TARGET PLATFORMS

Intel x86 based PC, 32 & 64-bit platforms

#### 2.4.1 Target O/S

Windows 2000 <sup>TM</sup>

Windows XP <sup>TM</sup> (32-bit only)

Windows Vista <sup>TM</sup> (32 and 64-bit)

#### 2.4.2 Minimum System Requirements

1.3GHz P4

512MB of RAM

#### 2.4.3 Peripheral Configurations

Ngenuity Scanner via USB 2.0. or SCSI.

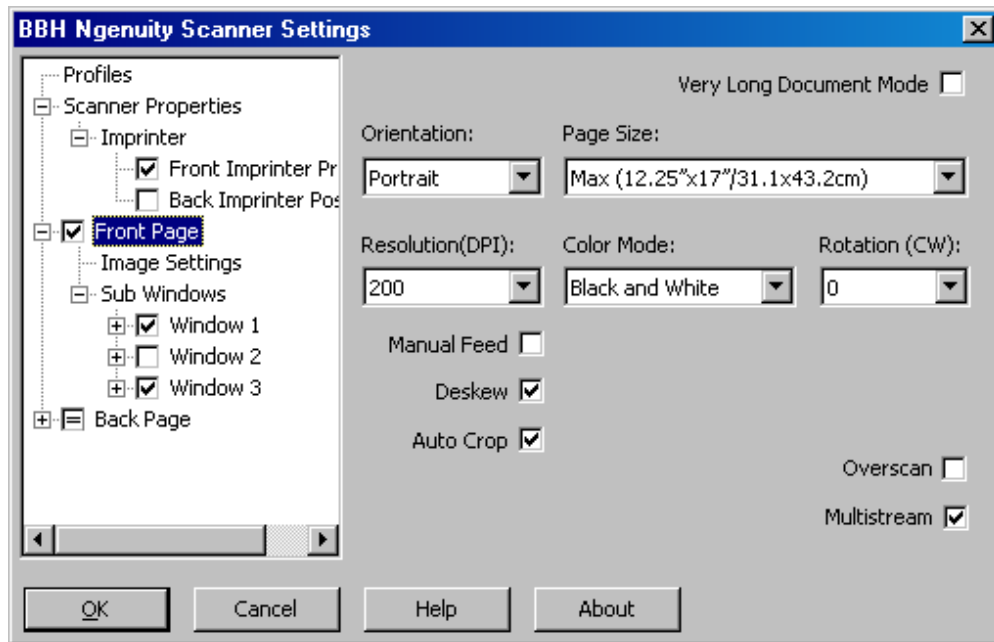
TDS uses BBH Ngenuity STI/WIA1.0 driver to communicate with the Scanner.

### 3 SOFTWARE FUNCTIONAL SPECIFICATION

This section contains a detailed description of the User Interface and TWAIN Programmatic interface for the Ngenuity Scanner TWAIN Data Source.

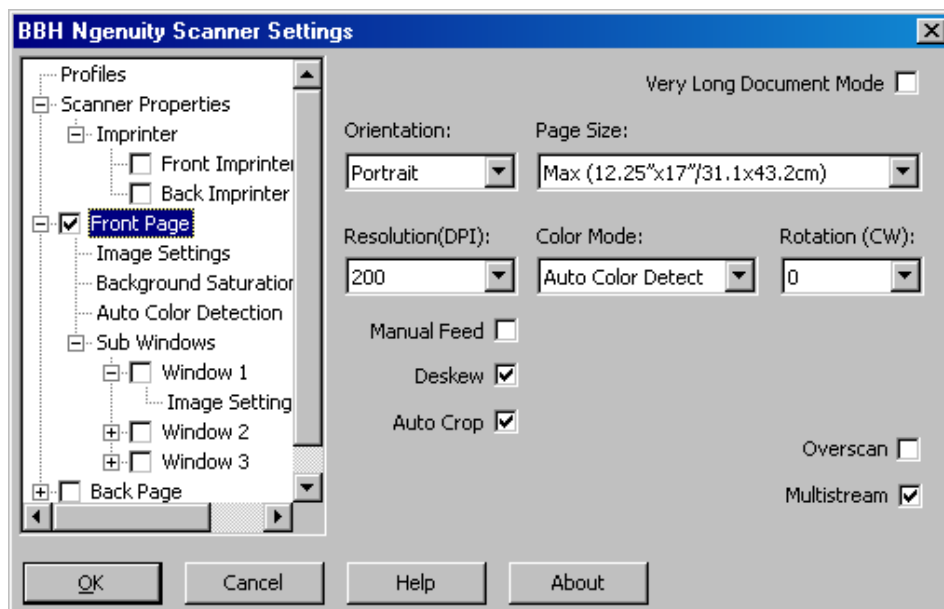
#### 3.1 USER INTERFACE

##### 3.1.1 Navigation tree



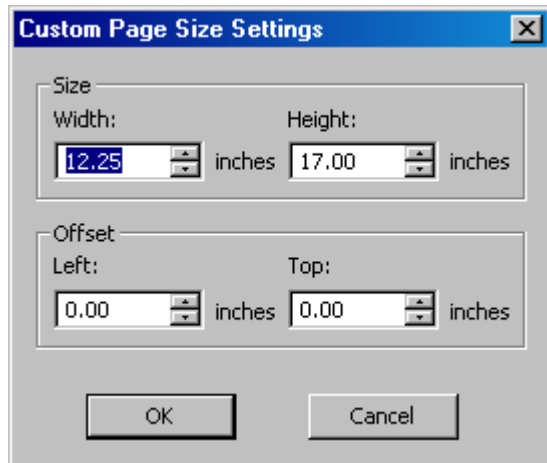
Equal sign means that Back Page will have the same settings as Front Page.

##### 3.1.2 Page settings



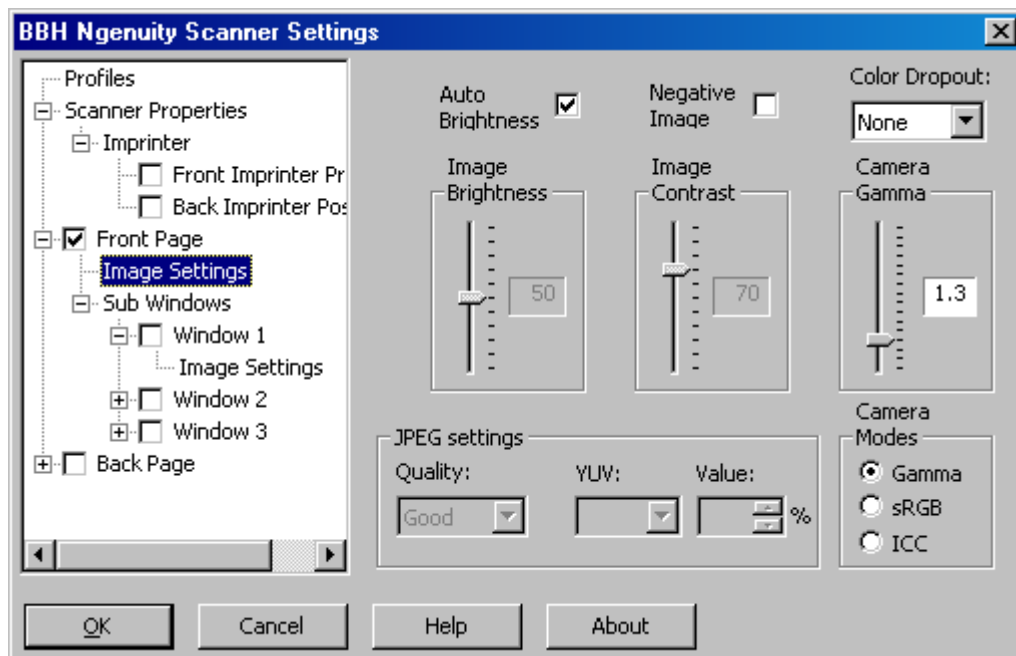
If the user selects Custom from Page size combo box then “Custom Page Size Settings” a dialog box will appear.

### 3.1.3 Custom Page Size Settings

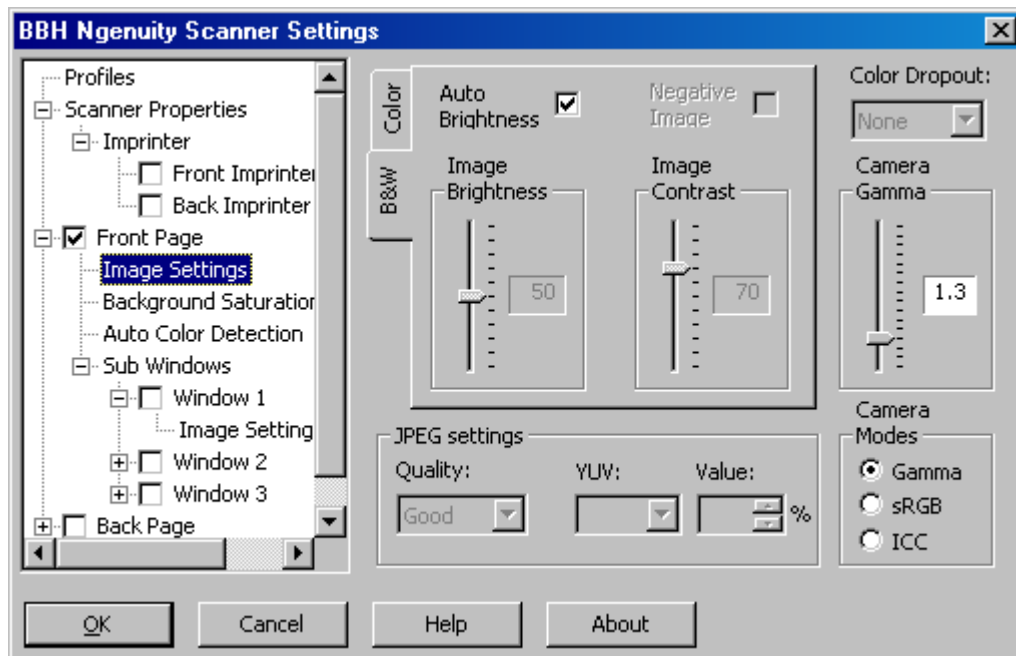


### 3.1.4 Image Settings

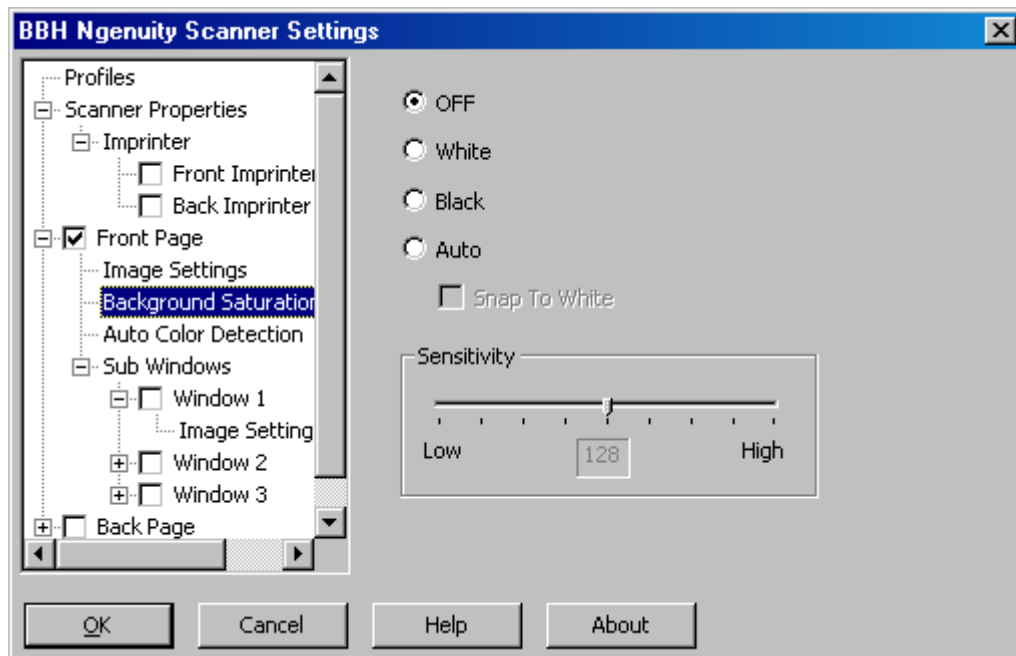
#### 3.1.4.1 Black and White, Grayscale and Color



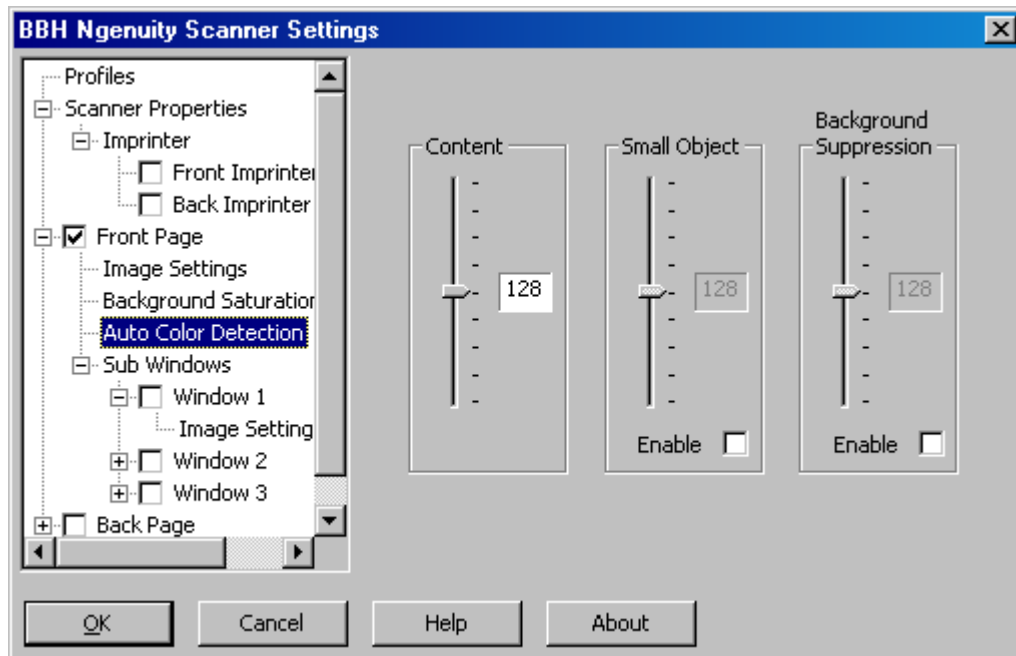
### 3.1.4.2 Auto Color Detect (ACD) mode



