# Symphony
# LabVIEW VI
# Version 0.9.4
# User Manual

Preliminary

HORIBA JOBIN YVON

# Table of Contents

## Overview:

This set of LabVIEW VIs is designed to run a Symphony CCD system and provide the sub-VIs necessary to incorporate the Symphony CCD into a full LabVIEW application.

The LabVIEW library, USER_LIB.LLB contains two high level VIs to control a CCD and collect data. These are meant as examples for a user to follow and modify for using a Symphony CCD in their application.

GLOB_LIB.LLB contains the lower level sub-VIs that performs individual functions with the CCD. The individual VIs are used for the examples in USER_LIB.LLB and documented in the manual.

## Minimum Requirements:

Windows 2000 or XP

LabVIEW 6.0.1 or Higher

Installed Symphony CCD system

Installed Symphony COM component – This can be installed either thorough Jobin Yvon's SynerJY software or the SynerJY SDK.

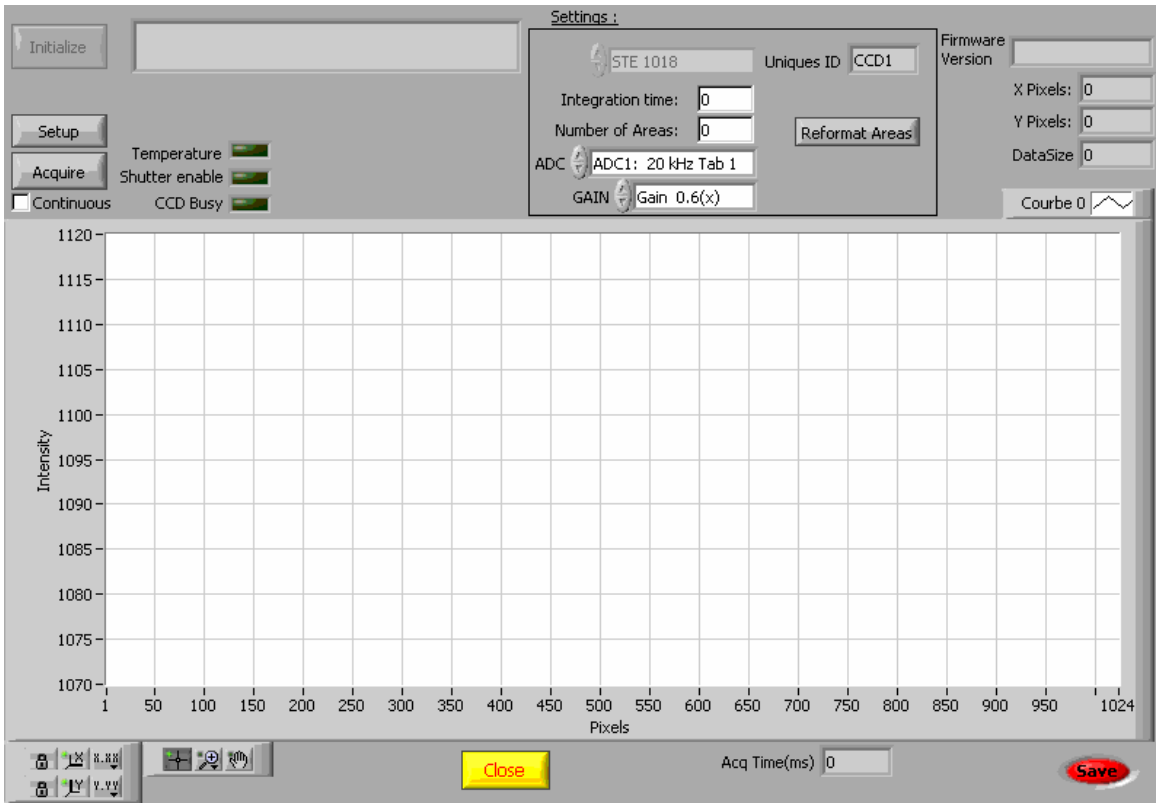
# User_Lib.LLB

These are top level VIs that can be used as examples and a foundation for more advanced applications.

