

Applies To

- IQeye All

Summary

The IQeye family of cameras has functionality to automatically adjust many imaging parameters including color balancing, image gain and how the camera will react to changing lighting conditions. For most users the built-in algorithms will be adequate, but for specific applications and scenes with unusual lighting conditions more user control is necessary.

This document will describe some of the imaging parameters available from the IQeye command line. It will document how they can be used to “lock down” image parameters and will explain the interactions between the different parameters. The actual syntax of these commands can be found in the IQeye Reference manual which is available as a PDF document on the IQinVision web site, <http://www.iqeye.com/spt/manuals.htm>.

The following commands are pertinent to this document:

```
SET/DEFINE IMAGE GAIN
SET/DEFINE IMAGE LIGHTING
SHOW/LIST IMAGE
```

These commands have numerous suboptions. They will be discussed when necessary. See the IQeye Reference Manual for complete command descriptions.

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Summary

Controlled Environment (Machine Vision) Example

When using the IQeye camera in a controlled environment, i.e. for machine vision applications it is often advantageous to turn off all automatic image processing so that the image acquisition parameters are completely consistent.

It is often convenient to allow the camera to automatically adjust the image to get starting values for all these parameters. After allowing the image to “settle down” issue the `SHOW IMAGE` and `SHOW IMAGE LIGHTING` commands to see current values.

Forced image parameters are generated using the following sequence of commands:

- `SET/DEFINE IMAGE GAIN AUTO DISABLED`
This command turns off the automatic adjustment of gain parameters

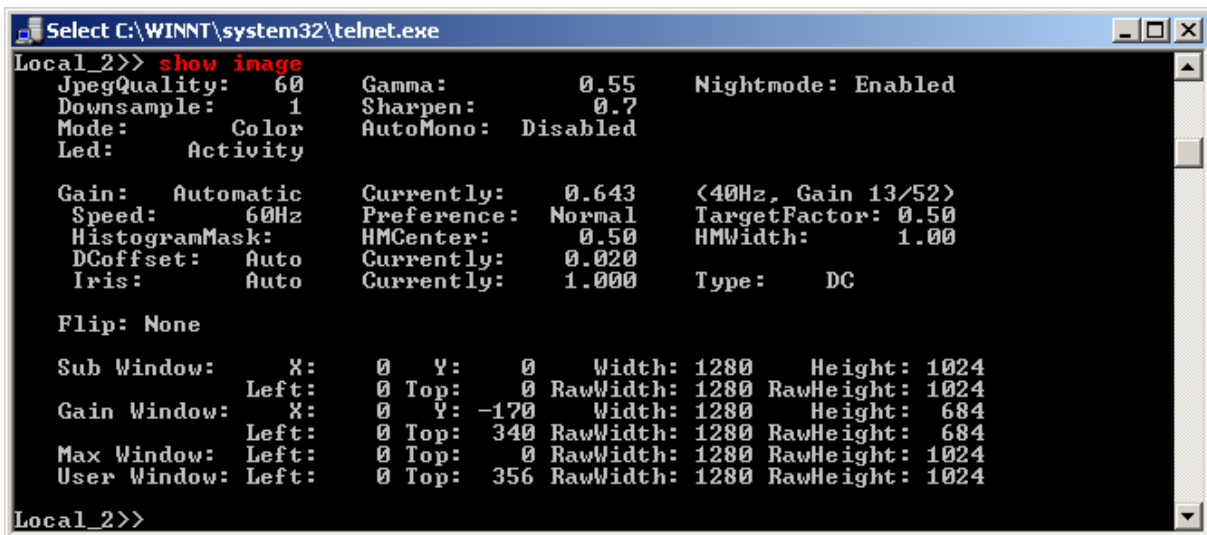
- SET/DEFINE IMAGE GAIN HOLD <gain>
This command adjusts the gain level the camera will use. It is a decimal value between 0.0 which represents the lowest gain (a dark image) and 1.0 which is the highest gain.
- SET/DEFINE IMAGE GAIN SPEED <frequency>
This command sets the 'shutter speed'.
Valid range for IQeye3, 16 (63 milliseconds) to 10240 (98 µseconds)
- SET/DEFINE IMAGE GAIN PREFERENCE FORCE
This command sets the camera to permanently remain at the selected 'shutter speed'.

Examining Lighting Parameters

To see the current lighting parameters the SHOW IMAGE and SHOW IMAGE LIGHTING commands should be used.