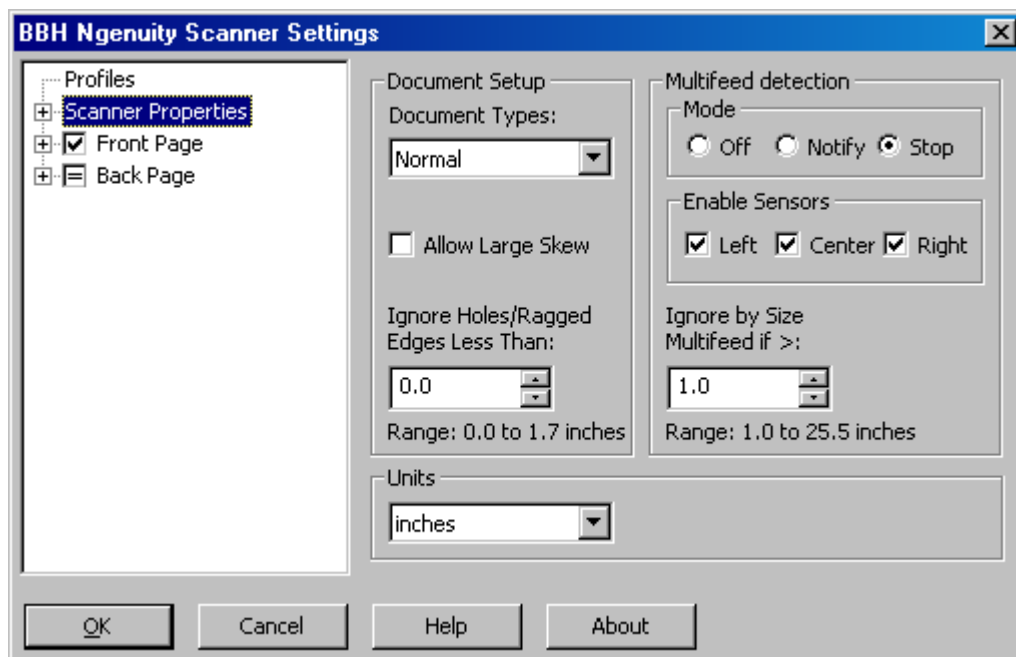
### 3.1.5 Color Background Saturation



### 3.1.6 Auto Color Detection

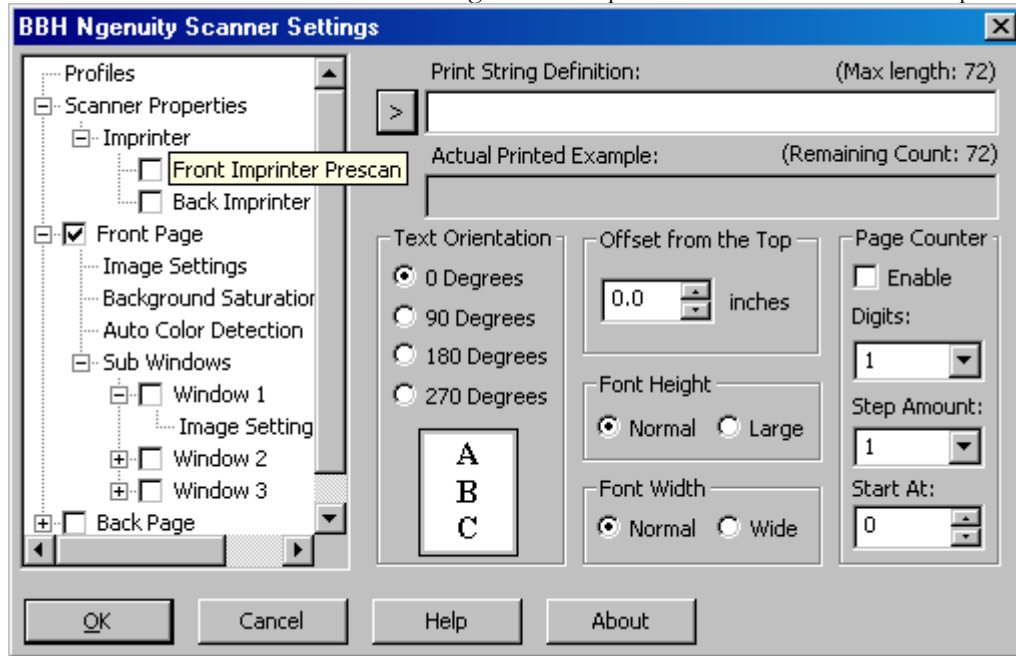


### 3.1.7 Scanner properties



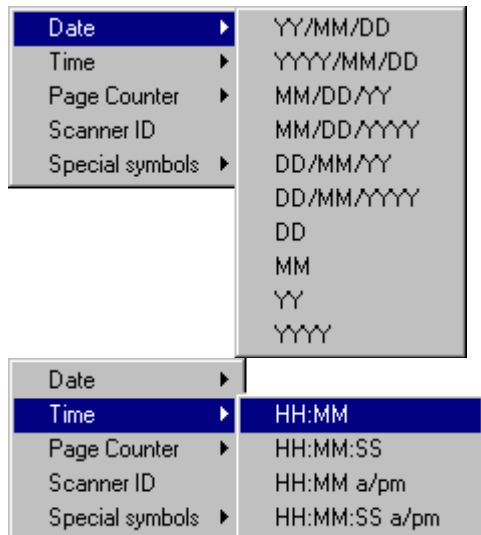
### 3.1.8 Imprinter Settings

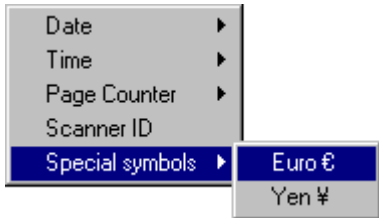
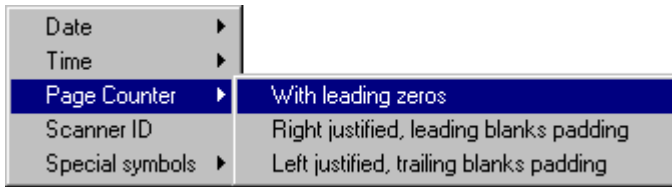
There are two similar windows for setting “Front Imprinter Prescan” and “Back Imprinter Postscan”



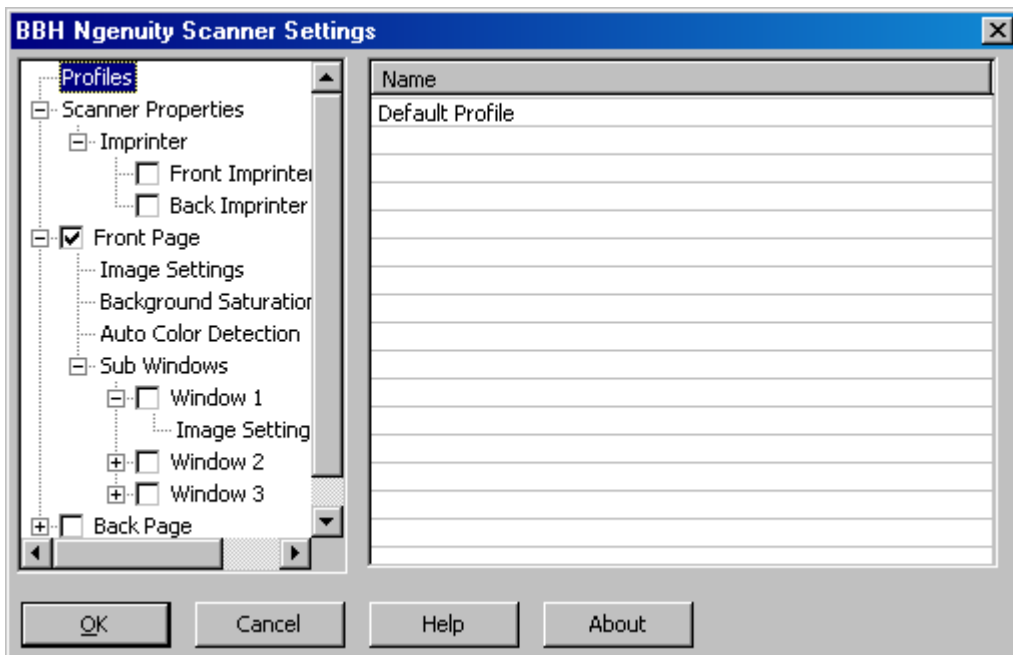
If user presses button “>” (Dynamic Content), floating menu will appear to insert dynamic content.

#### 3.1.8.1 Dynamic Content menu





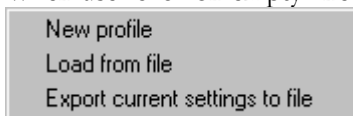
### 3.1.9 Profiles



Default Profile is always present and cannot be deleted or updated.  
If user presses right click, floating menu will appear to manage profiles.

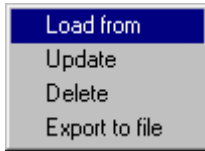
#### 3.1.9.1 Profile menus

When user click on empty line:



“New profile” will create new profile based on current settings.  
“Load from file” will load profile from external file.  
“Export current settings to file” will save current settings in an external file.

When user click on existing profile:



“Load from” will load the settings from selected profile.

“Update” will store current settings in selected profile.

“Delete” will delete selected profile.

“Export to file” will save selected profile in an external file.

### 3.2 INTERACTIVE EXCEPTION HANDLING

The scanner User Interface includes interactive handling of the most common scanner errors or conditions.

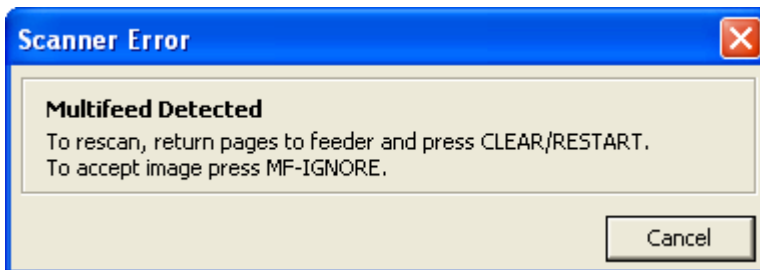
This is a productivity feature where, during Scan and upon detection of one of the following scanner exception, the TWAIN data source UI shows an interactive UI (see below).

This UI reports the scanner error and a short text description explaining the recovery steps.

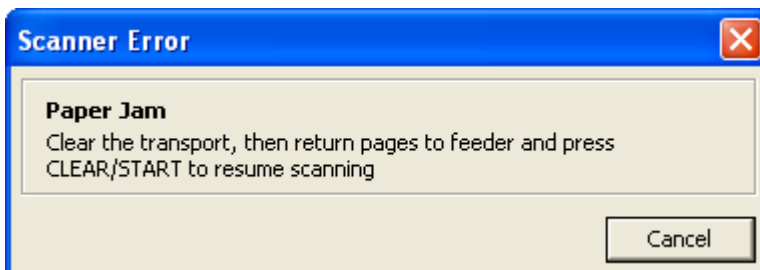
Following those instructions, the Scanner Operator (typically) uses the Scanner Control Panel to clear the exception and then the scanner automatically resumes scanning automatically.

The scanner control panel is located in front of the scanner device for easy operator access and quick recovery of those exceptions without going back to the Scan Application.

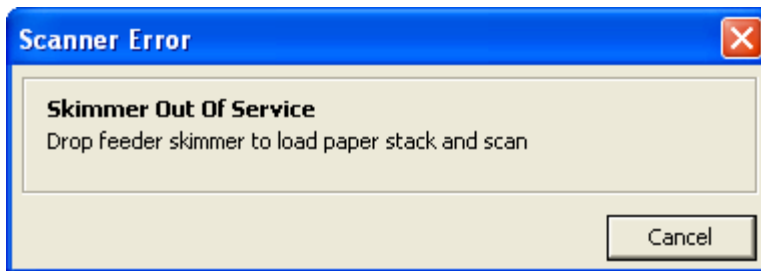
#### 3.2.1 Multifeed detected



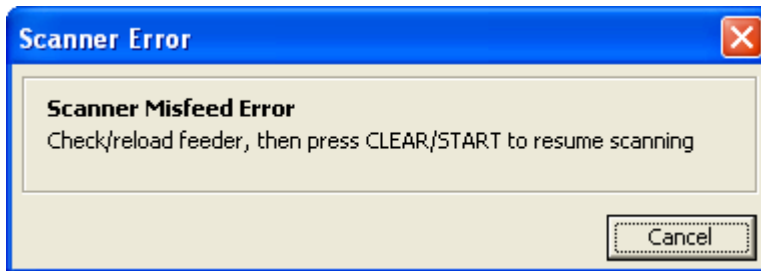
#### 3.2.2 Paper Jam



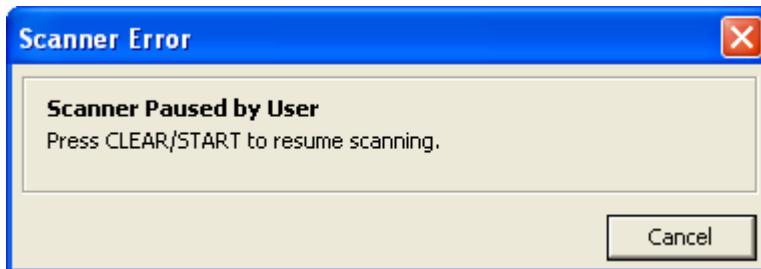
#### 3.2.3 Skimmer Out of Service



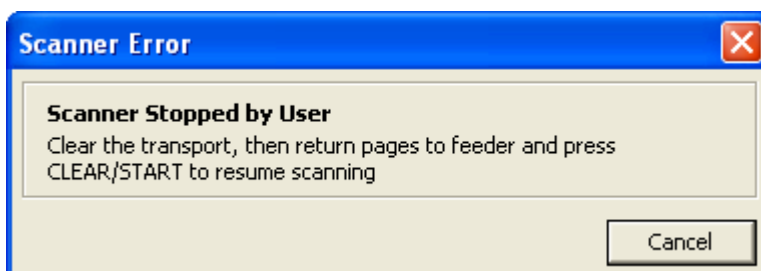
#### 3.2.4 Scanner Misfeed Error



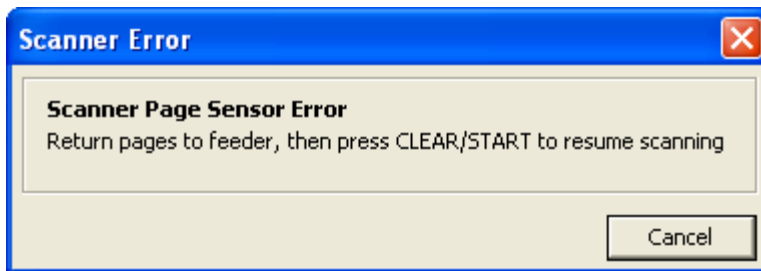
#### 3.2.5 Scanner Paused by User



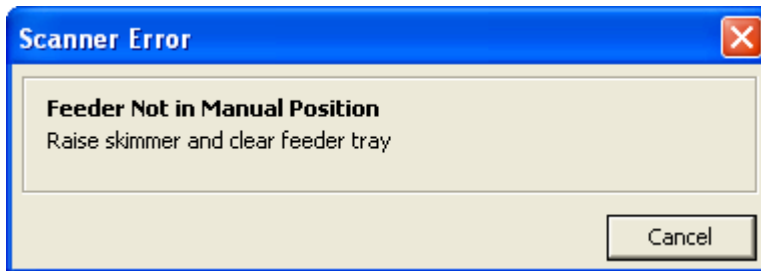
#### 3.2.6 Scanner Stopped by User



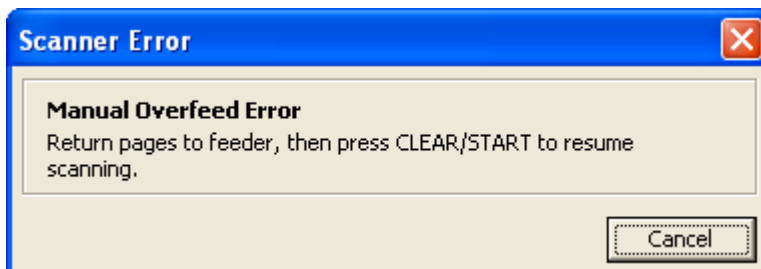
#### 3.2.7 Scanner Page Sensor Error



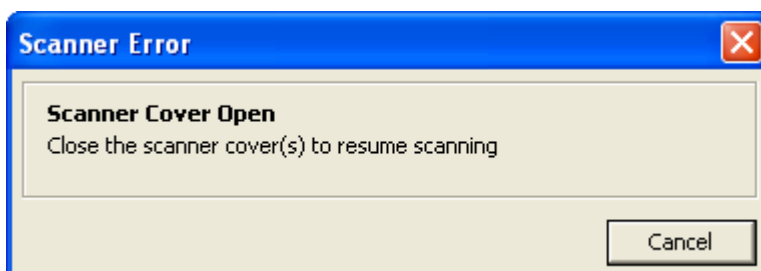
### 3.2.8 Feeder Not in Manual Position



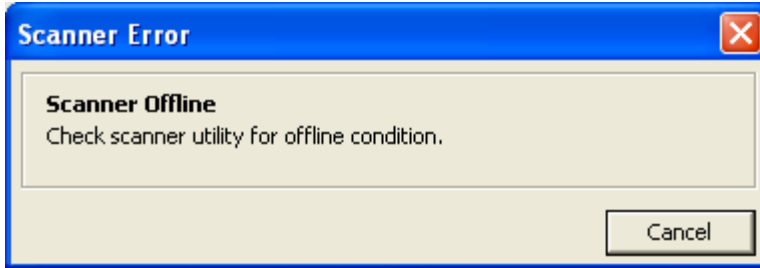
### 3.2.9 Manual Overfeed Error



### 3.2.10 Cover Open



### 3.2.11 Scanner Offline



### 3.3 HELP SYSTEM

Help files shown when clicking the Help button will be created at a later release date.  
(Note: help file to be in CHM or HTML format.)

