



Title **Interfacing a Gocator to Halcon**

Purpose

This document explains how to interface a Gocator sensor to Halcon.

Equipment

Gocator Firmware Release 3.2 or later

Halcon Version 10.0 or later

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1 Overview

Halcon is a comprehensive software package for machine vision applications with an integrated development environment. Gocator includes a GenTL driver that can be used to stream 3D point clouds and intensity data into Halcon in real-time.

Refer to the GenTL chapter in the Gocator's User Manual on how to install and setup the Gocator GenTL driver. This document describes how to configure Halcon to acquire data from the Gocator.



2 Setting up Halcon with a Gocator for the First Time

Follow the steps below to setup Halcon with the Gocator sensor for the first time:

1. Connect a Gocator to the PC running Halcon.
2. Power up the Gocator and put the Gocator into Whole Part mode and enable the Ethernet output. Check Acquire Intensity if intensity data is required.

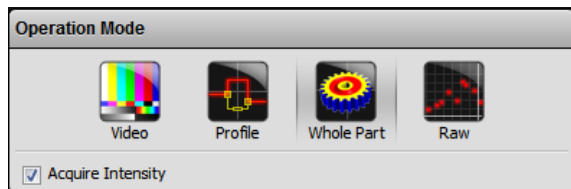


Figure 1. Enable Whole Part mode and intensity

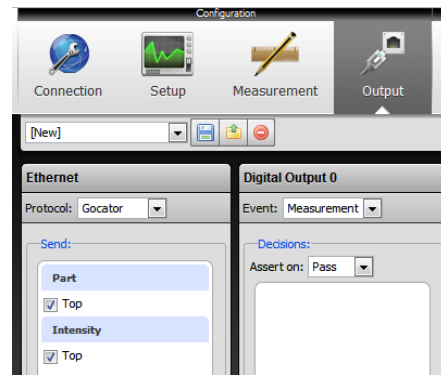
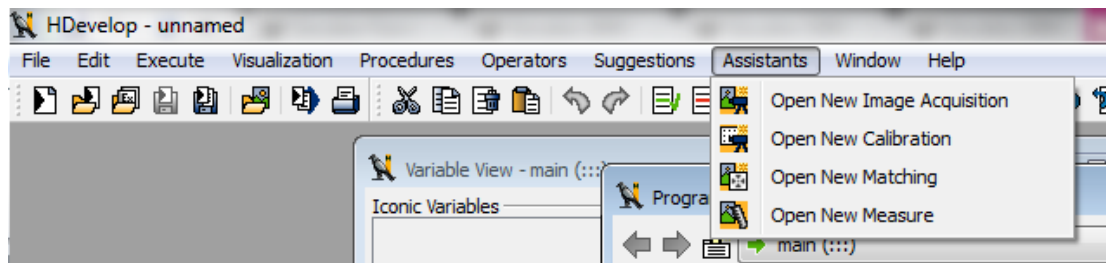


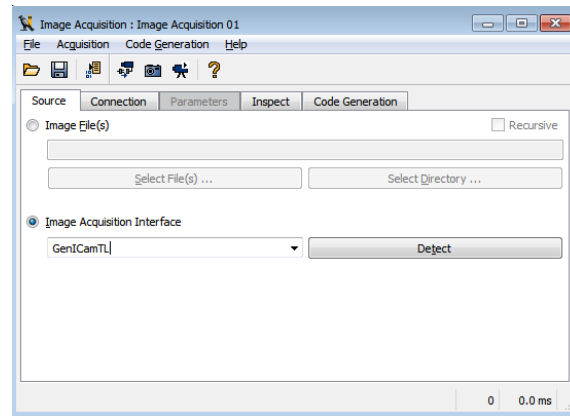
Figure 2. Enable Ethernet Output

3. Start Halcon.
4. Click Assistants->Open New Image Acquisition.

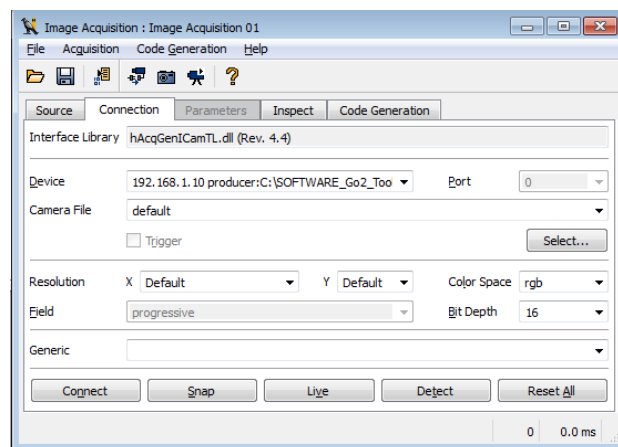




5. Select GenCamTL in the Image Acquisition Interface.
Note that the Gocator must be running and connected to the PC for this step to be successful.



6. Click the Connection Tab.
If a Gocator is detected, the device will be listed under “Device”. Set the Color Space to “RGB” and Bit-Depth to 16.