## *Spectral Mode.vi*

This is an example program to show how to use the sub-VIs in an application. This can be used to collect a spectrum or a series of spectra from different CCD Areas.

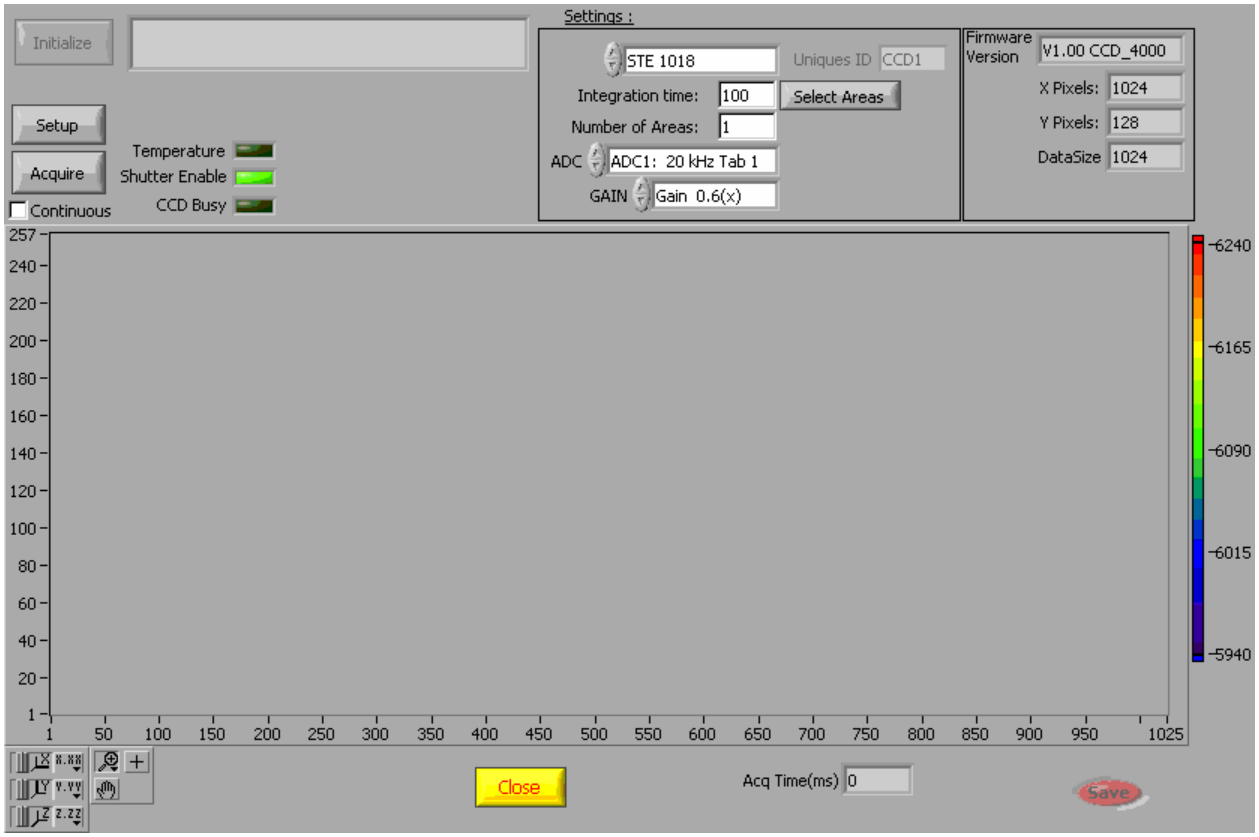
**Front Panel**



## *Image Mode.vi*

This is an example program to show how to use the sub-VIs in an application. This can be used to collect a spectrum or a series of spectra from different CCD Areas.

**Front Panel**



## *Version number.vi*

This is a Top Level VI that holds Version information about this revision of the Symphony LabVIEW VIs.