### 3.4 MANDATORY TWAIN OPERATIONS

Mandatory Operations are those that are required to meet TWAIN Protocol Version 2.0 compliance as dictated by the published TWAIN Specification Version 2.0.

Please see the TWAIN Specification for further detail about these operations and their behavior.

#### 3.4.1 DG\_CONTROL / DAT\_IDENTITY

Supported Messages, MSG\_GET (state 3-7), MSG\_OPENDS (state 3), MSG\_CLOSEDS (state 4)  
TW\_IDENTITY structure shall be filled out as follows:

ProtocolMajor = 2

ProtocolMinor = 0

SupportedGroups = DG\_CONTROL|DG\_IMAGE|DF\_DS2

Manufacturer = "Böwe Bell + Howell"

ProductFamily = "Ngenuity"

ProductName = "Model Name goes here"

Ex. "Ngenuity 9125DC"

TW\_VERSION substructure shall be filled out as follows:

MajorNum = 1

MinorNum = 0

Language = TWLG\_USA

Country = TWCY\_USA

Info = "1.0.0.0"

Further response to MSG\_OPENDS will be to move to state 4 and begin any time consuming initialization.

Further response to MSG\_CLOSEDS will be to move to state 3 and clean up any buffers or other resource used for this session.

#### 3.4.2 DG\_CONTROL / DAT\_XFERGROUP

Supported Messages: MSG\_GET (state 4-6)

Responds with:

DG\_CONTROL|DG\_IMAGE|DF\_DS2

### 3.4.3 DG\_CONTROL / DAT\_STATUS

Supported Messages: MSG\_GET (state 4-7)

Responds with the current status (from the last operation), and resets the value to TWCC\_SUCCESS.

Possible values:

TWCC\_BADPROTOCOL – unrecognized operation triplet

TWCC\_BADVALUE – parameter out of range

TWCC BUMMER – failure due to unknown causes

TWCC\_SEQERROR – operation performed in illegal sequence (unexpected state)

TWCC\_OPERATIONERROR – some hardware problem with operation (unknown error)

TWCC\_LOWMEMORY – low memory

TWCC\_BADCAP – (< 1.6 apps) capability not supported

TWCC\_CAPUNSUPPORTED – (> 1.6 apps) capability not supported

TWCC\_CAPBADOPERATION – (> 1.6 apps) operation not supported

TWCC\_CAPSEQERROR – (> 1.6 apps) capability has dependencies on other caps and cannot be operated upon at this time

TWCC\_PAPERJAM – (>1.8 apps) operation failed due to paper jam

TWCC\_CHECKDEVICEONLINE – (>1.8 apps) device is unexpectedly not available

TWCC\_PAPERDOUBLEFEED – (>1.8 apps) the feeder detected multiple pages

TWCC\_MAXCONNECTIONS – no more apps can Open DS at this time

TWCC\_INTERLOCK - (>=2.0 apps) Operation failed because the cover or door is open

### 3.4.4 DG\_IMAGE / DAT\_IMAGELAYOUT

Supported Messages: MSG\_GET (state 4-6), MSG\_GETDEFAULT (state 4-6), MSG\_SET (state 4), and MSG\_RESET (state 4)

During MSG\_GET operation the TW\_IMAGELAYOUT structure shall be filled out as follows:

Frame – shall contain the extents of the current frame

DocumentNumber – shall contain the value of the current document (calculated as the # of batch scans in this session)

PageNumber – shall contain the value of the current page # (always pending image from state 6)

FrameNumber – shall contain the value of the current frame (always pending image from state 6)

During MSG\_GETDEFAULT operation the TW\_IMAGELAYOUT structure shall be filled out as follows:

Frame – shall contain the default ICAP\_FRAME

DocumentNumber = 1

PageNumber = 1

FrameNumber = 1

During MSG\_SET operation the contents of the TW\_IMAGELAYOUT frame shall be accepted as the “Current” ICAP\_FRAME, unless it falls outside of the maximum allowed scanning extents.

Values of DocumentNumber, PageNumber and FrameNumber shall be ignored.

During MSG\_RESET operation, the current settings for Frame, DocumentNumber, PageNumber, and FrameNumber shall all be reset to the same values returned in MSG\_GETDEFAULT.

\*Note: future revision may read counters from scanner directly

See also, ICAP\_FRAMES and ICAP\_SUPPORTEDSIZES

### 3.4.5 DG\_CONTROL / DAT\_SETUPMEMXFER

Supported Messages: MSG\_GET (state 4-6)

The contents of the TW\_SETUPMEMXFER structure shall be filled out as follows:

MinBufSize = 64 \* 1024

MaxBufSize = 1024 \* 1024

Preferred = 64 \* 1024

The Max buffer size will be read from the “Return Scanner Configuration” command.

### 3.4.6 DG\_CONTROL / DAT\_CAPABILITY

Supported Messages: MSG\_GET (state 4-7), MSG\_GETCURRENT (state 4-7), MSG\_GETDEFAULT (state 4-7), MSG\_SET (state 4 \*with exceptions), MSG\_RESET (state 4, \*with exceptions), MSG\_RESETALL (state 4, \*with exceptions), MSG\_QUERY SUPPORT (state 4-7)

General Capability operation will be as follows:

The response to a MSG\_GET operation shall be to provide all the supported values of the requested capability. If constraints have been imposed by the application then the constrained values shall be reported. If a multivalue container is not allowed for this capability, then the response shall be the “Current” value.

The response to a MSG\_GETCURRENT operation shall be to provide the current state or value of the requested capability in a TW\_ONEVALUE container. Should a TW\_ONEVALUE container not be allowed for this operation, then the response will be the same as MSG\_GET.

The response to a MSG\_GETDEFAULT operation shall be to provide the Default State or value of the requested capability in a TW\_ONEVALUE container. Should a TW\_ONEVALUE container not be allowed for this operation, then the response will be the same as MSG\_GET.

The response to a MSG\_SET, if a TW\_ONEVALUE is used, shall be to adopt the requested setting as current for the requested capability. If a TW\_ENUMERATION, TW\_RANGE, or TW\_ARRAY container is used, then the TDS shall accept the requested set of constraints. (Assuming these containers are allowed for this particular capability)

The response to a MSG\_RESET shall be to reset the current values and all constraints applied to the requested capability to the state or value reported by MSG\_GETDEFAULT.

The response to a MSG\_RESETALL shall be to reset all scanner settings to their default and remove all constraints. It can be used with CAP\_SUPPORTEDCAPS only.

### 3.4.7 DG\_CONTROL / DAT\_USERINTERFACE

Supported Messages: MSG\_ENABLEDS (state 4), MSG\_DISABLED (state 5), MSG\_ENABLEDSUIONLY (\*new 1.7) (state 4)

In response to a MSG\_ENABLEDS, if the value of ShowUI is set to TRUE, the “Setup and Scan” dialog shall be displayed. Should the value of ShowUI be set to FALSE, then the TDS will move to state 5 and issue a DG\_CONTROL/DAT\_NULL/MSG\_XFERREADY.

In response to a MSG\_ENABLEDSUIONLY, (the value of ShowUI is ignored since UI is always visible), the “Setup and Save” dialog shall be displayed.

(In both cases, the TW\_USERINTERFACE structure value ModalUI shall be set to FALSE, the hParent will be used as the parent window for the dialog)

In response to MSG\_DISABLED, the TDS will close the currently displayed dialog and move to state 4.

### 3.4.8 DG\_CONTROL / DAT\_EVENT

Supported Messages: MSG\_PROCESSEVENT (state 5-7)

The TDS shall check the event with the built in user interface to determine if the message belongs to it. Should the message belong to it then the response shall be TWRC\_DSEVENT. If the message does not, then the response shall be TWRC\_NOTDSEVENT.

### 3.4.9 DG\_IMAGE / DAT\_IMAGEINFO

Supported Messages: MSG\_GET (state 6 & 7(after XFERDONE))

If called during state 6, the TW\_IMAGEINFO structure will be filled out with the image parameters for the Pending Image.

If called during state 7 (after TWRC\_XFERDONE) after an image has just finished being transferred, the TW\_IMAGEINFO structure shall be filled out with the actual known values of the scanned image. Useful to do if ICAP\_UNDEFINEDIMAGESIZE is negotiated so automatic border detection is used.

If the Capability ICAP\_UNDEFINEDIMAGESIZE has been negotiated, then the response will have the Width and Height set to -1.

### 3.4.10 DG\_IMAGE / DAT\_IMAGEMEMXFER

Supported Messages: MSG\_GET (6 & 7)

If called during State 6, the TDS shall move to state 7 and acquire a buffer.

If called during State 7, the TDS shall acquire a buffer (no state transition)

If the transfer is compressed, then the TW\_IMAGEMEMXFER structure shall be filled out as follows:

Compression = current compression mode

BytesPerRow = -1

Columns = -1  
 Rows = -1  
 XOffset = -1  
 YOffset = -1  
 BytesWritten = # of bytes currently written

If the transfer is not compressed, then the TW\_IMAGEMEMXFER structure shall be filled out as follows:

Compression = TWCP\_NONE  
 BytesPerRow = # of bytes per row (\*always DWORD aligned)  
 Columns = # of columns (pixels) per row  
 Rows = # of rows copied to the current buffer  
 XOffset = 0 (always transferring strips)  
 YOffset = Current Row index from the top (accumulation of all the rows so far)  
 BytesWritten = # of bytes currently written == (BytesPerRow \* Rows)

If the buffer was successfully acquired, the response shall be TWRC\_SUCCESS  
 If the user cancels, the response shall be TWRC\_CANCEL, moves to state 6  
 If this is the last buffer in the transfer the response shall be TWRC\_XFERDONE  
 If there is an error, the response shall be TWRC\_FAILURE, moves to state 6 (appropriate condition code will be set)

### 3.4.11 DG\_IMAGE / DAT\_IMAGENATIVEXER

Supported Messages: MSG\_GET (state 6)

The TDS shall create a Device Independent Bitmap (DIB) and scan an entire image to fill the DIB. If the entire image is scanned successfully then the response shall be TWRC\_XFERDONE and the TDS will remain in state 7

If the user cancels, the response shall be TWRC\_CANCEL, moves to state 6  
 If there is an error, the response shall be TWRC\_FAILURE, moves to state 6 (appropriate condition code will be set)

### 3.4.12 DG\_CONTROL / DAT\_PENDINGXFERS

Supported Messages: MSG\_ENDXFER (state 6,7), MSG\_GET (state 4-7), and MSG\_RESET (state 6)

The response to MSG\_GET shall be to fill the TW\_PENDINGXFERS structure Count value with the current # of pending images. In all states, if the feeder is not loaded, then the value will be 0. If the state is < 6 and the feeder is loaded, then that value will be the current value of CAP\_XFERCOUNT. If the state is >=6 and the feeder is loaded, then the value will be the # of images remaining to be scanned.

The response to MSG\_ENDXFER, if called during state 7, shall be to move to state 6 and decrement the remaining images count. If the feeder is loaded, then the Count field will be set to the # of images remaining to be scanned. If the feeder is not loaded, then the Count field will be set to 0 and a further transition to state 5 will occur. If called during state 6, it shall eject the current page and behave as expected based on the state of the feeder (move to state 5 if empty).

In response to MSG\_RESET, if called during state 6, the software shall move to state 5 and set the Count Field to 0 regardless of the number of images remaining to be scanned, or the contents of the sheet feeder.

### **3.5 MANDATORY TWAIN CAPABILITIES**

Mandatory Capabilities are those capabilities that are required to meet TWAIN Protocol Version 2.0 compliance as dictated by the published TWAIN Specification Version 2.0.

#### **3.5.1 CAP\_DEVICEONLINE**

Supported Messages: MSG\_GET, MSG\_GETCURRENT, and MSG\_GETDEFAULT

Allowed Containers: TW\_ONEVALUE

Type: TW\_BOOL

Stored in registry: No (Read Only capability)

The response shall be the same for all queries.

TDS shall attempt to determine if the device is accessible. Should the device be detected, then the response shall be TRUE otherwise it will be FALSE.

#### **3.5.2 CAP\_SUPPORTEDCAPS**

Supported Messages: MSG\_GET, MSG\_GETCURRENT, MSG\_GETDEFAULT and MSG\_RESETALL

Allowed Containers: TW\_ARRAY

Type: TW\_UINT16

Stored in registry: No (Read Only capability)

The response shall be the same for all queries.

