

Microsoft Windows2

-
- → → **National Instruments** → **NI License Manager** NI License Manager



Volume LicenseNI Volume License Manager

ID1

NI License Manager

Software Licensing

Information Privacy

Certificate of Owner



ID

IDNI License Manager

ID

1. → → **National Instruments** → **NI License Manager** NI License Manager

2.


NI VisionPDFPDFAdobe ReaderAdobe Reader
www.adobe.com ni.com/manuals_____

NI Vision Assistan → → **National Instruments** → **Vision Assistant**

- NI Vision Assistant —NI Vision Assistant
- NI Vision Concepts Manual—
- NI Vision 8.0 Development Module Release Notes—LabVIEWNI VisionLabWindows/CVINI VisionVisual BasicNI VisionNI Vision Assistant
- Application Note—NI VisionApplication Note
_____ni.com/appnotes.nsf

Vision Assistant

Vision Assistant

- Vision Assistant  Vision Assistant
- Vision Assistant → Vision Assistant
NI Vision
- →
→ **National Instruments** → **Vision Assistant** → **Vision Assistant Tutorial**
NI Vision Assistant Tutorial
Vision Assistant
- → → **National Instruments** → **Vision Assistant** → **NI Vision Concepts Manual**
NI Vision Concepts Manual
Vision Assistant Vision
- MAXNI-IMAQ NI Vision Acquisition Software Release Notes



- NI Vision ni.com/vision
- [NI Developer Zone](http://ni.com/zone) ni.com/zone NI Developer Zone
NI Developer Zone
- Vision Assistant Vision Assistant
<Vision Assistant> Vision Assistant
<Vision Assistant>\Examples

< > AO <0..3>

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» → → →



monospace

Windows

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Windows

""National Instruments""

*?prog*program
programmaticallyprogress

?extnexttext



example AND (program OR VI)example
programexmaple VI5



- **AND—**
- **OR—2**
- **NOT—2**
- **NEAR—28**

- —
- —programprograms
programmaticallyprogress
- —

Windows

1.

2.

3.