**Connector Pane**


**Front Panel**

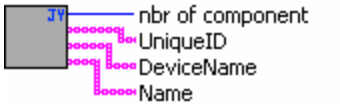
# Glob_Lib.LLB

**These are the low level sub-VIs that perform different functions with the Symphony CCD**

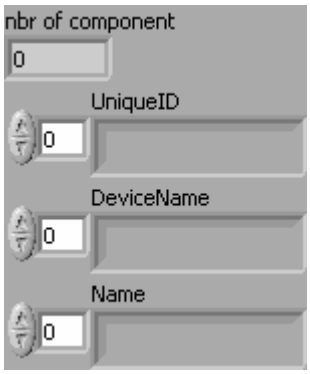
## *Read Detector uniq-id.vi*

This sub-VI will read all of the CCD information from the computer's registry. Registry settings are put into the registry on Hardware Configuration during installation of SynerJy sowfatre or the LabVIEW VIs.

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**nbr of component** : [Output] Total number of Detector UniqueIDs found in the registry

**UniqueID** [Output] Array of UniqueIDs

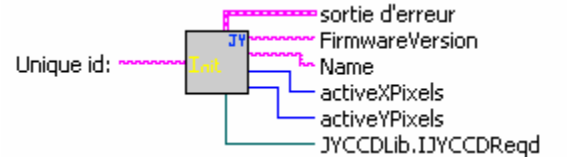
**DeviceName** : [Output] Array of Device Names corresponding to the same index in Unique ID Array