TDS shall report the following:

CAP\_AUTOFEED

CAP\_AUTOSCAN

CAP\_CAMERAENABLED

CAP\_CAMERASIDE

CAP\_CUSTOMDSDATA

CAP\_DEVICEONLINE

CAP\_DUPLEX

CAP\_DUPLEXENABLED

CAP\_ENABLEDSUIONLY

CAP\_FEEDERENABLED

CAP\_FEEDERLOADED

CAP\_INDICATORS

CAP\_JOBCONTROL

CAP\_PAPERDETECTABLE

CAP\_PRINTER

CAP\_PRINTERENABLED

CAP\_PRINTERINDEX  
CAP\_PRINTERMODE  
CAP\_PRINTERSTRING  
CAP\_SUPPORTEDCAPS  
CAP\_UICONTROLLABLE  
CAP\_XFERCOUNT  
ICAP\_AUTOBORDERDETECTION  
ICAP\_AUTOBRIGHT  
ICAP\_AUTOMATICDESKEW  
ICAP\_BITDEPTH  
ICAP\_BITDEPTHREDUCTION  
ICAP\_BITORDER  
ICAP\_BRIGHTNESS  
ICAP\_COMPRESSION  
ICAP\_CONTRAST  
ICAP\_EXTIMAGEINFO  
ICAP\_FILTER  
ICAP\_FRAMES  
ICAP\_GAMMA  
ICAP\_ICCPROFILE  
ICAP\_IMAGEFILEFORMAT  
ICAP\_JPEGQUALITY  
ICAP\_MAXFRAMES  
ICAP\_MINIMUMHEIGHT  
ICAP\_MINIMUMWIDTH  
ICAP\_ORIENTATION  
ICAP\_OVERSCAN  
ICAP\_PHYSICALHEIGHT  
ICAP\_PHYSICALWIDTH  
ICAP\_PIXELFLAVOR  
ICAP\_PIXELTYPE  
ICAP\_PLANARCHUNKY  
ICAP\_ROTATION  
ICAP\_SUPPORTEDSIZES  
ICAP\_TILES  
ICAP\_UNDEFINEDIMAGESIZE  
ICAP\_UNITS  
ICAP\_XFERMECH  
ICAP\_XNATIVERESOLUTION  
ICAP\_XRESOLUTION  
ICAP\_YNATIVERESOLUTION  
ICAP\_YRESOLUTION  
  
BBH\_CAP\_ENABLE\_ADVANCED\_FRAMES  
BBH\_CAP\_CROPWIDTH  
BBH\_CAP\_CROPHEIGHT  
BBH\_CAP\_NEGATIVE  
BBH\_CAP\_ACD\_BW\_WINDOW  
BBH\_CAP\_ACD\_CONTENT  
BBH\_CAP\_ACD\_SMALL\_OBJ\_ENABLE  
BBH\_CAP\_ACD\_SMALL\_OBJ  
BBH\_CAP\_ACD\_SUPPRESS\_ENABLE

BBH\_CAP\_ACD\_SUPPRESS  
BBH\_CAP\_BKG\_SAT\_MODE  
BBH\_CAP\_BKG\_SAT  
BBH\_CAP\_BKG\_SNAP\_TO\_WHITE  
BBH\_CAP\_MFD\_ACTION  
BBH\_CAP\_MFD\_SENSOR\_ENABLE  
BBH\_CAP\_MFD\_IGNORE\_BY\_SIZE  
BBH\_CAP\_DOC\_IGNORE\_HOLE  
BBH\_CAP\_DOC\_MODE  
BBH\_CAP\_DOC\_VERY\_LONG  
BBH\_CAP\_DOC\_HIGH\_SKEW  
BBH\_CAP\_CAM\_MODE  
BBH\_CAP\_CAM\_GAMMA  
BBH\_CAP\_CAM\_BRIGHTNESS  
BBH\_CAP\_CAM\_CONTRAST  
BBH\_CAP\_CAM\_BRIGHTNESS\_ENABLE  
BBH\_CAP\_CAM\_CONTRAST\_ENABLE  
BBH\_CAP\_CAM\_NEGATIVE  
BBH\_CAP\_PRN\_VOFFSET  
BBH\_CAP\_PRN\_FONT  
BBH\_CAP\_PRN\_SPACE  
BBH\_CAP\_PRN\_SIZE  
BBH\_CAP\_PRN\_ROT  
BBH\_CAP\_PRN\_CNT\_ENABLE  
BBH\_CAP\_PRN\_CNT\_MAX\_DIG  
BBH\_CAP\_PRN\_CNT\_STEP  
BBH\_CAP\_PRN\_TIME\_DATE  
BBH\_CAP\_ACD\_ENABLE  
BBH\_CAP\_ADV\_WND\_ENABLE  
BBH\_CAP\_ADV\_WND\_ID  
BBH\_CAP\_JPEG\_SUBSAMPLING

Note: MSG\_RESETALL - resets all scanner settings to their default and remove all constraints.

### 3.5.3 CAP\_UICONTROLLABLE

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for  
<2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERYSUPPORT - TW\_ONEVALUE

Allowed Values:

TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read Only capability)

Stored in profile:

No (Read Only capability)

### 3.5.4 CAP\_XFERCOUNT

Type:

TW\_INT16

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

-1, 1 to max 32767

Default Value:

-1

Query Support Value:

TWQC\_GET | TWQC\_SET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT  
 | TWQC\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Supplied by application)

### 3.5.5 ICAP\_BITDEPTH

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

**Allowed Values:**

1 if Current ICAP\_PIXELTYPE is TWPT\_BW  
8 if Current ICAP\_PIXELTYPE is TWPT\_GRAY  
24 if Current ICAP\_PIXELTYPE is TWPT\_RGB

**Default Value:**

1 if Current ICAP\_PIXELTYPE is TWPT\_BW  
8 if Current ICAP\_PIXELTYPE is TWPT\_GRAY  
24 if Current ICAP\_PIXELTYPE is TWPT\_RGB

**Query Support Value:**

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

**Stored in registry:**

No (Only one supported value per PixelType)

**Stored in profile:**

No (Only one supported value per PixelType)

**3.5.6 ICAP\_BITORDER****Type:**

TW\_UINT16

**Supported Messages:**

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

**Allowed Values:**

TWBO\_MSBFIRST

**Default Value:**

TWBO\_MSBFIRST

**Query Support Value:**

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

**Stored in registry:**

No (Only one supported value)

**Stored in profile:**

No (Only one supported value)

**3.5.7 ICAP\_COMPRESSION****Type:**

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWCP\_NONE, TWCP\_GROUP4, TWCP\_JPEG

Default Value:

TWCP\_NONE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Supplied by the Application)

### 3.5.8 ICAP\_PHYSICALHEIGHT

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - Not supported  
 MSG\_SET - Not supported  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

40in / 1016mm

Default Value:

40in / 1016mm

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read Only capability)

Stored in profile:

No (Read Only capability)

### 3.5.9 ICAP\_PHYSICALWIDTH

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

Maximum width is read from the scanner

Default Value:

Maximum width is read from the scanner

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read Only capability)

Stored in profile:

No (Read Only capability)

### 3.5.10 ICAP\_PIXELFLAVOR

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – TW\_ONEVALUE  
MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWPF\_CHOCOLATE

Default Value:

TWPF\_CHOCOLATE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Only one supported value)

Stored in profile:

No (Only one supported value)

### 3.5.11 ICAP\_PIXELTYPE

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWPT\_BW, TWPT\_GRAY, TWPT\_RGB (not available on monochrome hardware)

Default Value:

TWPT\_BW

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.5.12 ICAP\_PLANARCHUNKY

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWPC\_CHUNKY

Default Value:

TWPC\_CHUNKY

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Only one supported value)

Stored in profile:

No (Only one supported value)

### 3.5.13 ICAP\_UNITS

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWUN\_INCHES, TWUN\_MILLIMETERS

Default Value:

TWUN\_INCHES

Query Support Value:

TWQC\_GET | TWQC\_SET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT  
| TWQC\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Remark: Following capabilities values depends on ICAP\_UNITS:

ICAP\_MINIMUMHEIGHT, ICAP\_MINIMUMWIDTH, ICAP\_PHYSICALHEIGHT,  
ICAP\_PHYSICALWIDTH, ICAP\_XNATIVERESOLUTION, ICAP\_XRESOLUTION,  
ICAP\_YNATIVERESOLUTION, ICAP\_YRESOLUTION,  
BBH\_CAP\_DOC\_IGNORE\_HOLE, BBH\_CAP\_MFD\_IGNORE\_BY\_SIZE,  
BBH\_CAP\_PRN\_VOFFSET

### 3.5.14 ICAP\_XRESOLUTION

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

100, 150, 200, 240, 300, 400, 500, 600

Default Value:

200

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Note: ICAP\_YRESOLUTION will be updated to match the current setting of  
 ICAP\_XRESOLUTION

### 3.5.15 ICAP\_XFERMECH

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWSX\_NATIVE, TWSX\_MEMORY, TWSX\_FILE

Default Value:

TWSX\_NATIVE

Query Support Value:

TWQC\_GET | TWQC\_SET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT  
 | TWQC\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Supplied by application)

### 3.5.16 ICAP\_YRESOLUTION

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION, TW\_RANGE

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

100, 150, 200, 240, 300, 400, 500, 600

Default Value:

200

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Note: ICAP\_XRESOLUTION will be updated to match the current setting of  
ICAP\_YRESOLUTION

## 3.6 OPTIONAL TWAIN OPERATIONS

Optional Operations are those operations that have been implemented to further enhance the representation of the Supported Ngenuity Product Features.

### 3.6.1 DG\_CONTROL / DAT\_SETUPFILEXFER

Supported Messages: MSG\_GET (state 4–6), MSG\_GETDEFAULT (state 4–6), MSG\_RESET (state 4), and MSG\_SET (state 4–6)

Default configuration of the TW\_SETUPFILEXFER structure shall be:

FileName = "<temp path>\image0.bmp"

Format = TWFF\_BMP

VRefNum = 0

### 3.6.2 DG\_IMAGE / DAT\_IMAGEFILEXFER

Supported Messages: MSG\_GET (state 6)

MSG\_GET shall cause a file to be generated in the current file format and location negotiated in  
DAT\_SETUPFILEXFER

### **3.6.3 DG\_IMAGE / DAT\_CUSTOMSDATA**

Supported Messages: MSG\_GET (state 4), MSG\_SET (state 4)

MSG\_GET shall fill the TW\_CUSTOMDATA structure with the current state of all the settings  
MSG\_SET shall fill accept the TW\_CUSTOMDATA, check for version integrity, and accept the settings as the current state.

### **3.6.4 DG\_IMAGE / DAT\_EXTIMAGEINFO**

Supported Messages: MSG\_GET (state 7(after XFERDONE))

Shall provide appropriate responses for the following Extended Image Info Attributes

#### **3.6.4.1 TWEL\_DOCUMENTNUMBER**

This attribute reports the current document number. Since the Ngenuity scanner currently does not support any means of document separation or job control, this attribute always responds with 1.

Value Type: TW\_UINT32

Value: 1 (always)

#### **3.6.4.2 TWEL\_PAGENUMBER**

This attribute reports the current page number.

Value Type: TW\_UINT32

Value: Current page number (numbers are per-session)

#### **3.6.4.3 TWEL\_CAMERA**

This attribute reports the current Camera name.

Value Type: TW\_STR255

Value: Camera\_Top or Camera\_Bottom (depends on which side of the page was scanned)

#### **3.6.4.4 TWEL\_FRAMENUMBER**

This attribute reports the current frame number.

Value Type: TW\_UINT32

Value: Current frame number

#### **3.6.4.5 TWEL\_FRAME**

This attribute reports the frame for the current image.

Value Type: TW\_FRAME

Value: Always the same value as reported in ICAP\_FRAMES, DAT\_IMAGELAYOUT

#### **3.6.4.6 TWEL\_PIXELFLAVOR**

This attribute reports the pixel gender for the current image.

Value Type: TW\_UINT32  
Value: TWPF\_CHOCOLATE

### 3.6.5 DG\_IMAGE / DAT\_ICCPROFILE

Supported Messages: MSG\_GET (state 6, 7)

This operation provides the application with the ICC profile associated with the image which is about to be transferred (state 6) or is being transferred (state 7).

## 3.7 OPTIONAL TWAIN CAPABILITIES

Optional Capabilities are those capabilities that have been implemented to further enhance the representation of the Supported Ngenuity Features.  
The following Optional Capabilities shall be supported

### 3.7.1 CAP\_AUTOFEED

Type:  
TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for  
<2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
FALSE, TRUE

Default Value:  
TRUE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
Yes

Stored in profile:  
Yes

### 3.7.2 CAP\_AUTOSCAN

Type:  
TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for  
<2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
TRUE

Default Value:  
TRUE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
No (Only one supported value)

Stored in profile:  
No (Only one supported value)

### 3.7.3 CAP\_CAMERAENABLED

Type:  
TW\_BOOL

Supported Messages:  
MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for  
<2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
FALSE, TRUE

Default Value:  
FALSE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
No (Has mandatory default)

Stored in profile:  
Yes

### 3.7.4 CAP\_CAMERASIDE

The scanner does not support multifeed detection in back page scanning only. When the application sets this capability to TWCS\_BOTTOM it also needs to set BBH\_CAP\_MFD\_ACTION to MFD\_ACTION\_DISABLE.

Type:

TW\_INT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWCS\_BOTH, TWCS\_TOP,  
 TWCS\_BOTTOM (If scanner supports duplex mode)

Default Value:

TWCS\_BOTH

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default)

Stored in profile:

Yes

### 3.7.5 CAP\_CUSTOMSDATA

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - Not supported  
 MSG\_SET - Not supported  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.6 CAP\_DUPLEX

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ONEVALUE

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – Not supported

MSG\_SET – Not supported

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWDX\_NONE or TWDX\_1PASSDUPLEX (depends on scanner model)

Default Value:

TWDX\_NONE or TWDX\_1PASSDUPLEX (depends on scanner model)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.7 CAP\_DUPLEXENABLED

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – TW\_ONEVALUE

MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE(only available for some scanner models)

Default Value:

FALSE

Query Support Value:

TWQC\_GET |TWQC\_GETDEFAULT |TWQC\_GETCURRENT | MSG\_SET| MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.8 CAP\_ENABLEDSUIONLY

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – Not supported

MSG\_SET – Not supported

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET |TWQC\_GETDEFAULT |TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.9 CAP\_FEEDERLOADED

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
TRUE, FALSE

Default Value:  
TRUE, FALSE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:  
No (Read Only capability)

Stored in profile:  
No (Read Only capability)

Note: Use Read/ScannerStatus with ReadScanner bit set to 1 to force scanner update the status.

### 3.7.10 CAP\_FEEDERENABLED

Type:  
TW\_BOOL

Supported Messages:  
MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
TRUE

Default Value:  
TRUE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:  
No (Only one supported value)

Stored in profile:  
No (Only one supported value)

### 3.7.11 CAP\_INDICATORS

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET – TW\_ONEVALUE  
 MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Has mandatory default value)

### 3.7.12 CAP\_PAPERDETECTABLE

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET – Not supported  
 MSG\_SET – Not supported  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.13 CAP\_PRINTER

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWPR\_IMPRINTERTOPBEFORE, TWPR\_IMPRINTERTOPAFTER

Default Value:

TWPR\_IMPRINTERTOPAFTER

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.14 CAP\_PRINTERENABLED

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default)

Stored in profile:

Yes

### 3.7.15 CAP\_PRINTERINDEX

Type:

TW\_UINT32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 10(BBH\_CAP\_PRN\_CNT\_MAX\_DIG+1) - 1

Default Value:

1

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

### 3.7.16 CAP\_PRINTERMODE

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWPM\_SINGLESTRING

Default Value:

TWPM\_SINGLESTRING

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | TWQC\_SET |  
TWQC\_RESET

Stored in registry:

No (Only one supported value)

Stored in profile:

No (Only one supported value)

### 3.7.17 CAP\_PRINTERSTRING

Type:

TW\_STR255

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ENUMERATION  
MSG\_GETDEFAULT - TW\_ENUMERATION  
MSG\_RESET - TW\_ENUMERATION  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

Maximum string length is 73 characters including NULL termination. See table below.