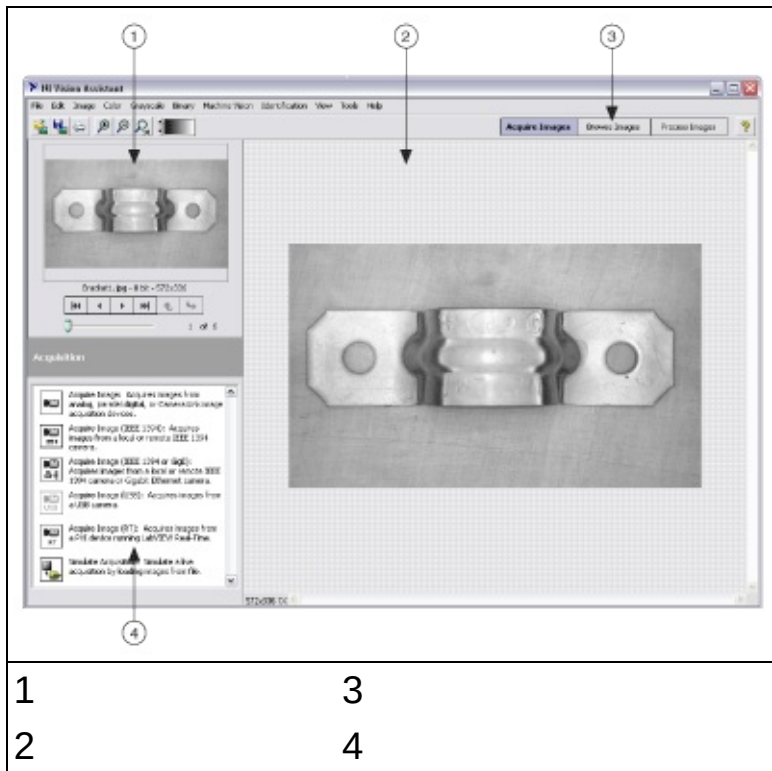
4. **OK**

PDF

PDFPDFAdobe Reader

1

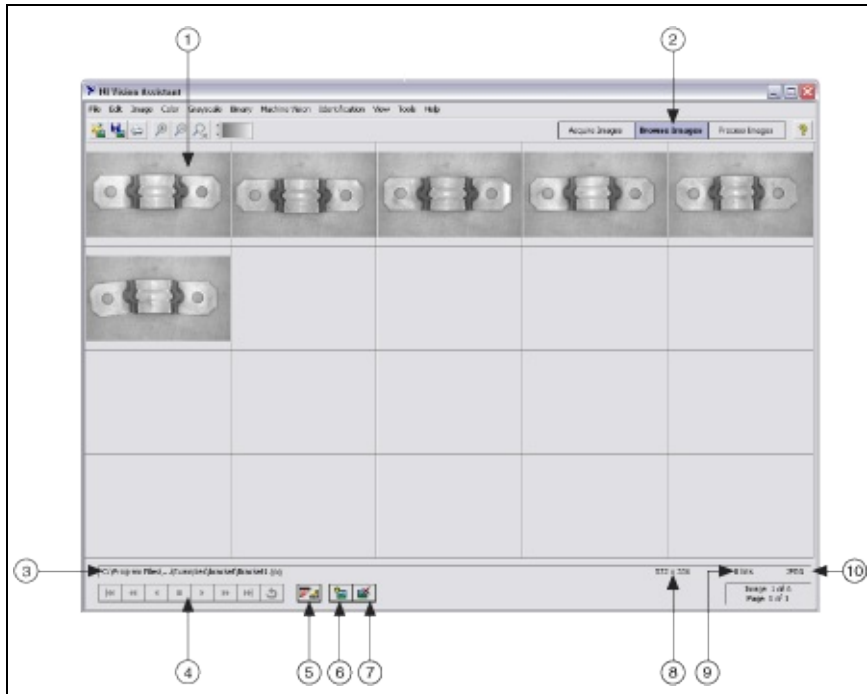
Vision Assistant



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—Vision Assistant

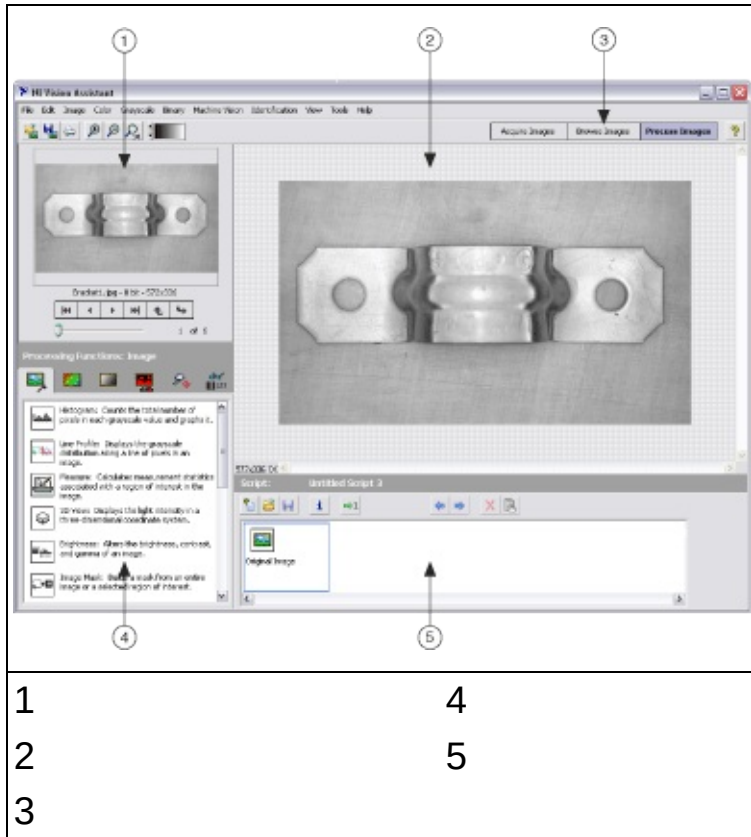
Vision Assistant



1	6
2	7
3	8
4	9
5 /	10

Vision Assistant

1



Vision Assistant

Vision Assistant



Vision Assistant



2:1



1:2



100



51

- —RGB
- —1616g g = 0R = 0G = 0B = 0g
= 1R = 1G = 0B = 0g = 2R = 0G = 1B =
0
- —0255
- —0255
- —0255



—



—



—ROI



—<Shift>



ROI —<Shift>



ROI —<Shift>



ROI —<Shift>



ROI —



ROI —&



ROI

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—/

Vision Assistant

→ NIDCAM IEEE 1394
GigEVision Vision Assistant
Software Release Notes

NI _____

Vision Assistant3

- _____
- _____
- _____

1. NI

2.