**Name** : [Output] Array of Specific Names corresponding to the same index in Unique ID Array

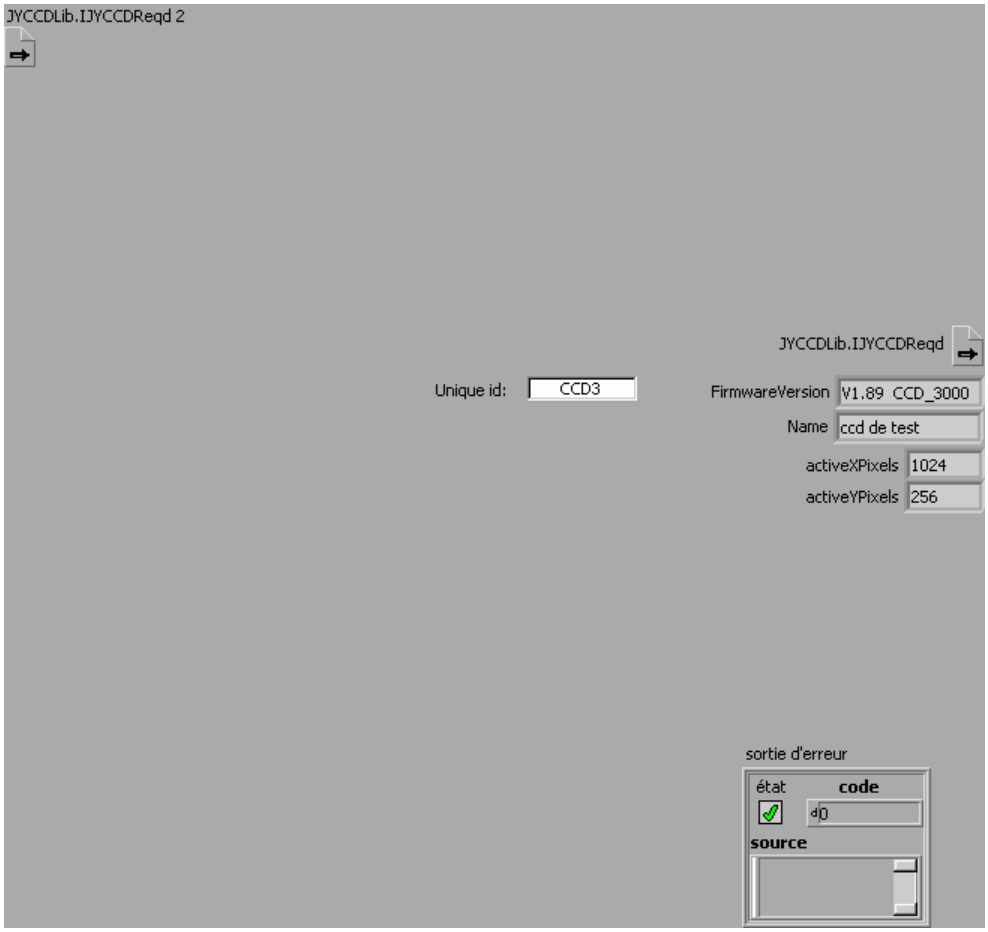
## *Initialize CCD.vi*

Sub VI to Initialize the CCD

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**Unique id:** [Input] - This is the Unique ID of the CCD. This information can be found by using the Read Detector uniq-id.vi VI

**activeYPixels** : [Output] Total number of Y pixels of the CCD

**ActiveXPixels**: [Output] Total number of X pixels of the CCD

**Name** : [Output] Device Name of CCD

**Firmware Version** : [Output] Firmware version of the Symphony CCD Controller

**Output error (Sortie d'erreur)** The **error out** cluster can pass error information to other VIs in the software. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

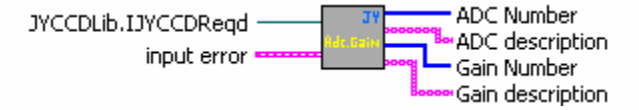
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**JYCCDLib.IJYCCDReqd**

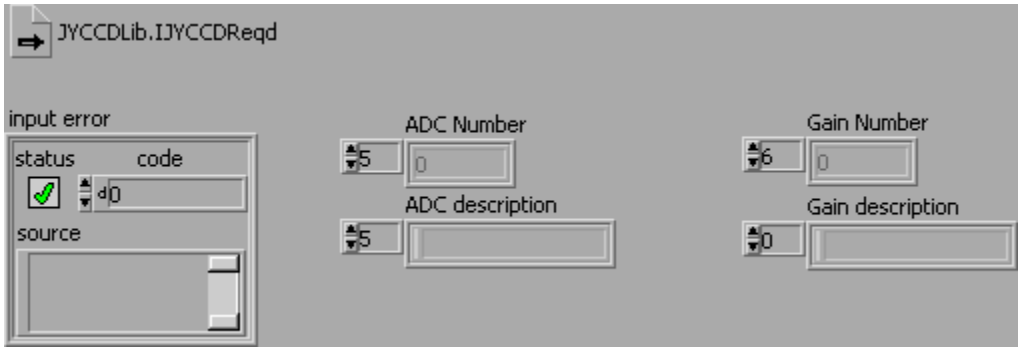
Link to the CCD COM component

## *Init ADC & Gain.vi*

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**JYCCDLib.IJYCCDReqd**

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

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**code** The **code** input identifies the error or warning.

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**source** The **source** string describes the origin of the error or warning.

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**ADC description** – [Output] Array of ADC Descriptions from the CCD Controller

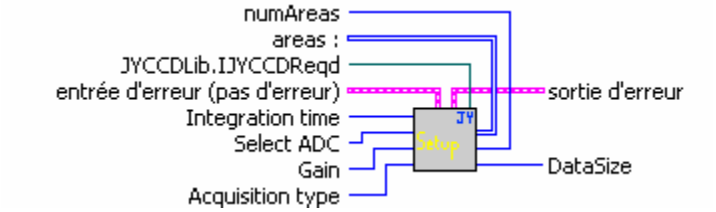
**ADC Number** – [Output] Array of ADC Values from the CCD Controller