Default Value:

""

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | TWQC\_SET |  
TWQC\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

| Content Format Specifier | Format as expanded for printer | Length | Example                        |
|--------------------------|--------------------------------|--------|--------------------------------|
| <b>Time</b>              |                                |        |                                |
| %T0                      | HH:MM                          | 5      | "21:31" (24 hour format)       |
| %T1                      | HH:MM:SS                       | 8      | "21:31:59" (24 hour format)    |
| %T2                      | HH:MM a/pm                     | 8      | "09:31 pm" (12 hour format)    |
| %T3                      | HH:MM:SS a/pm                  | 11     | "09:31:59 pm" (12 hour format) |

|                                                                                    |                                                                               |        |                                                                                                          |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------|
| <b>Date</b>                                                                        |                                                                               |        | All date examples are for October 31, 2007                                                               |
| %D0                                                                                | YY/MM/DD                                                                      | 8      | "07/10/31"                                                                                               |
| %D1                                                                                | YYYY/MM/DD                                                                    | 10     | "2007/10/31"                                                                                             |
| %D2                                                                                | MM/DD/YY                                                                      | 8      | "10/31/07"                                                                                               |
| %D3                                                                                | MM/DD/YYYY                                                                    | 10     | "10/31/2007"                                                                                             |
| %D4                                                                                | DD/MM/YY                                                                      | 8      | "31/10/07"                                                                                               |
| %D5                                                                                | DD/MM/YYYY                                                                    | 10     | "31/10/2007"                                                                                             |
| %D6                                                                                | DD                                                                            | 2      | "31"                                                                                                     |
| %D7                                                                                | MM                                                                            | 2      | "10"                                                                                                     |
| %D8                                                                                | YY                                                                            | 2      | "07"                                                                                                     |
| %D9                                                                                | YYYY                                                                          | 4      | "2007"                                                                                                   |
| <b>Index Counters – with leading zeros printed</b>                                 |                                                                               |        |                                                                                                          |
| %#0m<br>m = [0..2] □ which index counter                                           |                                                                               | Note 1 | For format specifier of %#01 with index counter 1 count value of 937 and CounterDigits of 6:<br>"000937" |
| <b>Index Counters – right justified, leading blanks padding (no leading zeros)</b> |                                                                               |        |                                                                                                          |
| %#1m<br>m = [0..2] □ which index counter                                           |                                                                               | Note 1 | For format specifier of %#11 with index counter 1 count value of 937 and CounterDigits of 6:<br>" 937"   |
| <b>Index Counters – left justified, trailing blanks padding</b>                    |                                                                               |        |                                                                                                          |
| %#2m<br>m = [0..2] □ which index counter                                           |                                                                               | Note 1 | For format specifier of %#21 with index counter 1 count value of 937 and CounterDigits of 6:<br>"937 "   |
| <b>Scanner Identifier</b>                                                          |                                                                               |        |                                                                                                          |
| %S0                                                                                | Replaced with scanner identifier                                              | 11     | "ABCDEFGHGIJK"                                                                                           |
| <b>ALT-codes</b>                                                                   |                                                                               |        |                                                                                                          |
| %A0xxx where xxx = 128 - 255                                                       | Replaced with single character per Windows code page 1252 ALT code selection. | 1      | %A0128 = "€"<br>%A0165 = "¥"                                                                             |

### 3.7.18 ICAP\_AUTOMATICBORDERDETECTION

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Note: If the Application sets this capability, then the paper size shall be automatically detected.

### 3.7.19 ICAP\_AUTOBRIGHT

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE (for Black and White (Bitonal) and Grayscale only)

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.20 ICAP\_AUTOMATICDESKEW

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.21 ICAP\_BITDEPTHREDUCTION

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWBR\_THRESHOLD

Default Value:

TWBR\_THRESHOLD

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | TWQC\_SET | TWQC\_RESET

Stored in registry:

No (Only one supported value)

Stored in profile:

No (Only one supported value)

### 3.7.22 ICAP\_BRIGHTNESS

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

-1000 to 1000

Default Value:

0

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.23 ICAP\_CONTRAST

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

-1000 to 1000

Default Value:

0 – Gray and Color  
 400 - Black and White (Bitonal)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.24 ICAP\_EXTIMAGEINFO

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – Not supported

MSG\_SET – Not supported

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.25 ICAP\_FILTER

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ARRAY

MSG\_GETCURRENT - TW\_ARRAY

MSG\_GETDEFAULT - TW\_ARRAY

MSG\_RESET – TW\_ARRAY

MSG\_SET – TW\_ONEVALUE, TW\_ARRAY

MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

TWFT\_NONE,  
TWFT\_RED, TWFT\_GREEN, TWFT\_BLUE (only for Black and White (Bitonal) and Grayscale  
PixelType)

## Default Value:

TWFT\_NONE

## Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

## Stored in registry:

No (Has mandatory default TWFT\_NONE)

## Stored in profile:

Yes

**3.7.26 ICAP\_FRAMES**

## Type:

TW\_FRAME

## Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

Anything within the maximum Scanning Width and Height

## Default Value:

12.25in x 40in

## Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

## Stored in registry:

Yes

## Stored in profile:

Yes

**3.7.27 ICAP\_GAMMA**

## Type:

TW\_FIX32

## Supported Messages:

MSG\_GET - TW\_ONEVALUE

MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
 0.1 to 10.0

Default Value:  
 0

Query Support Value:  
 TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
 Yes

Stored in profile:  
 Yes

Note: see implementation note where BBH recommends using BBH\_CAP\_CAM\_GAMMA rather than ICAP\_GAMMA.

### 3.7.28 ICAP\_ICCPROFILE

Type:  
 TW\_UINT16

Supported Messages:  
 MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
 TWIC\_NONE, TWIC\_EMBED (color only)

Default Value:  
 TWIC\_NONE

Query Support Value:  
 TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
 No

Stored in profile:  
 Yes

### 3.7.29 ICAP\_IMAGEFILEFORMAT

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWFF\_BMP, TWFF\_TIFF, TWFF\_JFIF, TWFF\_TIFFMULTI

Default Value:

TWFF\_TIFF

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Application uses DAT\_SETUPFILEXFER / MSG\_SET , which overwrite this capabilities)

Stored in profile:

No (Application uses DAT\_SETUPFILEXFER / MSG\_SET , which overwrite this capabilities)

### 3.7.30 ICAP\_JPEGQUALITY

Type:

TW\_INT16

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 99, TWJQ\_LOW, TWJQ\_MEDIUM, TWJQ\_HIGH

Default Value:

29

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:  
Yes

### 3.7.31 ICAP\_MAXFRAMES

Type:  
TW\_UINT16

Supported Messages:  
MSG\_GET - TW\_ONEVALUE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
1 to 4 – Not Multistream mode (Read from scanner)  
1 to 2 – Multistream mode (Read from scanner)  
1 - Advanced mode

Default Value:  
4 – Not Multistream mode (Read from scanner)  
2 – Multistream mode (Read from scanner)  
1 - Advanced mode

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | TWQC\_SET |  
TWQC\_RESET

Stored in registry:  
No (Supplied by the Application)

Stored in profile:  
No (Supplied by the Application)

### 3.7.32 ICAP\_MINIMUMHEIGHT

Type:  
TW\_FIX32

Supported Messages:  
MSG\_GET - TW\_ONEVALUE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
2.5in (63mm)

Default Value:

2.5in (63mm)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.33 ICAP\_MINIMUMWIDTH

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ONEVALUE

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – Not supported

MSG\_SET – Not supported

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1.7in (43mm)

Default Value:

1.7in (43mm)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.34 ICAP\_ORIENTATION

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – TW\_ONEVALUE

MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION

### MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWOR\_PORTRAIT, TWOR\_LANDSCAPE

Default Value:

TWOR\_PORTRAIT

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.7.35 ICAP\_OVERSCAN

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWOV\_NONE, TWOV\_ALL

Default Value:

TWOV\_NONE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default)

Stored in profile:

Yes

### 3.7.36 ICAP\_ROTATION

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0, 90, 180, 270 (read from scanner)

Default Value:

0

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Note: Rotation is clockwise.

### 3.7.37 ICAP\_SUPPORTEDSIZES

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

TWSS\_NONE, TWSS\_USLETTER, TWSS\_USLEGAL, TWSS\_USLEDGER,  
 TWSS\_USSTATEMENT, TWSS\_USEXECUTIVE, TWSS\_BUSINESSCARD, TWSS\_A3,  
 TWSS\_A4, TWSS\_A5, TWSS\_A6, TWSS\_A7, TWSS\_A8, TWSS\_ISOB4, TWSS\_ISOB5,  
 TWSS\_ISOB6, TWSS\_ISOB7, TWSS\_ISOB8, TWSS\_C4, TWSS\_C5, TWSS\_C6, TWSS\_C7,  
 TWSS\_C8, TWSS\_JISB4, TWSS\_JISB5, TWSS\_JISB6, TWSS\_JISB7, TWSS\_JISB8, TWSS\_JISB9,  
 TWSS\_MAXIMUM, TWSS\_MAXIMUM\_LONG

Default Value:

TWSS\_MAXIMUM

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

Note: Setting this value will affect DAT\_IMAGELAYOUT and the ICAP\_FRAMES

### 3.7.38 ICAP\_TILES

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Has mandatory default value)

### 3.7.39 ICAP\_UNDEFINEDIMAGESIZE

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

TRUE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Has mandatory default value)

Stored in profile:

No (Has mandatory default value)

Note: If the Application sets this capability, then the image dimensions will be reported in state 7 after image has been transferred from DAT\_IMAGEINFO

### 3.7.40 ICAP\_XNATIVERESOLUTION

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

600

Default Value:

600

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.7.41 ICAP\_YNATIVERESOLUTION

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET – Not supported  
MSG\_SET – Not supported

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

600

Default Value:

600

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.8 CUSTOM TWAIN CAPABILITIES

Custom capabilities IDs:

|                                |                       |
|--------------------------------|-----------------------|
| BBH_CAP_ENABLE_ADVANCED_FRAMES | CAP_CUSTOMBASE+0x0001 |
| BBH_CAP_CROPWIDTH              | CAP_CUSTOMBASE+0x0002 |
| BBH_CAP_CROPHEIGHT             | CAP_CUSTOMBASE+0x0003 |
| BBH_CAP_NEGATIVE               | CAP_CUSTOMBASE+0x0004 |
| BBH_CAP_ACD_BW_WINDOW          | CAP_CUSTOMBASE+0x0005 |
| BBH_CAP_ACD_CONTENT            | CAP_CUSTOMBASE+0x0006 |
| BBH_CAP_ACD_SMALL_OBJ_ENABLE   | CAP_CUSTOMBASE+0x0007 |
| BBH_CAP_ACD_SMALL_OBJ          | CAP_CUSTOMBASE+0x0008 |
| BBH_CAP_ACD_SUPPRESS_ENABLE    | CAP_CUSTOMBASE+0x0009 |
| BBH_CAP_ACD_SUPPRESS           | CAP_CUSTOMBASE+0x000A |
| BBH_CAP_BKG_SAT_MODE           | CAP_CUSTOMBASE+0x000B |
| BBH_CAP_BKG_SAT                | CAP_CUSTOMBASE+0x000C |
| BBH_CAP_BKG_SNAP_TO_WHITE      | CAP_CUSTOMBASE+0x000D |
| BBH_CAP_MFD_ACTION             | CAP_CUSTOMBASE+0x000E |
| BBH_CAP_MFD_SENSOR_ENABLE      | CAP_CUSTOMBASE+0x000F |
| BBH_CAP_MFD_IGNORE_BY_SIZE     | CAP_CUSTOMBASE+0x0010 |
| BBH_CAP_DOC_IGNORE_HOLE        | CAP_CUSTOMBASE+0x0011 |
| BBH_CAP_DOC_MODE               | CAP_CUSTOMBASE+0x0012 |
| BBH_CAP_DOC_VERY_LONG          | CAP_CUSTOMBASE+0x0013 |
| BBH_CAP_DOC_HIGH_SKEW          | CAP_CUSTOMBASE+0x0014 |
|                                |                       |
| BBH_CAP_CAM_MODE               | CAP_CUSTOMBASE+0x0016 |
| BBH_CAP_CAM_GAMMA              | CAP_CUSTOMBASE+0x0017 |
| BBH_CAP_CAM_BRIGHTNESS         | CAP_CUSTOMBASE+0x0018 |
| BBH_CAP_CAM_CONTRAST           | CAP_CUSTOMBASE+0x0019 |
| BBH_CAP_CAM_BRIGHTNESS_ENABLE  | CAP_CUSTOMBASE+0x001A |
| BBH_CAP_CAM_CONTRAST_ENABLE    | CAP_CUSTOMBASE+0x001B |
| BBH_CAP_CAM_NEGATIVE           | CAP_CUSTOMBASE+0x001C |
| BBH_CAP_PRN_VOFFSET            | CAP_CUSTOMBASE+0x001D |
| BBH_CAP_PRN_FONT               | CAP_CUSTOMBASE+0x001E |
| BBH_CAP_PRN_SPACE              | CAP_CUSTOMBASE+0x001F |
| BBH_CAP_PRN_SIZE               | CAP_CUSTOMBASE+0x0020 |
| BBH_CAP_PRN_ROT                | CAP_CUSTOMBASE+0x0021 |
| BBH_CAP_PRN_CNT_ENABLE         | CAP_CUSTOMBASE+0x0022 |
| BBH_CAP_PRN_CNT_MAX_DIG        | CAP_CUSTOMBASE+0x0023 |
| BBH_CAP_PRN_CNT_STEP           | CAP_CUSTOMBASE+0x0024 |
| BBH_CAP_PRN_TIME_DATE          | CAP_CUSTOMBASE+0x0025 |
| BBH_CAP_ACD_ENABLE             | CAP_CUSTOMBASE+0x0026 |
| BBH_CAP_ADV_WND_ENABLE         | CAP_CUSTOMBASE+0x0027 |
| BBH_CAP_ADV_WND_ID             | CAP_CUSTOMBASE+0x0028 |
| BBH_CAP_JPEG_SUBSAMPLING       | CAP_CUSTOMBASE+0x0029 |

CAP\_CUSTOMBASE = 0x8000

### 3.8.1 BBH\_CAP\_ACD\_ENABLE

Enable ACD if current ICAP\_PIXELTYPE is TWPT\_RGB. It can be different on deferent windows. This capability must be the same for front and back master windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.2 BBH\_CAP\_ACD\_BW\_WINDOW

Window ID to use for image output parameters for images that are not color, when using ACD. It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

All possible windows IDs , 255 (depends on scanner)

Default Value:

255

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

Note: 255 mean this window.

### 3.8.3 BBH\_CAP\_ACD\_CONTENT

Aggressiveness of the auto color detection algorithm. 0 – low aggressiveness (requires much color to detect image as color); 255 – high aggressiveness (requires very little color to detect image as color). It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 255

Default Value:

128

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.4 BBH\_CAP\_ACD\_SMALL\_OBJ\_ENABLE

If enabled and ACD is enabled, then detection of small color object(s) will cause the image to be detected as color. If disabled, small color object(s) will not cause the image to be detected as color. It can be different on deferent windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.5 BBH\_CAP\_ACD\_SMALL\_OBJ

Aggressiveness of the small color object detection algorithm. 0 – low aggressiveness (requires larger objects to detect as color); 255 – high aggressiveness (requires smaller objects to detect as color). It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 255

Default Value:

128

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.6 BBH\_CAP\_ACD\_SUPPRESS\_ENABLE

If enabled and **ACD** is being performed, ignore the document background when determining if a document contains color. In this mode, if the document background is color but the rest of the document is not, it will be detected as non-color. This has no effect if **ACD** is not enabled or if **Small Color Object Detect** is enabled. It can be different on deferent windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.7 BBH\_CAP\_ACD\_SUPPRESS

Aggressiveness of the color suppression algorithm. 0 – low aggressiveness (less sensitive when determining background pixels to reject for color detection purposes); 255 – high aggressiveness (more sensitive when determining background pixels to reject for color detection purposes). It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE

MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
 0 to 255

Default Value:  
 128

Query Support Value:  
 TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
 Yes

Stored in profile:  
 Yes

### 3.8.8 BBH\_CAP\_ADV\_WND\_ENABLE

This capability specifies if the current window (specified by BBH\_CAP\_ADV\_WND\_ID) will be read from the scanner. It can be different on deferent windows.