3.



NI



NITTLTTLTLNI

4.

5.

6.

7.

8.

1. → Vision Assistant

2. NI


3.




- NI PCI/PXI-1411NI PCI/PXI-1422NI PCI-1424NI PCI/PXI-1428NI PCIe-1430NI PCI/PXI-1422NI PCI-1424
- NINI Vision Acquisition Software Release Notes

4.

5. Vision Assistant

-  —NI Vision

-  —NI

-  —

-  —

- —NI

- —NITTL

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-

Vision Assistant

Vision Assistant 8-bit 16-bit RGB HSL

60,00060

NI

PCI/PXI-1407 PCI/PXI-14110 NI

05V TTL

Vision Assistant Vision Assistant MAX NI-IMAQ
Measurement & Automation Explorer NI-IMAQ for IEEE 1394
Cameras Help MAX → → **Legacy NI-IMAQ IEEE 1394**

IEEE 1394GigE






- 1.
- 2.
3. IEEE 1394 **IEEE 1394**

5.

6.

7.

IEEE 1394GigE

-  —IEEE 1394Gigabit Ethernet (GigE)
-  —
-  —
-  —
-  —

- —
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 - **IP—IP**
 - —**IP**
- — NI-IMAQdxMeasurement & Automation Explorer (MAX)NI-IMAQdx
- —IEEE 1394

- —
- —
- —
- —
- —
- —MAX

IEEE 1394GigE

IEEE 1394GigE

NI-IMAQdx

Measurement & Automation Explorer Help for NI-IMAQdx

→ → **NI-IMAQdx** MAX Measurement & Automation

Explorer Help for NI-IMAQdx

Measurement & Automation ExplorerMAX

MAXNI-IMAQdx **NI-IMAQ IEEE 1394** **Driver** → **NI-**

IMAQ IEEE 1394 IIDC Measurement & Automation

Explorer Help for NI-IMAQdx Measurement & Automation Explorer

Help for NI-IMAQdx MAX → → **NI-IMAQdx**

Vision AssistantMAX Measurement &

Automation Explorer Help for NI-IMAQdx Measurement &

Automation Explorer Help for NI-IMAQdx MAX → → **NI-IMAQdx**

16

16

1. **IEEE 1394GigE**
- 2.
- 3.
4. **BitsPerPixelShiftPixelBitsSwapPixelBytes**
5. **OK**







16

8BitsPerPixelShiftPixelBits16

USB

1. USB
2.
- 3.

USB

-  —USB
-  —
-  —
-  —

- —USB

- —

- —

USB

Vision Assistant

Vision Assistant8-bit16-bitRGBHSL

USBUSBUSB

NI 17xx

1.

2.



NI 17xxNI 17xxNI 17xx User Manual

3.

4.

5.


6. **Direct Drive**

NI 17xx

5 V TTL 24 V

7.

8. **OK**

-  —NI 17xx

-  —

-  —

- —
- — 31.2μs
-
- —
- —
- —
- —41
- —
- —
- **1 × 2**—
- —

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• —

- —
 - **Direct Drive** —Direct DriveNI
Direct DriveNI 17xx Smart Camera User Manual
 - **Direct Drive** —Direct Drive
 - —
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 - **5 V TTL** —NI 17xx5 V TTL
 - **24 V** —NI 17xx24 V
 -
 -
- HIGHLOWHIGHLOW

- —
- —01000

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0




NI 17xxGetting Started with the NI 17xx Smart Camera

IP

OK

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

RT

-  — NI
-  —
-  —

- —
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 - IP—IP
 - —IP
- —

- —
- —01000



RT






1.

2.

3. 

4.

5.