**Gain Number** – [Output] Array of Gain Descriptions from the CCD Controller

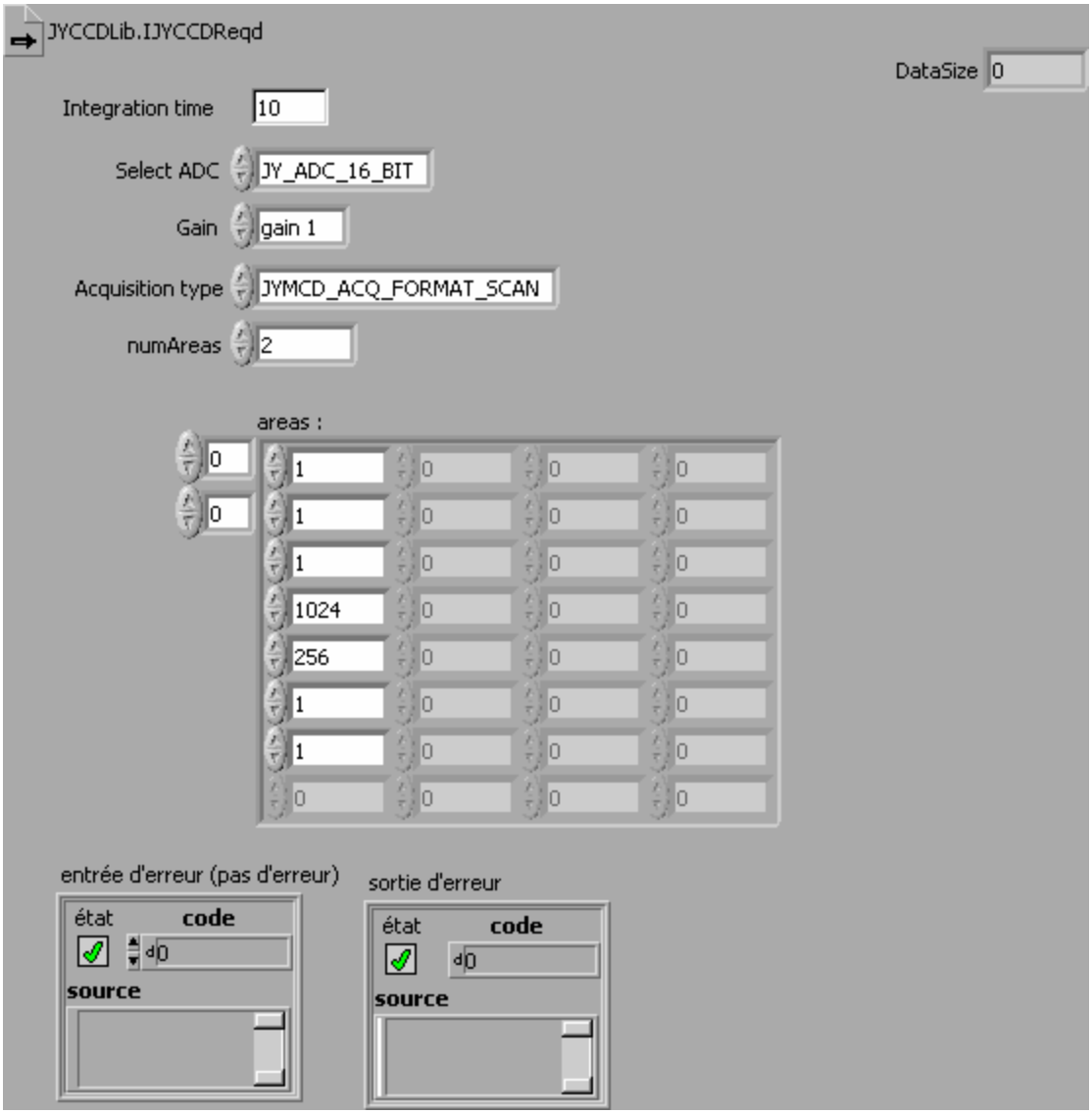
## *Setup CCD.vi*

VI to setup a CCD for an acquisition

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**Gain** : [Input] Set the Gain Level for the CCD Acquisition

**Integration time** : [Input] Set the Integration Time for the Acquisition

**Select ADC** : [Input] Select the ADC for the acquisition

**numAreas** : [Input]

**Acquisition type** [Input]

**JYCCDLib.IJYCCDReqd**

This is a link to the CCD COM object functions

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

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**source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**areas :**