Type:  
 TW\_BOOL

Supported Messages:  
 MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
 FALSE, TRUE

Default Value:  
 FALSE

Query Support Value:  
 TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
 No (Non standard TWAIN mechanism)

Stored in profile:  
 Yes

### 3.8.9 BBH\_CAP\_ADV\_WND\_ID

This capability specifies the current window.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

All available windows IDs

Default Value:

0

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Non standard TWAIN mechanism)

Stored in profile:

No

### 3.8.10 BBH\_CAP\_BKG\_SAT

Aggressiveness of the color saturation algorithm. 0 – low aggressiveness (less of the background will be saturated); 255 – high aggressiveness (more of the background will be saturated). It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 255

Default Value:

128

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.11 BBH\_CAP\_BKG\_SAT\_MODE

Sets the format for performing color background saturation. It can be different on deferent windows.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

BKG\_SAT\_DISABLE = 0

BKG\_SAT\_BLACK = 1

BKG\_SAT\_WHITE = 2

BKG\_SAT\_AUTOMATIC = 3

Default Value:

BKG\_SAT\_DISABLE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.12 BBH\_CAP\_BKG\_SNAP\_TO\_WHITE

If set, enables background snap-to-white if **Color Bkg. Saturation** is enabled, the saturation format is set to **Smooth**, and the background of the document is near white. It can be different on deferent windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.13 BBH\_CAP\_CAM\_BRIGHTNESS

This is a factory only setting, see implementation notes. Value to set in the camera for its (input) brightness control. It can be different on different sides.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 255

Default Value:

144

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.14 BBH\_CAP\_CAM\_BRIGHTNESS\_ENABLE

If enabled, enable the camera (input) brightness setting and use the value from the Camera Brightness parameter for its brightness. If sRGB mode or ICC Input is enabled, then this will have no effect.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE (BBH\_CAP\_CAM\_BRIGHTNESS is a factory only setting)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

### 3.8.15 BBH\_CAP\_CAM\_CONTRAST

This is a factory only setting, see implementation notes. Value to set in the camera for its (input) contrast control. It can be different on different sides.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0 to 255

Default Value:

133

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.16 BBH\_CAP\_CAM\_CONTRAST\_ENABLE

If enabled, enable the camera (input) contrast setting and use the value from the Camera Contrast parameter for its contrast. If sRGB mode or ICC Input is enabled, then this will have no effect.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE (BBH\_CAP\_CAM\_CONTRAST is a factory only setting)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

### 3.8.17 BBH\_CAP\_CAM\_GAMMA

Value to set in the camera for its (input) gamma control. BBH recommends using this setting rather than ICAP\_GAMMA, see implementation notes.

Type:

TW\_FIX32

## Supported Messages:

MSG\_GET - TW\_RANGE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

1.0 to 2.5

## Default Value:

1.3

## Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

## Stored in registry:

Yes

## Stored in profile:

Yes

### 3.8.18 BBH\_CAP\_CAM\_MODE

CAM\_MODE\_GAMMA enables the camera (input) gamma setting and use the value from the Camera Gamma parameter for its gamma.

CAM\_MODE\_SRGB sets the camera so it scans using its sRGB input mode

CAM\_MODE\_ICC configures the scanner camera for its “default” settings that are required so its ICC profile is correct.

In CAM\_MODE\_SRGB and CAM\_MODE\_ICC mode, the enable camera brightness, enable camera contrast and enable camera gamma settings will not be used.

## Type:

TW\_UINT8

## Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

CAM\_MODE\_GAMMA = 0  
CAM\_MODE\_SRGB = 1  
CAM\_MODE\_ICC = 2

## Default Value:

CAM\_MODE\_GAMMA

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.19 BBH\_CAP\_CAM\_NEGATIVE

If set, the scanner assumes the image is primarily a dark image with light text (reverse image input). This setting is ignored when scanning in color mode.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

### 3.8.20 BBH\_CAP\_CROPHEIGHT

If set, automatic length detection (vertical cropping) is enabled. It can be different on deferent windows.

Setting ICAP\_AUTOMATICBORDERDETECTION will set this capability. Resetting ICAP\_AUTOMATICBORDERDETECTION will reset this capability.

Type:

TW\_BOOL

## Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

FALSE, TRUE

## Default Value:

TRUE

## Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

## Stored in registry:

Yes

## Stored in profile:

Yes

**3.8.21 BBH\_CAP\_CROPWIDTH**

If set, automatic width detection is enabled. It can be different on deferent windows.

Setting ICAP\_AUTOMATICBORDERDETECTION will set this capability. Resetting ICAP\_AUTOMATICBORDERDETECTION will reset this capability.

## Type:

TW\_BOOL

## Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

## Allowed Values:

FALSE, TRUE

## Default Value:

TRUE

## Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

## Stored in registry:

Yes

Stored in profile:  
Yes

### 3.8.22 BBH\_CAP\_DOC\_HIGH\_SKEW

If set, the host expects that documents will be fed with a high skew and proper compensation (typically slowing down or telling the scanner) must be performed.

Type:  
TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:  
FALSE, TRUE

Default Value:  
FALSE

Query Support Value:  
TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:  
Yes

Stored in profile:  
Yes

### 3.8.23 BBH\_CAP\_DOC\_IGNORE\_HOLE

Size of hole to ignore. If greater than 0, the scanner paper sensor should ignore holes in the page

Type:  
TW\_FIX32

Supported Messages:

MSG\_GET - TW\_RANGE  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0in to 1.7in (0 to 43mm)

Default Value:

0in (0mm)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.24 BBH\_CAP\_DOC\_MODE

Specify paper type to be scanned. It may affect scanning speed.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

DOC\_MODE\_NORMAL = 0

DOC\_MODE\_FRAGILE = 1

DOC\_MODE\_THICK = 2

DOC\_MODE\_TRIFOLD = 3

Default Value:

DOC\_MODE\_NORMAL

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.25 BBH\_CAP\_DOC\_VERY\_LONG

If set, split page into segments. Segments are the size of the paper selected in the ICAP\_FRAME

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Non standard TWAIN mechanism)

Stored in profile:

Yes

### 3.8.26 BBH\_CAP\_ENABLE\_ADVANCED\_FRAMES

Setting this capability to true will enable using BBH\_CAP\_ADV\_WND\_ID. TWAIN Application will be able to access all properties of the scanner windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0Applications)  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No (Non standard TWAIN mechanism)

Stored in profile:

Yes

### 3.8.27 BBH\_CAP\_JPEG\_SUBSAMPLING

Specify JPEG subsampling. It works for color mode only.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

JPEG\_SUBSAMPLING444=0

JPEG\_SUBSAMPLING422=1

Default Value:

JPEG\_SUBSAMPLING422

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.28 BBH\_CAP\_MFD\_ACTION

MFD\_ACTION\_DISABLE - multifeed detection is disabled. All sensors will be disabled and multifeed faults will not be detected.

MFD\_ACTION\_NOTIFY - It will not stop scanning and will not report the multifeed to the host. Instead, it will only report the error through the operator interface (e.g. sound and LEDs).

MFD\_ACTION\_STOP - scanner stops after a multifeed.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET – TW\_ONEVALUE  
 MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT – TW\_ONEVALUE

Allowed Values:

MFD\_ACTION\_DISABLE = 0  
 MFD\_ACTION\_NOTIFY = 1  
 MFD\_ACTION\_STOP = 2

Default Value:

MFD\_ACTION\_STOP

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.29 BBH\_CAP\_MFD\_IGNORE\_BY\_SIZE

Minimum overlap size for the sensor to detect a multifeed.

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET – TW\_ONEVALUE  
 MSG\_SET – TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT – TW\_ONEVALUE

Allowed Values:

1in to 25.5in (25mm to 647mm)

Default Value:

1in (25mm)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

**3.8.30 BBH\_CAP\_MFD\_SENSOR\_ENABLE**

List of Multifeed sensors to be enabled.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ARRAY

MSG\_GETCURRENT - TW\_ARRAY

MSG\_GETDEFAULT - TW\_ARRAY

MSG\_RESET - TW\_ARRAY

MSG\_SET - TW\_ARRAY

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

MFD\_SENSOR\_LEFT = 0

MFD\_SENSOR\_CENTER = 1

MFD\_SENSOR\_RIGHT = 2

Default Value:

MFD\_SENSOR\_LEFT, MFD\_SENSOR\_CENTER, MFD\_SENSOR\_RIGHT

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

Note: To enable a sensor add it into the array. For example, to enable Left and Right sensors only set {MFD\_SENSOR\_LEFT, MFD\_SENSOR\_RIGHT} array to BBH\_CAP\_MFD\_SENSOR\_ENABLE.

**3.8.31 BBH\_CAP\_NEGATIVE**

If 1, indicates image should be output in reverse-image format (invert black and white). It works in Black and White (Bitonal) mode only. It can be different on different windows.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

No

Stored in profile:

Yes

### 3.8.32 BBH\_CAP\_PRN\_CNT\_ENABLE

If set, printer counter is enabled and will count, based upon the other settings for the counter. It can be different on different printers.

Type:

TW\_BOOL

Supported Messages:

MSG\_GET - TW\_ENUMERATION (for 2.0 applications), TW\_ONEVALUE (for <2.0 Applications)

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

FALSE, TRUE

Default Value:

FALSE

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.33 BBH\_CAP\_PRN\_CNT\_MAX\_DIG

Maximum number of digits for the counter. It will wrap around when it reaches the maximum value that may be specified with this number of digits. It can be different on different printers.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1 to 9 (Read from scanner)

Default Value:

1

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.34 BBH\_CAP\_PRN\_CNT\_STEP

Step / increment amount for the counter. Every time it is to be incremented (based upon the other settings) this value will be added to the counter value. It can be different on different printers.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION  
MSG\_GETCURRENT - TW\_ONEVALUE  
MSG\_GETDEFAULT - TW\_ONEVALUE  
MSG\_RESET - TW\_ONEVALUE  
MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION  
MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1 to 9 (Read from scanner)

Default Value:

5

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.35 BBH\_CAP\_PRN\_FONT

Selects the font to be used for printing. It can be different on different printers.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1 (Read from scanner)

Default Value:

1

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.36 BBH\_CAP\_PRN\_ROT

Rotation to use for the character string that is printed. It can be different on different printers.

Type:

TW\_UINT16

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0, 90, 180, 270 (Read from scanner)

Default Value:

90

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.37 BBH\_CAP\_PRN\_SIZE

Selects the character size to be used for printing. It can be different on different printers.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE

MSG\_GETDEFAULT - TW\_ONEVALUE

MSG\_RESET - TW\_ONEVALUE

MSG\_SET - TW\_ONEVALUE, TW\_ENUMERATION

MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1 to 2 (Read from scanner)

Default Value:

1

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.38 BBH\_CAP\_PRN\_SPACE

Character spacing to use for printing. It can be different on different printers.

Type:

TW\_UINT8

Supported Messages:

MSG\_GET - TW\_ENUMERATION

MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET – TW\_ONEVALUE  
 MSG\_SET – TW\_ONEVALUE, TW\_ENUMERATION  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

1 to 2 (Read from scanner)

Default Value:

1

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.8.39 BBH\_CAP\_PRN\_TIME\_DATE

Bytes 0x3C and 0x3D of Inquiry data.

|        |                     |                                |                               |                                |                             |      |                               |      |
|--------|---------------------|--------------------------------|-------------------------------|--------------------------------|-----------------------------|------|-------------------------------|------|
| Byte 0 | Time Print<br>Avail | Time /<br>Date Single<br>Field | Time 24<br>Hr Format<br>Avail | Time 12<br>Hr. Format<br>Avail | Reserved                    |      |                               |      |
| Byte 1 | Date Print<br>Avail | Date DMY<br>Format<br>Avail    | Date MDY<br>Format<br>Avail   | Date YMD<br>Format<br>Avail    | Date Text<br>Month<br>Avail | Rsvd | Date 4<br>Digit Year<br>Avail | Rsvd |

Type:

TW\_UINT32

Supported Messages:

MSG\_GET - TW\_ONEVALUE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET – TW\_ONEVALUE  
 MSG\_SET – TW\_ONEVALUE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

(Read from scanner)  
 BYTE0 = InquiryImprinter.byTime  
 BYTE1 = InquiryImprinter.byDate

Default Value:

(Read from scanner)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT

Stored in registry:

No (Read only)

Stored in profile:

No (Read only)

### 3.8.40 BBH\_CAP\_PRN\_VOFFSET

Vertical offset from the top of the page to the beginning of the print string. It can be different on different printers.

Type:

TW\_FIX32

Supported Messages:

MSG\_GET - TW\_RANGE  
 MSG\_GETCURRENT - TW\_ONEVALUE  
 MSG\_GETDEFAULT - TW\_ONEVALUE  
 MSG\_RESET - TW\_ONEVALUE  
 MSG\_SET - TW\_ONEVALUE, TW\_RANGE  
 MSG\_QUERY SUPPORT - TW\_ONEVALUE

Allowed Values:

0in to 54.6in (0mm to 1387mm)

Default Value:

0.5in (13mm)

Query Support Value:

TWQC\_GET | TWQC\_GETDEFAULT | TWQC\_GETCURRENT | MSG\_SET | MSG\_RESET

Stored in registry:

Yes

Stored in profile:

Yes

### 3.9 CAPABILITIES SUMMARY

| Capability            | Type      | Range                                  | Default value | Has mandatory default value |
|-----------------------|-----------|----------------------------------------|---------------|-----------------------------|
| CAP_AUTOFEE<br>D      | TW_BOOL   | FALSE, TRUE                            | TRUE          | No                          |
| CAP_AUTOSCA<br>N      | TW_BOOL   | TRUE                                   | TRUE          | Yes                         |
| CAP_CAMERA<br>ENABLED | TW_BOOL   | FALSE, TRUE                            | FALSE         | Yes                         |
| CAP_CAMERA<br>SIDE    | TW_UINT16 | TWCS_BOTH,<br>TWCS_TOP,<br>TWCS_BOTTOM | TWCS_BOTH     | Yes                         |

|                                       |               |                                                               |                                      |     |
|---------------------------------------|---------------|---------------------------------------------------------------|--------------------------------------|-----|
| CAP_CUSTOMD<br>SDATA                  | TW_BOOL       | TRUE                                                          | TRUE                                 | No  |
| CAP_DEVICEO<br>NLINE                  | TW_BOOL       | FALSE, TRUE                                                   | NAK                                  | No  |
| CAP_DUPLEX                            | TW_UINT1<br>6 | TWDX_1PASSDU<br>PLEX or<br>TWDX_NONE                          | TWDX_1PASS<br>DUPLEX or<br>TWDX_NONE | No  |
| CAP_DUPLEXE<br>NABLED                 | TW_BOOL       | FALSE, TRUE                                                   | FALSE                                | No  |
| CAP_ENABLEDS<br>UIONLY                | TW_BOOL       | TRUE                                                          | TRUE                                 | No  |
| CAP_FEEDERE<br>NABLED                 | TW_BOOL       | TRUE                                                          | TRUE                                 | No  |
| CAP_FEEDERL<br>OADED                  | TW_BOOL       | FALSE, TRUE                                                   | FALSE, TRUE                          | No  |
| CAP_INDICATO<br>RS                    | TW_BOOL       | FALSE, TRUE                                                   | TRUE                                 | Yes |
| CAP_JOBCONTR<br>OL                    | TW_UINT1<br>6 | TWJC_NONE                                                     | TWJC_NONE                            | No  |
| CAP_PAPERDET<br>ECTABLE               | TW_BOOL       | TRUE                                                          | TRUE                                 | No  |
| CAP_PRINTER                           | TW_UINT1<br>6 | TWPR_IMPRINTE<br>RTOPBEFORE,<br>TWPR_IMPRINTE<br>RBOTTOMAFTER | TWPR_IMPRIN<br>TERTOPBEFO<br>RE      | No  |
| CAP_PRINTERE<br>NABLED                | TW_BOOL       | FALSE, TRUE or<br>FALSE only                                  | FALSE                                | Yes |
| CAP_PRINTERI<br>NDEX                  | TW_UINT3<br>2 | 0 to Max Printer<br>Counter Value                             | 1                                    | No  |
| CAP_PRINTERM<br>ODE                   | TW_UINT1<br>6 | TWPM_SINGLES<br>TRING                                         | TWPM_SINGL<br>ESTRING                | No  |
| CAP_PRINTERS<br>TRING                 | TW_STR255     | string - 0 to<br>MaxString Len                                | ""                                   | No  |
| CAP_SUPPORTE<br>DCAPS                 | TW_UINT1<br>6 | Column 1 of this<br>table                                     | Column 1 of this<br>table            | No  |
| CAP_UICONTRO<br>LLABLE                | TW_BOOL       | TRUE                                                          | TRUE                                 | No  |
| CAP_XFERCOU<br>NT                     | TW_INT16      | -1 , 1 to 32767                                               | -1                                   | Yes |
| ICAP_AUTOBRI<br>GHT                   | TW_BOOL       | FALSE, TRUE                                                   | True                                 | No  |
| ICAP_AUTOMAT<br>ICBORDERDET<br>ECTION | TW_BOOL       | FALSE, TRUE                                                   | False                                | Yes |

|                            |               |                                                     |                          |     |
|----------------------------|---------------|-----------------------------------------------------|--------------------------|-----|
| ICAP_AUTOMAT<br>ICDESKEW   | TW_BOOL       | FALSE, TRUE                                         | TRUE                     | Yes |
| ICAP_BITDEPT<br>H          | TW_UINT1<br>6 | 1or8or24                                            | 1or8or24                 | No  |
| ICAP_BITDEPT<br>HREDUCTION | TW_UINT1<br>6 | TWBR_THRESHO<br>LD                                  | TWBR_THRES<br>HOLD       | No  |
| ICAP_BITORDE<br>R          | TW_UINT1<br>6 | TWBO_MSBFIRST                                       | TWBO_MSBFI<br>RST        | No  |
| ICAP_BRIGHTN<br>ESS        | TW_FIX32      | -1000 to 1000                                       | 0                        | No  |
| ICAP_COMPRES<br>SION       | TW_UINT1<br>6 | TWCP_NONE,<br>TWCP_GROUP4,<br>TWCP_JPEG             | TWCP_NONE                | Yes |
| ICAP_CONTRAS<br>T          | TW_FIX32      | -1000 to 1000                                       | 0                        | No  |
| ICAP_EXTIMAG<br>EINFO      | TW_BOOL       | TRUE                                                | TRUE                     | No  |
| ICAP_FRAMES                | TW_FRAM<br>E  | 1 to 8 frames                                       | 1 frame with<br>max size | No  |
| ICAP_FILTER                | TW_UINT1<br>6 | TWFT_NONE,TW<br>FT_RED,<br>TWFT_GREEN,<br>TWFT_BLUE | TWFT_NONE                | Yes |
| ICAP_GAMMA                 | TW_FIX32      | 0.1 to 10.0                                         | 1.0                      | No  |
| ICAP_ICCPROFI<br>LE        | TW_UNIT1<br>6 | TWIC_NONE,<br>TWIC_EMBED                            | TWIC_EMBED               | No  |
| ICAP_IMAGEFIL<br>EFORMAT   | TW_UINT1<br>6 | TWFF_BMP,<br>TWFF_TIFF,<br>TWFF_JFIF                | TWFF_TIFF                | No  |
| ICAP_JPEGQUA<br>LITY       | TW_INT16      | 0 to 99                                             | 29                       | No  |
| ICAP_MAXFRAM<br>ES         | TW_UINT1<br>6 | 2,4,8                                               | 4                        | No  |
| ICAP_MINIMUM<br>HEIGHT     | TW_FIX32      | 2.5in (63mm)                                        | 2.5in (63mm)             | No  |
| ICAP_MINIMUM<br>WIDTH      | TW_FIX32      | 1.7in (43mm)                                        | 1.7in (43mm)             | No  |

|                         |               |                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |     |
|-------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|
| ICAP_ORIENTA<br>TION    | TW_UINT1<br>6 | TWOR_PORTRAI<br>T,<br>TWOR_LANDSCA<br>PE                                                                                                                                                                                                                                                                                                                                                                           | TWOR_PORTR<br>AIT  | Yes |
| ICAP_OVERSCA<br>N       | TW_UINT1<br>6 | TWOV_NONE,<br>TWOV_ALL                                                                                                                                                                                                                                                                                                                                                                                             | TWOV_NONE          | Yes |
| ICAP_PHYSICAL<br>HEIGHT | TW_FIX32      | 40in (1016mm)                                                                                                                                                                                                                                                                                                                                                                                                      | 40in (1016mm)      | No  |
| ICAP_PHYSICAL<br>WIDTH  | TW_FIX32      | 12.25in (311mm)                                                                                                                                                                                                                                                                                                                                                                                                    | 12.25in (311mm)    | No  |
| ICAP_PIXELFLA<br>VOR    | TW_UINT1<br>6 | TWPF_CHOCOLA<br>TE                                                                                                                                                                                                                                                                                                                                                                                                 | TWPF_CHOCO<br>LATE | No  |
| ICAP_PIXELTYP<br>E      | TW_UINT1<br>6 | TWPT_BW,TWPT<br>_GRAY,TWPT_R<br>GB                                                                                                                                                                                                                                                                                                                                                                                 | TWPT_BW            | No  |
| ICAP_PLANARC<br>HUNKY   | TW_UINT1<br>6 | TWPC_CHUNKY                                                                                                                                                                                                                                                                                                                                                                                                        | TWPC_CHUN<br>KY    | No  |
| ICAP_ROTATIO<br>N       | TW_FIX32      | 0, 90, 180, 270                                                                                                                                                                                                                                                                                                                                                                                                    | 0                  | Yes |
| ICAP_SUPPORT<br>EDSIZES | TW_UINT1<br>6 | TWSS_NONE,<br>TWSS_USLETTER<br>,<br>TWSS_USLEGAL,<br>TWSS_USLEDGE<br>R,<br>TWSS_USSTATE<br>MENT,<br>TWSS_USEXECU<br>TIVE,<br>TWSS_BUSINESS<br>CARD, TWSS_A3,<br>TWSS_A4,<br>TWSS_A5,<br>TWSS_A6,<br>TWSS_A7,<br>TWSS_A8,<br>TWSS_ISO4,<br>TWSS_ISO5,<br>TWSS_ISO6,<br>TWSS_ISO7,<br>TWSS_ISO8,<br>TWSS_C4,<br>TWSS_C5,<br>TWSS_C6,<br>TWSS_C7,<br>TWSS_C8,<br>TWSS_JIS4,<br>TWSS_JIS5,<br>TWSS_JIS6,<br>TWSS_JIS7, | TWSS_MAXIM<br>UM   | No  |

|                             |               |                                                                          |                 |     |
|-----------------------------|---------------|--------------------------------------------------------------------------|-----------------|-----|
|                             |               | TWSS_JISB8,<br>TWSS_JISB9,<br>TWSS_MAXIMUM<br>,<br>TWSS_MAXIMUM<br>_LONG |                 |     |
| ICAP_TILES                  | TW_BOOL       | FALSE                                                                    | FALSE           | No  |
| ICAP_UNDEFIN<br>EDIMAGESIZE | TW_BOOL       | FALSE, TRUE                                                              | FALSE           | Yes |
| ICAP_UNITS                  | TW_UINT1<br>6 | TWUN_INCHES,<br>TWUN_MILLIME<br>TERS                                     | TWUN_INCHE<br>S | No  |
| ICAP_XFERMEC<br>H           | TW_UINT1<br>6 | TWSX_NATIVE,<br>TWSX_MEMORY,<br>TWSX_FILE                                | TWSX_NATIV<br>E | Yes |
| ICAP_XNATIVE<br>RESOLUTION  | TW_FIX32      | 600                                                                      | 600             | No  |
| ICAP_XRESOLU<br>TION        | TW_FIX32      | 100, 150, 200, 240,<br>300, 400,500, 600                                 | 200             | No  |
| ICAP_YNATIVE<br>RESOLUTION  | TW_FIX32      | 600                                                                      | 600             | No  |
| ICAP_YRESOLU<br>TION        | TW_FIX32      | 100, 150, 200, 240,<br>300, 400,500, 600                                 | 200             | No  |
| BBH_CAP_ACD_<br>BW_WINDOW   | TW_UINT8      | any possible<br>WindowID,255                                             | 255             | No  |
| BBH_CAP_ACD_<br>CONTENT     | TW_UINT8      | 0 to 255                                                                 | 128             | No  |
| BBH_CAP_ACD_<br>ENABLE      | TW_BOOL       | FALSE, TRUE                                                              | FALSE           | No  |
| BBH_CAP_ACD_<br>SMALL_OBJ   | TW_UINT8      | 0 to 255                                                                 | 128             | No  |

|                               |          |                                                                                  |                          |    |
|-------------------------------|----------|----------------------------------------------------------------------------------|--------------------------|----|
| BBH_CAP_ACD_SMALL_OBJ_ENABLE  | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_ACD_SUPPRESS          | TW_UINT8 | 0 to 255                                                                         | 128                      | No |
| BBH_CAP_ACD_SUPPRESS_ENABLE   | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_ADV_WND_ENABLE        | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_ADV_WND_ID            | TW_UINT8 | Current Window(frame) ID                                                         | Current Window(frame) ID | No |
| BBH_CAP_BKG_SAT               | TW_UINT8 | 0 to 255                                                                         | 128                      | No |
| BBH_CAP_BKG_SAT_MODE          | TW_UINT8 | BKG_SAT_DISABLE = 0, BKG_SAT_WHITE = 2, BKG_SAT_BLACK = 1, BKG_SAT_AUTOMATIC = 3 | BKG_SAT_DISABLE          | No |
| BBH_CAP_BKG_SNAP_TO_WHITE     | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_CAM_BRIGHTNESS        | TW_UINT8 | 0 to 255                                                                         | 144                      | No |
| BBH_CAP_CAM_BRIGHTNESS_ENABLE | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_CAM_CONTRAST          | TW_UINT8 | 0 to 255                                                                         | 133                      | No |
| BBH_CAP_CAM_CONTRAST_ENABLE   | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_CAM_GAMMA             | TW_FIX32 | 1.0 to 2.5                                                                       | 1.3                      | No |
| BBH_CAP_CAM_MODE              | TW_UINT8 | CAM_MODE_GAMMA = 0, CAM_MODE_SRGB = 1, CAM_MODE_ICC = 2                          | CAM_MODE_GAMMA           | No |
| BBH_CAP_CAM_NEGATIVE          | TW_BOOL  | FALSE, TRUE                                                                      | FALSE                    | No |
| BBH_CAP_CROP_HEIGHT           | TW_BOOL  | FALSE, TRUE                                                                      | TRUE                     | No |

|                                |          |                                                                                         |                     |    |
|--------------------------------|----------|-----------------------------------------------------------------------------------------|---------------------|----|
| BBH_CAP_CROP_WIDTH             | TW_BOOL  | FALSE, TRUE                                                                             | TRUE                | No |
| BBH_CAP_DOC_HIGH_SKEW          | TW_BOOL  | FALSE, TRUE                                                                             | FALSE               | No |
| BBH_CAP_DOC_IGNORE_HOLE        | TW_FIX32 | 0in to 1.7in (0mm to 43mm)                                                              | 0in (0mm)           | No |
| BBH_CAP_DOC_MODE               | TW_UINT8 | DOC_MODE_NO RMAL = 0, DOC_MODE_F RAGILE = 1, DOC_MODE_T HICK = 2, DOC_MODE_T RIFOLD = 3 | DOC_MODE_NORMAL     | No |
| BBH_CAP_DOC_VERY_LONG          | TW_BOOL  | FALSE, TRUE                                                                             | FALSE               | No |
| BBH_CAP_ENABLE_ADVANCED_FRAMES | TW_BOOL  | FALSE, TRUE                                                                             | FALSE               | No |
| BBH_CAP_JPEG_SUBSAMPLING       | TW_UINT8 | JPEG_SUBSAMPLING444=0, JPEG_SUBSAMPLING422=1                                            | JPEG_SUBSAMPLING422 | No |
| BBH_CAP_MFD_ACTION             | TW_UINT8 | MFD_ACTION_DISABLE = 0, MFD_ACTION_NOTIFY = 1, MFD_ACTION_STOP = 2                      | MFD_ACTION_STOP     | No |
| BBH_CAP_MFD_IGNORE_BY_SIZE     | TW_FIX32 | 1.0in to 25.5in (25mm to 647 mm)                                                        | 1.0in (25mm)        | No |
| BBH_CAP_MFD_SENSOR_ENABLE      | TW_UINT8 | MFD_SENSOR_LEFT = 0, MFD_SENSOR_CENTER = 1, MFD_SENSOR_RIGHT = 2                        | All                 | No |
| BBH_CAP_NEGATIVE               | TW_BOOL  | FALSE, TRUE                                                                             | FALSE               | No |
| BBH_CAP_PRN_CNT_ENABLE         | TW_BOOL  | FALSE, TRUE                                                                             | FALSE               | No |
| BBH_CAP_PRN_CNT_MAX_DIG        | TW_UINT8 | 1 to 9                                                                                  | 1                   | No |
| BBH_CAP_PRN_CNT_STEP           | TW_UINT8 | 1 to 9                                                                                  | 5                   | No |

|                       |           |                                     |                                     |    |
|-----------------------|-----------|-------------------------------------|-------------------------------------|----|
| BBH_CAP_PRN_FONT      | TW_UINT8  | 1                                   | 1                                   | No |
| BBH_CAP_PRN_ROT       | TW_UINT16 | 0, 90, 180, 270                     | 90                                  | No |
| BBH_CAP_PRN_SIZE      | TW_UINT8  | 1,2                                 | 1                                   | No |
| BBH_CAP_PRN_SPACE     | TW_UINT8  | 1,2                                 | 1                                   | No |
| BBH_CAP_PRN_TIME_DATE | TW_UINT32 | Bytes 0x3C and 0x3D of Inquiry data | Bytes 0x3C and 0x3D of Inquiry data | No |
| BBH_CAP_PRN_VOFFSET   | TW_FIX32  | 0" to 54.6" 0mm to 1387mm           | 0.5" 12mm                           | No |

### 3.10 CAPABILITIES STORED IN REGISTRY

The table below present all capabilities stored in the registry and how they are stored.