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-  —
- —
-  —

Vision AssistantBMPTIFFJPGPNG

Vision Assistant

VisionAssistant

1. → 

2.

3. **OK**

4.



<Shift>

Vision AssistantAVI

1. → AVI AVI

2. AVI

3. **OK** Vision AssistantAVI



AVI

AVI

4.



Vision Assistant





Vision Assistant

2020





-  Vision Assistant
-





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1.



2.





Vision Assistant

1 AVI

1. →

2.

3.

4.

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PNG -

• AVI - AVI

• JP2 - JPEG 2000

5.



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-

-

=2 Vision Assistant 246810

=2 =10

[Vision Assistant](#)



- 1.
2. →
- 3.
- 4.
- 5.
6. **OK**

Vision Assistant



- 1/1100%
- 2/1200%
- 1/250%



-   **1:1**
- 1/1100%2/1200%1/250%

Vision Assistant

Vision Assistant

Vision Assistant

1.

Vision Assistant

2.

NI VisionLabVIEWLabWindows/CVIVisual BasicActiveX

LabVIEW 7.1NI Vision 8.2.1Vision Assistant

LabVIEW VI



Vision Assistant

1. →
- 2.
- 3.
4. **OK**



1. →
- 2.
3. **OK**





1.



2.

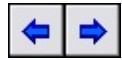
3. **OK**



•

•

- 1.
- 2.
- 3.
4. **OK**Vision Assistant



2



1. →

2.



a.



Vision Assistant
RT
Assistant

RTVision

b.

c.

3.



4. 3

 6

5. **OK**

6.

7.



Vision/



- 1.
2. → Vision Assistant
3. Vision
4. **OK**

3

233

LabVIEW VI

Vision AssistantLabVIEW VI

ROI



- —
- —
- —

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• —
• —
• —
• —
• —
• —
• —y
- —
- —

1. → Vision Assistant
2. ROIROI
3. **OK**



- ROIROI<Delete>
- **Excel**



- —
- —
- —

• —
• —
• —
• —
• —
• —
• —y
- —
- —

1. →
2. 1
3. **OK**



- ← ↑ → ↓ 1
- **Excel**

ROI



- —
- —
- —

- —ROI
 - **X**—X
 - **Y**—Y
 - —
- —ROI
 - —ROI
 - **X**—ROIX
 - **Y**—ROIY
 - **X**—ROIX
 - **Y**—ROIY
 - —ROI
 - —ROI
 - —ROI
 - —ROI
- —
 - —2
- —ROI
 - —ROI
 - —ROI
 - **X1**—ROIX
 - **Y1**—ROIY
 - **X2**—ROIX
 - **Y2**—ROIY
 - —ROI
 - —ROI
 - —ROI
 - —ROI

ROI

1. →

2.

3. ROI

Vision Assistant



Excel



4. OK

3

2333



3

3

- —3
- —3
- —3
- —3
- —3

- α —

α 045

- β —2

β 045

- —3
- —3

3




- 3
- 38

1. → **3** **3**
- 2.
3. 3
4. α
5. β^2
- 6.
7. **OK**



3

- —
- —1282550
- —45891
- —
- —
- —
- —
-  RGB
- —

1. →

2.

3. **OK**



-

- ROI

- —
- —
 - —Vision Assistant
 - —Vision Assistant
 - —Vision Assistant
 - —Vision Assistant



- —x y
- **X**—x

- 1.
- 2.
- 3.

X

x

x

xX

Xx

X

ROI10Vision Assistant1

- —
- —
- —

- ROI ROI

- **ROI**
ROI 0
ROI 0
ROIROI

- 0
0
ROIROI

ROI

ROI

ROI

1. →
2. **ROI**
3. ROI
4. **ROI**
- 5.
6. **OK**



ROI

1. →
- 2.
- 3.
- 4.
5. **OK**

OK

• —

• —

• —

- —

- —

- —

• —

- ° —

• —

- **X—X**

- **Y—Y**

- —

- —23

1. →
- 2.
- 3.
4. **OK**

1. →
- 2.
- 3.
4. **OK**

1. →
- 2.
- 3.
- 4.
5. **XY**
6. **OK**

- —
- —
- —
- —
- —

1. →
- 2.
- 3.
4. **OK**




1. →
- 2.
- 3.
4. **OK**



- —
- —
- —



1. →
2. 
- 3.
4. **OK**



→

Vision AssistantBMPTIFFJPGPNG

Vision Assistant

Vision Assistant

2
2

Vision Assistant

3

- _____ xy
- _____
- _____





• —

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-- xy

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•

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-- xy
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- $-xy$
- $-y$
- $-x$
- $-$

1. →

2.