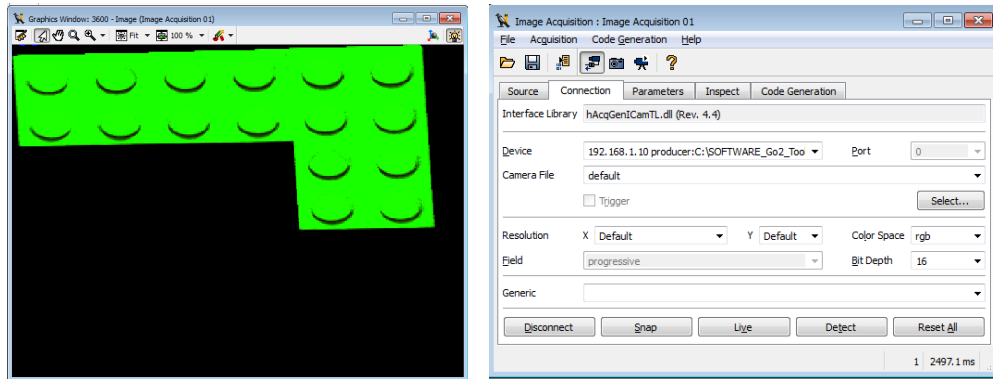


*Device in the example is: 192.168.1.10 producer:C:\SOFTWARE_Go2_Tools\GenTLx86\Go2GenTL.cti
interface:0:XX::GenTL vendor:LMI model:Gocator.*

The IP address and the directory may be different depending on the directory the Gocator tools package is installed to and the Gocator networking setup.



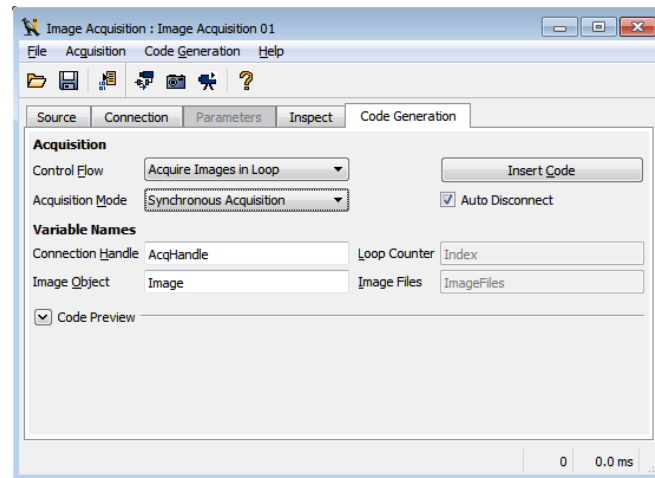
7. Press Snap and trigger the Gocator to output a part object.
The method to trigger the Gocator output depends on the Gocator setup. The output will be displayed in the Graphic Window.





3 Halcon Code Generation

To generate acquisition code in Halcon, enter the Code Generation Tab and select Synchronous Acquisition in the Acquisition Mode.



Press *Insert Code* to generate the code to open the acquisition device. To handle cases when the *grab_image* function times out while waiting for Whole Part data, add a try-catch statement around the *grab_image* function code. An example is shown below:

```
* Image Acquisition 01: Code generated by Image Acquisition 01
open_framegrabber ('GenICamTL', 0, 0, 0, 0, 0, 0, 'progressive', 16, 'rgb', -1, 'false', 'default',
'192.168.1.10 producer:C:\\SOFTWARE_Go2_Tools\\GenTL\\x86\\Go2GenTL.cti interface:0:XX::GenTL vendor:LMI
model:Gocator', 0, -1, AcqHandle)

while (true)

try
    grab_image (Image, AcqHandle)
catch(Exception)
    continue
endtry

    * Image Acquisition 01: Do something
endwhile
close_framegrabber (AcqHandle)
```

The user can now enter the processing function in the space between *endtry* and *endwhile*.

Note: The IP address and the path could be different depending on the Gocator's IP address and the GenTL installed directory.

3.1 Extracting RGB Image into Height Map, Intensity and Stamp

The Gocator GenTL driver packs the height map, intensity and stamp information into a 16-bit RGB image. Refer to the GenTL chapter in the Gocator user manual on how the information is packed.



The following code can be used to break the 16-bit RGB images into three single channel 16-bit images: Height Map, Intensity and stamp image.

```
try
    grab_image (Image, AcqHandle)
catch(Exception)
    continue
endtry
count_channels(Image, ChannelCount)
decompose3(Image, HeightMap, Intensity, Stamps)
```

3.2 Extracting Stamp Information

The following code illustrates how to extract stamp information from the stamp image obtained from previous example.

```
stampPos := 0
get_grayval(Stamps, 0, (stampPos * 4), tempvalue0)
get_grayval(Stamps, 0, (stampPos * 4) + 1, tempvalue1)
get_grayval(Stamps, 0, (stampPos * 4) + 2, tempvalue2)
get_grayval(Stamps, 0, (stampPos * 4) + 3, tempvalue3)
tuple_lsh(tempvalue0, 48, tempvalue0)
tuple_lsh(tempvalue1, 32, tempvalue1)
tuple_lsh(tempvalue2, 16, tempvalue2)
tuple_lsh(tempvalue3, 0, tempvalue3)
framecount := tempvalue0 + tempvalue1 + tempvalue2 + tempvalue3
```

```
stampPos := 10
get_grayval(Stamps, 0, (stampPos * 4), tempvalue0)
get_grayval(Stamps, 0, (stampPos * 4) + 1, tempvalue1)
get_grayval(Stamps, 0, (stampPos * 4) + 2, tempvalue2)
get_grayval(Stamps, 0, (stampPos * 4) + 3, tempvalue3)
tuple_lsh(tempvalue0, 48, tempvalue0)
tuple_lsh(tempvalue1, 32, tempvalue1)
tuple_lsh(tempvalue2, 16, tempvalue2)
tuple_lsh(tempvalue3, 0, tempvalue3)
zResolution := tempvalue0 + tempvalue1 + tempvalue2 + tempvalue3
```

The *stampPos* is the stamp index described in the GenTL chapter in the user manual.