| Capability                    | Per Window | Per Side | Per Printer | Per PixelType |
|-------------------------------|------------|----------|-------------|---------------|
| CAP_AUTOFEED                  |            |          |             |               |
| CAP_DUPLEXENABLED             |            |          |             |               |
| CAP_PRINTER                   |            |          |             |               |
| CAP_PRINTERSTRING             |            |          | Yes         |               |
| ICAP_AUTOBRIGHT               | Yes        |          |             |               |
| ICAP_AUTOMATICBORDERDETECTION | Yes        |          |             |               |
| ICAP_AUTOMATICDESKEW          | Yes        |          |             |               |
| ICAP_BRIGHTNESS               | Yes        |          |             | Yes           |
| ICAP_CONTRAST                 | Yes        |          |             | Yes           |
| ICAP_FRAMES                   | Yes        |          |             |               |
| ICAP_GAMMA                    | Yes        |          |             | Yes           |
| ICAP_IMAGEFILEFORMAT          |            |          |             |               |
| ICAP_JPEGQUALITY              |            |          |             |               |
| ICAP_ORIENTATION              | Yes        |          |             |               |
| ICAP_PIXELTYPE                | Yes        |          |             |               |
| ICAP_ROTATION                 | Yes        |          |             |               |
| ICAP_SUPPORTEDSIZES           | Yes        |          |             |               |
| ICAP_UNITS                    |            |          |             |               |
| ICAP_XRESOLUTION              | Yes        |          |             |               |
| ICAP_YRESOLUTION              | Yes        |          |             |               |
| BBH_CAP_ACD_CONTENT           | Yes        |          |             |               |
| BBH_CAP_ACD_SMALL_OBJ         | Yes        |          |             |               |
| BBH_CAP_ACD_SMALL_OBJ_ENABLE  | Yes        |          |             |               |
| BBH_CAP_ACD_SUPPRESS          | Yes        |          |             |               |

|                             |     |     |     |  |
|-----------------------------|-----|-----|-----|--|
| BBH_CAP_ACD_SUPPRESS_ENABLE | Yes |     |     |  |
| BBH_CAP_BKG_SAT             | Yes |     |     |  |
| BBH_CAP_BKG_SAT_MODE        | Yes |     |     |  |
| BBH_CAP_BKG_SNAP_TO_WHITE   | Yes |     |     |  |
| BBH_CAP_CAM_BRIGHTNESS      |     | Yes |     |  |
| BBH_CAP_CAM_CONTRAST        |     | Yes |     |  |
| BBH_CAP_CAM_GAMMA           |     | Yes |     |  |
| BBH_CAP_CAM_MODE            |     |     |     |  |
| BBH_CAP_MFD_ACTION          |     |     |     |  |
| BBH_CAP_MFD_IGNORE_BY_SIZE  |     |     |     |  |
| BBH_CAP_MFD_SENSOR_ENABLE   |     |     |     |  |
| BBH_CAP_DOC_HIGH_SKEW       |     |     |     |  |
| BBH_CAP_DOC_IGNORE_HOLE     |     |     |     |  |
| BBH_CAP_DOC_MODE            |     |     |     |  |
| BBH_CAP_PRN_CNT_ENABLE      |     |     | Yes |  |
| BBH_CAP_PRN_CNT_MAX_DIG     |     |     | Yes |  |
| BBH_CAP_PRN_CNT_STEP        |     |     | Yes |  |
| BBH_CAP_PRN_FONT            |     |     | Yes |  |
| BBH_CAP_PRN_ROT             |     |     | Yes |  |
| BBH_CAP_PRN_SIZE            |     |     | Yes |  |
| BBH_CAP_PRN_SPACE           |     |     | Yes |  |
| BBH_CAP_PRN_VOFFSET         |     |     | Yes |  |
| BBH_CAP_ACD_ENABLE          | Yes |     |     |  |
| BBH_CAP_JPEG_SUBSAMPLING    |     |     |     |  |

### 3.11 CAPABILITIES DEPENDENCIES

The table below presents capabilities which depend on other capabilities.

| Capability                    | BBH_CAP_ADV_WND_ID | CAP_CAMERA_ID | CAP_PRINTER | ICAP_PIXELTYPE |
|-------------------------------|--------------------|---------------|-------------|----------------|
| CAP_CAMERAENABLED             |                    | Yes           |             | Yes            |
| CAP_PRINTERENABLED            |                    |               | Yes         |                |
| CAP_PRINTERINDEX              |                    |               | Yes         |                |
| CAP_PRINTERMODE               |                    |               | Yes         |                |
| CAP_PRINTERSTRING             |                    |               | Yes         |                |
| ICAP_AUTOBRIGHT               | Yes                |               |             |                |
| ICAP_AUTOMATICBORDERDETECTION | Yes                |               |             |                |
| ICAP_AUTOMATICDESKEW          | Yes                |               |             |                |
| ICAP_BITDEPTH                 |                    |               |             | Yes            |

|                               |     |     |     |     |
|-------------------------------|-----|-----|-----|-----|
| ICAP_BRIGHTNESS               | Yes |     |     | Yes |
| ICAP_COMPRESSION              | Yes |     |     |     |
| ICAP_CONTRAST                 |     |     |     | Yes |
| ICAP_FRAMES                   | Yes |     |     |     |
| ICAP_FILTER                   |     | Yes |     |     |
| ICAP_GAMMA                    | Yes |     |     | Yes |
| ICAP_JPEGQUALITY              | Yes |     |     |     |
| ICAP_ORIENTATION              | Yes |     |     |     |
| ICAP_PIXELTYPE                | Yes |     |     |     |
| ICAP_ROTATION                 | Yes |     |     |     |
| ICAP_SUPPORTEDSIZES           | Yes |     |     |     |
| ICAP_XRESOLUTION              | Yes |     |     |     |
| ICAP_YRESOLUTION              | Yes |     |     |     |
| BBH_CAP_ACD_BW_WINDOW         | Yes |     |     |     |
| BBH_CAP_ACD_CONTENT           | Yes |     |     |     |
| BBH_CAP_ACD_SMALL_OBJ         | Yes |     |     |     |
| BBH_CAP_ACD_SMALL_OBJ_ENABLE  | Yes |     |     |     |
| BBH_CAP_ACD_SUPPRESS          | Yes |     |     |     |
| BBH_CAP_ACD_SUPPRESS_ENABLE   | Yes |     |     |     |
| BBH_CAP_BKG_SAT               | Yes |     |     |     |
| BBH_CAP_BKG_SAT_MODE          | Yes |     |     |     |
| BBH_CAP_BKG_SNAP_TO_WHITE     | Yes |     |     |     |
| BBH_CAP_CAM_BRIGHTNESS        |     | Yes |     |     |
| BBH_CAP_CAM_BRIGHTNESS_ENABLE |     |     |     |     |
| BBH_CAP_CAM_CONTRAST          |     | Yes |     |     |
| BBH_CAP_CAM_CONTRAST_ENABLE   |     |     |     |     |
| BBH_CAP_CAM_GAMMA             |     | Yes |     |     |
| BBH_CAP_CAM_NEGATIVE          |     | Yes |     |     |
| BBH_CAP_CAM_MODE              |     |     |     |     |
| BBH_CAP_CROPHEIGHT            | Yes |     |     |     |
| BBH_CAP_CROPWIDTH             | Yes |     |     |     |
| BBH_CAP_NEGATIVE              | Yes |     |     |     |
| BBH_CAP_PRN_CNT_ENABLE        |     |     | Yes |     |
| BBH_CAP_PRN_CNT_MAX_DIG       |     |     | Yes |     |
| BBH_CAP_PRN_CNT_STEP          |     |     | Yes |     |
| BBH_CAP_PRN_FONT              |     |     | Yes |     |
| BBH_CAP_PRN_ROT               |     |     | Yes |     |

|                          |     |  |     |  |
|--------------------------|-----|--|-----|--|
| BBH_CAP_PRN_SIZE         |     |  | Yes |  |
| BBH_CAP_PRN_SPACE        |     |  | Yes |  |
| BBH_CAP_PRN_VOFFSET      |     |  | Yes |  |
| BBH_CAP_ACD_ENABLE       | Yes |  |     |  |
| BBH_CAP_ADV_WND_ENABLE   | Yes |  |     |  |
| BBH_CAP_JPEG_SUBSAMPLING | Yes |  |     |  |

If CAP\_CAMERASIDE is TWCS\_BOTH, then Get message will return data from front side and set/reset message will change both sides. This is default scanner behavior.

### 3.12 **SCANNING MODES**

These scanner modes are related to TWAIN DS API only.

#### 3.12.1 **Simple mode**

Most of TWAIN application used this mode. User can scan Simplex/Duplex and it is possible to specify few frames (all with same image settings except the frame size and location), but it is not possible to obtain multistream from the scanner.

#### 3.12.2 **Multistream using standard TWAIN interface**

It is based on CAP\_CAMERAENABLED capability introduced in TWAIN version 2.0. Using CAP\_CAMERASIDE, ICAP\_PIXELTYPE and CAP\_CAMERAENABLED, an application can specify several PixelTypes per side. If TWAIN DS finds that application enable more than one camera it discard CAP\_DUPLEX capability and it will use CAP\_CAMERAENABLED instead of it to determine if it must scan Simplex or Duplex. Application can use this mode to scan back side only

Here is an example:

```
Set CAP_CAMERASIDE to TWCS_TOP
Set ICAP_PIXELTYPE to TWPT_BW
Set CAP_CAMERAENABLED to TRUE
Set ICAP_PIXELTYPE to TWPT_RGB
Set CAP_CAMERAENABLED to TRUE
Set CAP_CAMERASIDE to TWCS_BOTTOM
Set ICAP_PIXELTYPE to TWPT_BW
Set CAP_CAMERAENABLED to TRUE
Scan
```

TWAIN DS will return Black and White (Bitonal) and Color image from front side and Black and White (Bitonal) image from back side.

#### 3.12.3 **Custom Multistream mode**

This mode is based on custom capabilities and can be used only from applications specially written for this TWAIN DS. This completely corresponds to scanner windows system.

To turn on this mode set to TRUE capability BBH\_CAP\_ENABLE\_ADVANCED\_FRAMES. If this capability is TRUE, then TWAIN DS will ignore other scan modes.

Every window can be addressed using capability BBH\_CAP\_ADV\_WND\_ID. See “Capabilities Dependencies” table for information which capabilities can be set separately for each window.

### **3.13 INSTALLER / UNINSTALLER**

The basic installer is using Windows Installer (MSM) and Driver Install Frameworks (DIFX) to update low level drivers and .inf based PNP.

Separate installers are provided for both 32 & 64-bit TDS.  
64 bit installer will install both 32-bit and 64-bit TDS.

### **3.14 ERROR DETECTION / RECOVERY**

Device Not Present – if CAP\_INDICATORS is TRUE, then user shall be presented with appropriate message otherwise TWAIN API shall respond with TWCC\_CHECKDEVICEONLINE.

Scan errors – when CAP\_INDICATORS is TRUE, user shall be presented with a message. TWAIN API shall respond with the appropriate TWCC\_error code.

### **3.15 LOCALIZATION**

All strings are stored in the resource file. Initial release is English only version.

## 4 LOGGING

To enable logging add these DWORD values:

Name: DEBUG

Data:1

Name: DEBUGTIMING

Data: 1

to this registry key :

HKEY\_CURRENT\_USER\Software\Böwe Bell+Howell\Ngenuity

After opening the TDS , it will create registry value with name “DSLogFileName” under the same registry key. It will contain path to the log file.

Notes:

There is no size protection, but log file is cleared every time after opening the TDS.

Enabling logging will slow down the scanning.

## 5 IMPLEMENTATION NOTES

### 5.1 IMAGE CONTRAST BRIGHTNESS GAMMA

BBH recommends the following user controls implementation

RGB or GRAY Scanning (Color or Grayscale):

|                  |                   |
|------------------|-------------------|
| Image Brightness | ICAP_BRIGHTNESS   |
| Image Contrast   | ICAP_CONTRAST     |
| Image Gamma      | BBH_CAP_CAM_GAMMA |

BW (Bitonal) Scanning

|                  |                                                      |
|------------------|------------------------------------------------------|
| Image Brightness | ICAP_AUTOBRIGHT (default to Auto-Brightness feature) |
| Image Contrast   | ICAP_CONTRAST                                        |
| Image Gamma      | BBH_CAP_CAM_GAMMA                                    |

The following Camera parameters are set by the scanner manufacturer and are not considered to be user set parameters and should not be exposed to a scanner user (unless for the most advanced factory users):

BBH\_CAP\_CAM\_BRIGHTNESS  
BBH\_CAP\_CAM\_CONTRAST

Therefore the TDS user is required to keep the default settings to FALSE for

BBH\_CAP\_CAM\_BRIGHTNESS\_ENABLE  
BBH\_CAP\_CAM\_CONTRAST\_ENABLE

BBH recommend the use of BBH\_CAP\_CAM\_GAMMA for camera gamma control as this parameter works within the camera full depth of color palette (maximum bit depth) compared the ICAP\_GAMMA that controls gamma in the Image Processing buffer RGB 24-bit more limited color palette.

### 5.2 COLOR IMAGE IN BMP MODE

TWFF\_BMP file type with ICAP\_PIXELTYPE = RGB creates uncompressed file however the scanner hardware actually uses JPEG compression with JPEGQUALITY = 99 and JPEG\_SUBSAMPLING = 444 for RESOLUTION at 400 DPI or less and 422 for RESOLUTION higher than 400 DPI.

### 5.3 MULTISTREAM MODE

In Multistream mode, the scanner outputs multiple images per pages with up to 4 images for the Front Page and 4 images for the Back Page. The multistream mode is quite versatile but also contains some limitations explained below.

Duplex

- Front and Back Main Pages are required to have same Orientation, Page Size, Resolution, JPEG Compression and Color Mode. (This is not a multistream mode specific requirement).
- Front and Back Sub-Windows settings are independents, except for JPEG compression.

Color Mode

- Sub-Windows Color mode need to be the same or derived from Main Page Color mode; Black and White (BW) can be derived from Color or Grayscale.
- The combination of Color (Main Page) and Grayscale (Sub-windows) is not supported.

Auto Color Detect setting in Main Page is equivalent to Color setting for this purpose.

- Color Drop-Out is not supported in Multistream mode.

#### JPEG Compression

- JPEG need to be the same for all Windows, that is Main Front and Back Pages and all Sub-Windows.
- Multistream does not support a mix of compressed and uncompressed JPEG windows.

#### Resolution

- The minimum Sub-Windows resolution is HALF of the Main Page.
- Sub-Windows resolution will be interpolated by image processing from Main Page resolution if the Sub-Windows have a different resolution than the Main.

#### Page Size, Orientation

- Sub-windows Page Size (with Orientation) needs to be smaller or equal to the Main Page (not withstanding Crop/Deskew off).

#### Image Settings

- The following parameters can be set differently between Main Page and Sub-Windows: Rotation, Crop/Deskew, Image Contrast, Image Brightness/Auto-Brightness, Image Gamma (not GUI exposed), Background Saturation settings and Auto Color Detect settings.
- Camera image settings are set by the Main Page and apply to all Sub-Windows: Camera Gamma (GUI exposed) and Camera Contrast and Brightness (not GUI exposed).

### 5.4 **FRONT AND BACK PAGES IMAGES**

- Imprinter: Ngenuity support 2 imprinters, a Front Page Prescan and/or a Back Page Post-scan. When using the Back Page Post-scan imprinter, the scanner needs to scan in duplex mode, with Back Page scanning enabled. This dependency is not enforced by the driver.
- Back Page only: Ngenuity supports Back Page scanning only, but the MultiFeed detection will not work in this mode and should be disabled. This dependency is not enforced by the driver.