OK

3.

4.

5. 2

• 2

•

a. 2X

b.

c. y²

d. 2Y

6.

7. **XY**

8.

90180 270

9.

10. **OK**

11. **OK**



1. →

2.

3.

4.

5.

- —Vision Assistant

- —

- —

- **XY**—

- —2

- **dX**—2X

- **dY**—2y

- —

-

- —xy

- —

- **X**

- —X

- —X

+

- —y

1. →
2. **OK**
- 3.
- 4.
- 5.
6. 3
7. **OK**
- 8.
9. **XY**
10. 90180 270
- 11.
12. **OK**
13. **OK**
14. **OK**

- —Vision Assistant

- —

- 4—

- —

- —

- —

- —

-

- —xy

- —

- X

- —X

- —X

+

- —y



1. →

2.

OK

3.

4.

5.

• 22

•

•

6.

7. xy



8.

9. XY

10.

90180 270

11.

12. OK

13.

OK

14. OK

• —

• —

• —

• $X - X^2$

• $Y - Y^2$

• —

•

- —xy

- —

• X

- —X

- —X

+

• —y



• —

• —

• —

• —

• —

- $-x y$
- $-xy$
- $-x$
- $-$

1

1. →
- 2.
- 3.
4. **OK**

OK



→ _____

→ _____

- —
- —0

1. →
- 2.
3. **OK**



Vision Assistant



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•

—

- X—

- Y—y

•

—

- X—

- Y—y

•

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•

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- X—

- Y—y

•

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- —
- —
 - X—
 - Y—y

- —

- —
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- —
- —



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- —
- —
- —
- —

- —
- —
 - X—
 - Y—y

- —
- —

- —
- —

- —
 - X—
 - Y—y

- —

• —

• —

•  —

• —

- X—

- Y—y

• —

• —

• —

• —

• X—x

• Y—



x y

• —

• —

• —

1. →

2. Vision Assistant



3.

4.

5.

6. Vision Assistant

7. **OK**

1



LabVIEW VI

LabVIEW VI

- —
- VI—VI

VI

VI

- **VI—VI**
- —VIVIVI
- **VI—VIVI**
- —VILabVIEW
- —VI

Vision AssistantLabVIEW VI

1.  VI



LabVIEW VILabVIEW 8.2.

xVIVI

VI

VI

2. VI
3. VIVI
- 4.
5. 34
6. **OKVI**



VIVI

LabVIEW VI

VI

VIVision AssistantI8I16I32U8U16U32DBL
SGL EXTIMAQ

LabVIEW VI VI

Vision Assistant

VI VIIMQAQIMAQ
LabVIEW VI

→ Vision AssistantVI



LabVIEW VI

Vision AssistantVIIMQAQIMAQ



Vision AssistantVI

VIVision Assistant

LabVIEW VIVIVIVIVI

VIVI1

VIVIVI

VI

Run LabVIEW VILabVIEWVIVision Assistant

VIVIVILabVIEW

VI

RGBHSVHSL

- —
-

2

1

NAND

OR

NOR

Exclusive OR

Exclusive NOR

008

- —
- —8RGB

→

1. →

2. 1

3.



4.

5. **OK**



8RGB

3LV1

- —
- —
- **RGB** - —RGB
- **RGB** - —RGB
- **RGB** - —RGB
- **HSL** - —HSL
- **HSL** - —HSL
- **HSL - (L)** —HSL(L)
- **HSV - (V)** —HSL(V)
- **HSI** - —HSI

1. →

2.

3. **OK**



88

2

328

• —

2

2

• —RGBHSLHSVHSI

• —

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- —

- —

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• /LVI —LV 0





HSLHSVHSIROI

• —2

• —2

• /HSLHSVHSI

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 —[0]

[255]



ROI

2

1. → **2**

2

2. RGBHSLHSVHSI

3.