**Output error (Sortie d'erreur)** The **error out** cluster can pass error information to other VIs in the software. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

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The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

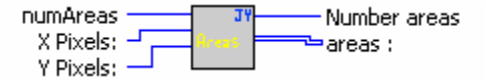
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

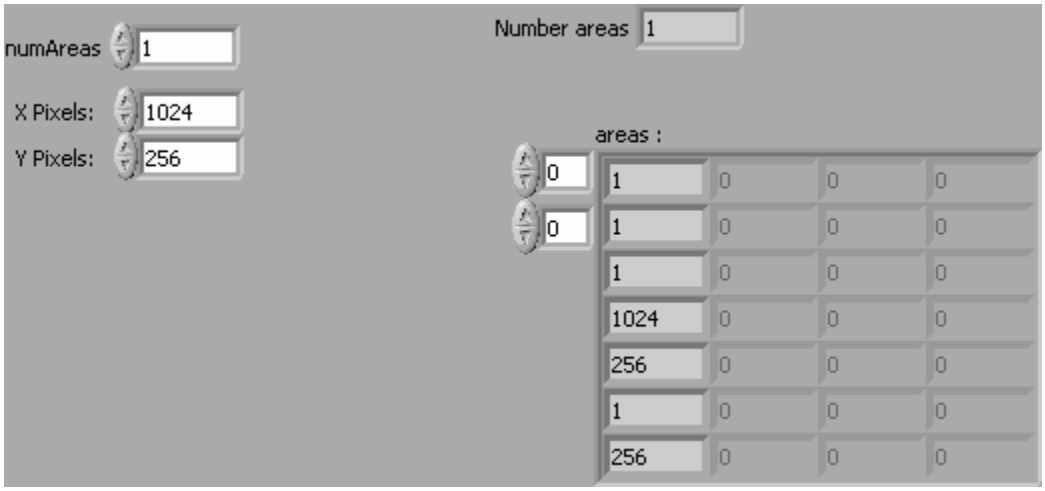
The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

## *Spectral Reformat CCD area.vi*

**Connector Pane**




**Front Panel**




**Controls and Indicators:**

I32 **numAreas** [Input]

Total Number of Areas defined

I32 **X Pixels** [Input]

Total Number of pixels in the X direction of the CCD

I32 **Y Pixels** [Input]

Total Number of pixels in the Y direction of the CCD

[I32] **Areas** [Output]

I32 **Area Number:** specific number of area for this set of parameters

I32 **X Start:** First pixel in X dimension

I32 **Y Start:** First pixel in y dimension

I32 **X Size :** Total number of pixels in X direction

I32 **Y Size :** Total number of pixels in Y direction

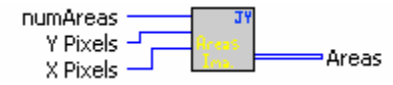
I32 **X binning** : Number of pixels to sum together to get 1 data value in X direction

I32 **Y binning** : Number of pixels to sum together to get 1 data value in Y direction. For spectral information, this value needs to be equal to the Y size.

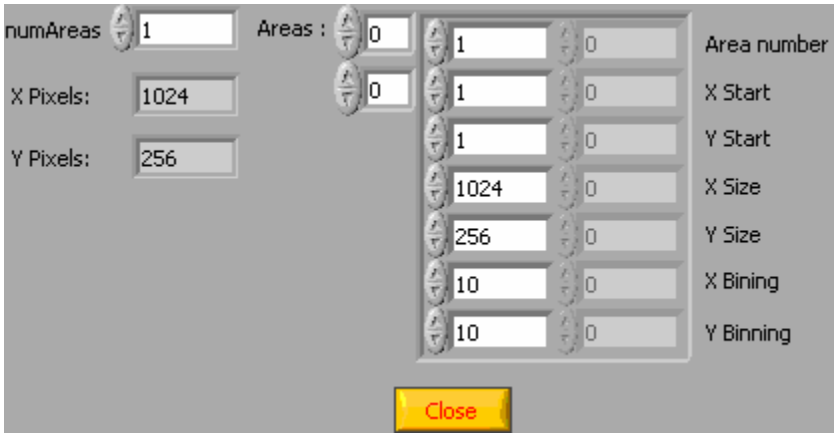
## *Image Reformat CCD area.vi*

Sub-VI to define an area for acquiring an image from the CCD

**Connector Pane**




**Front Panel**




**Controls and Indicators**

I32 **numAreas** [Input]