SHOW IMAGE

The SHOW IMAGE command will extract basic image settings:



```

Select C:\WINNT\system32\telnet.exe
Local_2>> show image
JpegQuality: 60      Gamma: 0.55      Nightmode: Enabled
Downsample: 1      Sharpen: 0.7
Mode: Color      AutoMono: Disabled
Led: Activity

Gain: Automatic      Currently: 0.643      <40Hz, Gain 13/52>
Speed: 60Hz      Preference: Normal      TargetFactor: 0.50
HistogramMask:      HMCenter: 0.50      HMWidth: 1.00
DCOffset: Auto      Currently: 0.020
Iris: Auto      Currently: 1.000      Type: DC

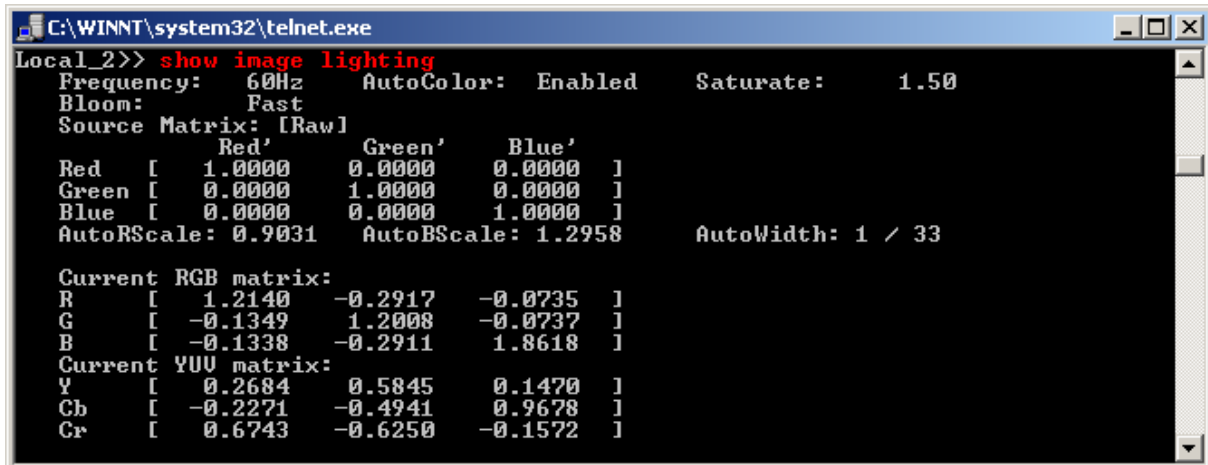
Flip: None

Sub Window: X: 0 Y: 0 Width: 1280 Height: 1024
Left: 0 Top: 0 RawWidth: 1280 RawHeight: 1024
Gain Window: X: 0 Y: -170 Width: 1280 Height: 684
Left: 0 Top: 340 RawWidth: 1280 RawHeight: 684
Max Window: Left: 0 Top: 0 RawWidth: 1280 RawHeight: 1024
User Window: Left: 0 Top: 356 RawWidth: 1280 RawHeight: 1024

Local_2>>
    
```

SHOW IMAGE LIGHTING

The SHOW IMAGE LIGHTING command will display image parameters related to lighting conditions:



```
C:\WINNT\system32\telnet.exe
Local_2>> show image lighting
Frequency: 60Hz      AutoColor: Enabled      Saturate: 1.50
Bloom: Fast
Source Matrix: [Raw]
          Red'      Green'      Blue'
Red [ 1.0000      0.0000      0.0000 ]
Green [ 0.0000      1.0000      0.0000 ]
Blue [ 0.0000      0.0000      1.0000 ]
AutoRScale: 0.9031      AutoBScale: 1.2958      AutoWidth: 1 / 33

Current RGB matrix:
R [ 1.2140      -0.2917      -0.0735 ]
G [ -0.1349      1.2008      -0.0737 ]
B [ -0.1338      -0.2911      1.8618 ]
Current YUU matrix:
Y [ 0.2684      0.5845      0.1470 ]
Cb [ -0.2271      -0.4941      0.9678 ]
Cr [ 0.6743      -0.6250      -0.1572 ]
```

More Information

- IQEYE Reference manual. <http://www.iqeye.com/spt/manuals.htm>.
- TechTip – Configure image for difficult lighting in a parking lot, at night.