LV

4. **OK2**



- ROIROI

-

- —
- —
- —ROI

- —

-

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 - —

-

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 - —

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 - —

- —2 NI Vision Concepts Manual

- —ROI

- —

- —

- —
- —100001000
- —3

- —2



- —

- —

- —



ROI

- —
- —

- $X \rightarrow X$
- $Y \rightarrow Y$
- -100001000

1. →

2.

• ROI OK OK

• OK

3.

4.

5.


6.

7. OK

- —
- —
- —

- —
- —
- —
- —
- —ROI
- —
- —
- —
- —
- —
- —

• —2 NI Vision Concepts Manual

- —
- —100001000
- —1000
- 0500
- —4
- —2
- 
- —
- —
- —
- —

- $X-X$
- $Y-Y$
- -100001000
- $-$

1. →

- ROI OK OK
- OK

2.

3.

4.

5.

6. **OK**

- —
- —
- —

- —
- —ROIROI
- —
- —
- —2 NI Vision Concepts Manual

- —100001000

ROI

- / —ROI
- —100001000

1. →

2.

•

OK

•

OK

3.

4.

5.

6.

7. **OK**

-

FFT

FFT

2

2

10

Watershed

LUTLUT

- —
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 - — [0255]
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 - **2**—
 - —
 - **X**—
 - **1/X**—
- —X1/XX1.5

1. →
- 2.
3. **OK**

- —
-

-

-

-

abcd $x < 1$

-

-

abcd x

-

3

-

-

-

-

-

- — $3 \times 5 \times 7 \times 7$

- —

- —



1. →
2. 1
- 3.
4. **OK**



1. →
2. 1
3. **OK**



1. →
2. -
- 3.
4. **OK**



1. →
2. —
- 3.
4. **OK**



—

2

- —
-

2

2

2

-



2D10

- —3 x 35 x 57 x 7
- —

1. →
- 2.
- 3.
4. 0
- 5.
6. **OK**



- 2D10
-

1. →
- 2.
- 3.
4. 0
- 5.
6. **OK**



- 2D10
-

1. →
- 2.
- 3.
4. 0
5. **OK**



- 2D10
-

1. →
- 2.
- 3.
4. 0
5. **OK**



- 2D10
-

1. →

2. 3

- —
- —
- —

3.

4. 0

5. **OK**



- 2D10
-

FFT

3FFTFFT

FFT

- —
- FFT

- —

- % —%FFT
- FFT—

FFT

1. → FFT
2. .
- 3.
4. %
5. OKFFT

FFT



FFT

FFT FFT

FFT

2

222222

• —

2

2

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255

0

• 2

2 01

2: Niblack

2: 22

2:

2:

2:

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2:

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• —



- ROI

- 201

• —22



ROIROIROI



ROI

• —0012: Niblack 2

2

1. → **2**

2

2.

3. 2



222

2

3. **OK2**



- 2ROIROI

Grayscale Threshold FAQs

Watershed

WatershedWatershed

NI Vision Concepts Manual

- —
- —
- **4/8**—
 - **8**—
 - **4**—
- —WatershedVision Assistant
 - —Watershed
 - —Watershed



Watershed



Watershed816

1

1. 2—(→ **2**) 2

2. —(→ →)

3. —(→)

4. Watershed —(→ **Watershed**) Watershed
Watershed

2Watershed

NI Vision Concepts Manual

Watershed

255

Watershed816825525525516

327668255Watershed16

8255255

Watershed

Watershed

Watershed

1. → #1
2. → →
3. Watershed → **Watershed**
4. Watershed#2
5. #12
6. → → Watershed2

- —
-

2

1

NAND

OR

NOR

Exclusive OR

Exclusive NOR

008

$$< (x, y) (x, y) (x, y) 0 (x, y) (x, y)$$

$$\leq (x, y) (x, y) (x, y) 0 (x, y) (x, y)$$

$$= (x, y) (x, y) (x, y) 0 (x, y) (x, y)$$

$$\cong (x, y) (x, y) (x, y) 0 (x, y) (x, y)$$

$$> (x, y) (x, y) (x, y) 0 (x, y) (x, y)$$

- —
- —Vision Assistant →

1. →

2. 1

3.