Total Number of Areas defined

I32 **X Pixels** [Input]

Total Number of pixels in the X direction of the CCD

I32 **Y Pixels** [Input]

Total Number of pixels in the Y direction of the CCD

[I32] **Areas**

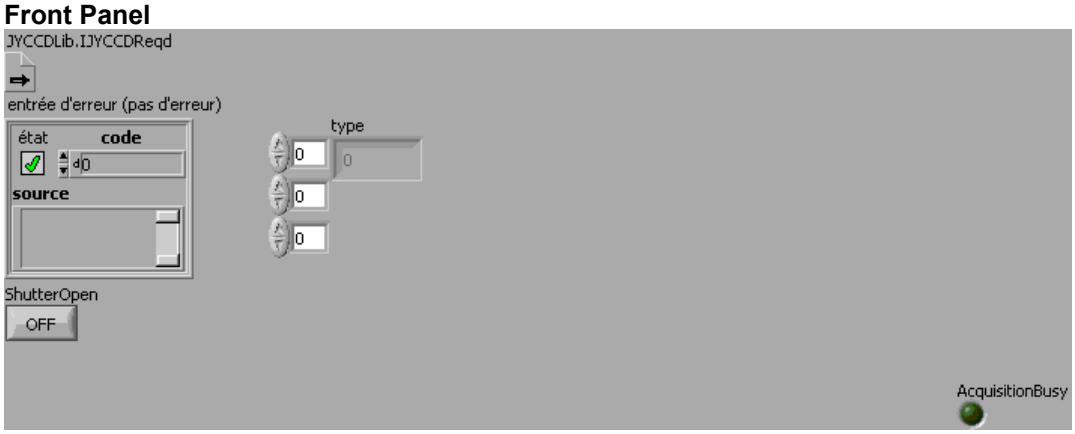
- I32 **Area Number:** specific number of area for this set of parameters
- I32 **X Start:** First pixel in X dimension
- I32 **Y Start:** First pixel in y dimension
- I32 **X Size :** Total number of pixels in X direction
- I32 **Y Size :** Total number of pixels in Y direction
- I32 **X binning** : Number of pixels to sum together to get 1 data value in X direction
- I32 **Y binning** : Number of pixels to sum together to get 1 data value in Y direction

## *Acquire image.vi*

This Sub-VI starts the acquisition of data from the Symphony CCD and returns a 3D array with X Data Value (Pixel), Y Data Value (Pixel), and Intensity

**Connector Pane**


**Front Panel**




**Controls and Indicators**

**JYCCDLib.IJYCCDReqd**

This is a link to the CCD COM object functions

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**ShutterOpen**

True to open the shutter during acquisition
False to keep the shutter closed during an acquisition

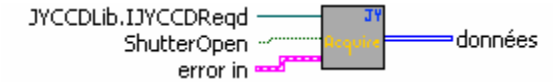
[132] **type**

data information from the image being acquired.