4.

5. **OK**



- —
- —
- —816
- —



168816
8412-88

#12

1. →
- 2.
3. **OK**

ROI

- —
- —
- —

• (%) —%

• —

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• —

• —

ROI

1. →
2. ROI1
3. Vision Assistant ROI
4. **OK**



- Vision AssistantROI
- **Excel**
-

- —
- —
- —
- X—X
- Y—Y



ROI

1. →

2. **OK**



ROI

Vision Assistant


-

—

- —
- —

2
2
0
0

-

 210

- —3 x 35 x 57 x 7
- —3x3
- / —

 8

d

 6

1. →

2.

3.

4. 0

5.

6. **OK**



2D10



1. →

2.

3.

4. 0

5.

6. **OK**



2D10



1. →

2.

3.

4. 0

5. **OK**



2D10



1. →

2.

3.

4. 0

5. **OK**



2D10



→ _____

1. →

2. 3

• —
• —
• —

3.

4. 0

5. **OK**



2D10



1. →

2.

3.

4. 0

5. **OK**



2D10



1. →

2.

3.

4. 0

5. **OK**



2D10



1. →

2.

3.

4. 0

5. **OK**



2D10



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- —
-

1

1LLMM

0

- —LLML
-

 210

- —3 x 35 x 57 x 7

- —3x3

- **4/8**—

 8

 4

- / —

 8

d

 6

1. →
- 2.
3. 3x3
4. **OK**

1. →
- 2.
3. 3x3
4. **OK**

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3. **OK**

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2. **OK**



- Vision Assistant Vision Assistant

- Vision Assistant

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Vision Assistant



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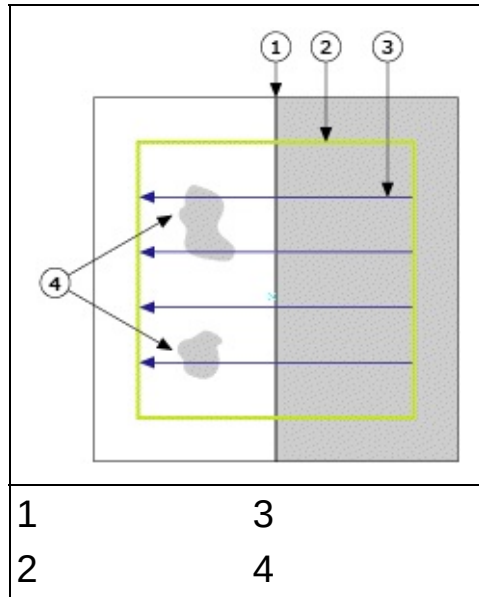
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7. **OK**

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Vision Assitant

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- $X \rightarrow X$
- $Y \rightarrow Y$
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



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5. **OK**



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Vision Assistant

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CodabarCode 128EAN 8EAN 13UPCA

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1. LabVIEWVision Assistant Express VI
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National Instruments Corporation

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National Instruments Corporation

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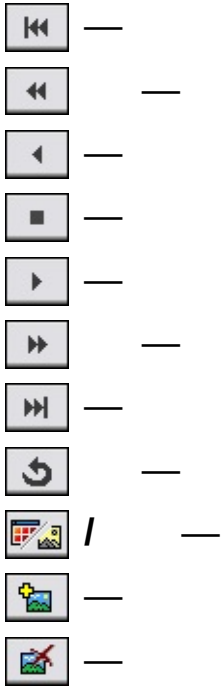
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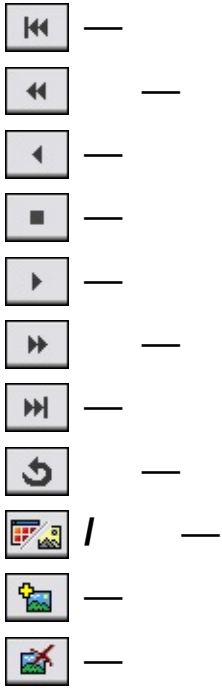
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Vision Assistant



Vision Assistant



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7. Vision Assistant



NINI Vision Acquisition Software Release Notes

[Vision Assistant](#)

1. → Vision Assistant

2. NI/

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5.

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7. Vision Assistant



NINI Vision Acquisition Software Release Notes



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Vision Assistant

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2930f/s-1

6. Vision Assistant
7. Vision Assistant



NINI Vision Acquisition Software Release Notes

[Vision Assistant](#)

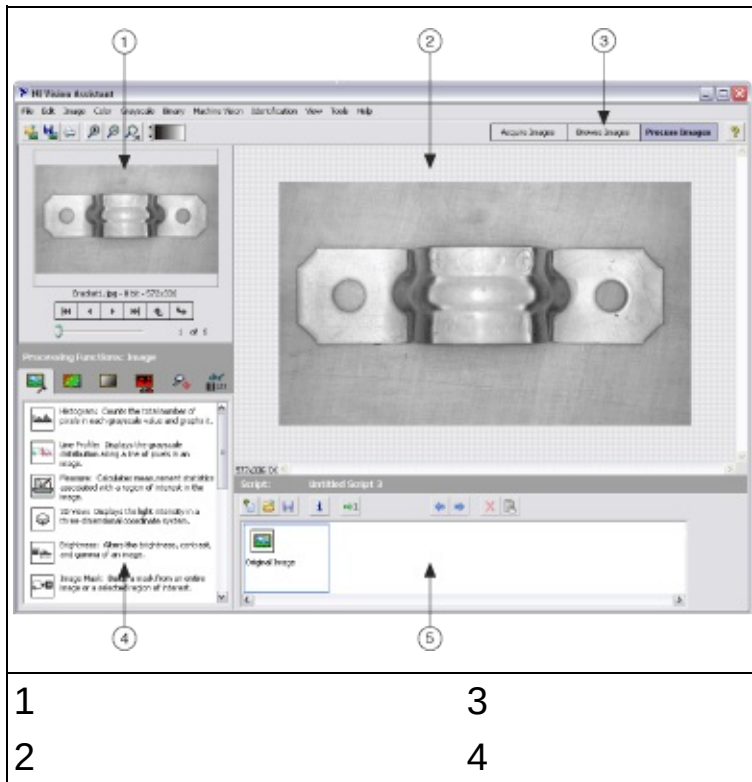
NI 17xx

4



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Vision Assistant

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ROI

1. ROI

2. ROI



ROI



ROI



ROIROIROI



B E F H J L M N P R T W

B

BMP Bitmap8
.bmp

E

ECC

F

FFT Fast Fourier Transform

H

HSI

HSL

HSV

J

JPEG Joint Photographic Experts Group8

JPEG2000 Joint Photographic Experts Group 20008

L

LabVIEW Laboratory Virtual Instrument Engineering Workbench
GLabVIEW

L

L

M

M M

N

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P

PNG Portable Network Graphic816
.png

R

RGB

ROI

ROI

T

TIFF Tagged Image File Format
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W

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NI Vision

$x, y(x, y) f(x, y)$

Vision Assistant

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RGB

ROI

NI

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ROIROI22

Vision AssistantVision Assistant

2550

2

Vision AssistantVision Assistant

Vision Assistant

Vision Assistant

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3X3

/Vision Assistant

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FFT FFT

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Vision AssistantVisual BasicsVision Assistant
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VI.

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VI

LabVIEW VI

1. LabVIEW
2. VIVIVI
3. →
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LabVIEW
 - a. →
 - b.
 - c. **OK**
5. →
6. VI →
- 7.
- 8.
9. VI
- 10.
11. **LLB**
- 12.
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- 15.
16. **VI**
17. **vi.lib** **instr.lib** **user.lib**
18. VI
19.  **LLBFTPLL**

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- $XY \rightarrow XY$

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6. &

7. **OK**



ROI

1. →

2.

3. &Vision AssistantROI

4.

5.

6. **OK**



ROI

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2.

3. &Vision AssistantROI

4.

5.

6. **OK**



ROI

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	82 02 3451 3400
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	34 91 640 0085
	386 3 425 42 00
	662 278 6777
	886 02 2377 2222
	86 21 5050 9800
	420 224 235 774
	45 45 76 26 00
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	90 212 279 3031
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