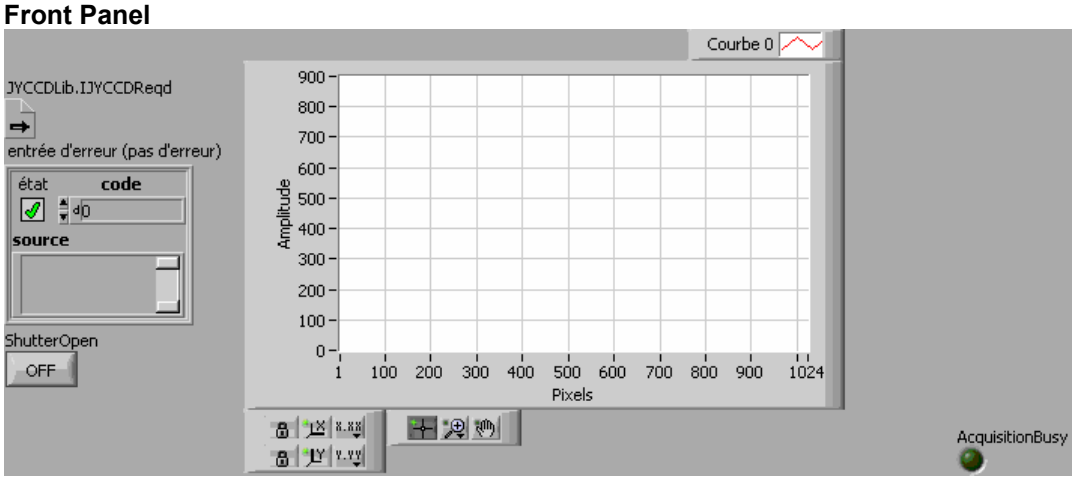
## *Acquire spectral.vi*

This Sub-VI starts the acquisition of data from the Symphony CCD and returns a 2D array with X Data Value (Pixel) and Intensity

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**JYCCDLib.IJYCCDReqd**

This is a link to the CCD COM object functions

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

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The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**ShutterOpen**

True to open the shutter during acquisition
False to keep the shutter closed during an acquisition

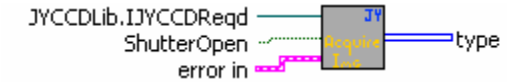
**type**

data information from the image being acquired.

## *Acquire.vi*

This Sub-VI starts the acquisition of data from the Symphony CCD and returns a 3D array with X Data Value (Pixel), Y Data Value (Pixel), and Intensity. This VI has the same function and Acquire Image.

**Connector Pane**




**Front Panel**


**Controls and Indicators**

**JYCCDLib.IJYCCDReqd**

This is a link to the CCD COM object functions

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**status** The **status** boolean is either TRUE (X) for an error, or FALSE (checkmark) for no error or a warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**ShutterOpen** : Input – Set to True to open the shutter during acquisition. Set to False to

keep shutter closed during acquisition.

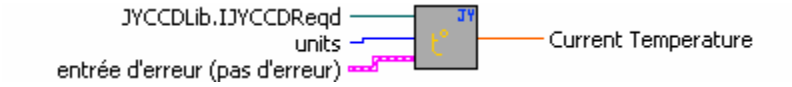
**Type**

Array of data reported back from detector. Data is in the format of X, Y, Intensity

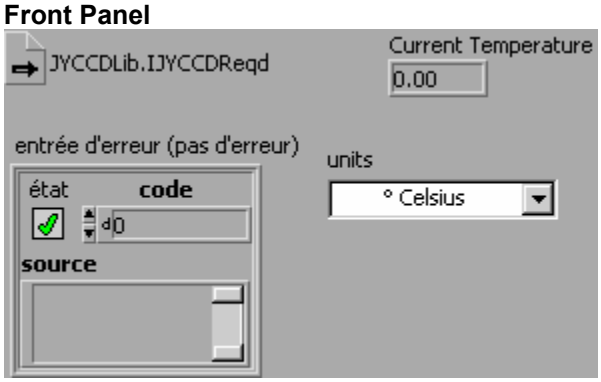
## *Read Temperature.vi*

Sub-VI to read the CCD's current temperature

**Connector Pane**




**Front Panel**




**Controls and Indicators**

**JYCCDLib.IJYCCDReqd**

This is a link to the CCD COM object functions

**Input error (Entree d'erreur)** The **error in** cluster can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

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The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**code** The **code** input identifies the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.

**source** The **source** string describes the origin of the error or warning.

The pop-up option **Explain Error** (or Explain Warning) gives more information about the error displayed.


**units** [Input]: Select Celsius, Fahrenheit, or Kelvin temperature units


**Current Temperature** [Output]: Shows the current CCD Temperature