**ZenCam v 1.2 Configuration details**

**Camera Controller Parameters**

**"CameraControllerParameters": [** //Number of elements in array=Number of Racks in system

**{**

**"ID": 0,** // Camera Controller ID

**"FrontPanelOpen": false ,** // Front panel Status true = Front panel opened, false = Front Panel Closed

**"NoOfCameras": 3,** // Number of cameras in that particular Rack

**"CameraID": [** // IDs of individual cameras (defines order)

**0,**

**1,**

**2**

**],**

**"NoOfReceivers": 1,** // Specifies number of Receivers in Run state. Now for Zengage it is Algorithm. Rack specific parameter.

**"Diagnostics": {**  // Parameters for Camera Optics Diagnostics

**"Path": "xxxxxx",** // For future use. SubVI for Diagnostics will be called from this path.

**"LightCameraSequence": [** // Number of elements in array = Number of Light Camera pairs.

**{**

**"Name": "LightCameraSequence1",** // This string will be sent to Machine Interface via SM

**"CameraID": 0,** // Camera ID associated with LightCameraSequence1

**"LightID": 1**  // Light ID associated with LightCameraSequence1

**},**

**{**

**"Name": "LightCameraSequence2",** // This string will be sent to Machine Interface via SM

**"CameraID": 1,** // Camera ID associated with LightCameraSequence2

**"LightID": 2** // Light ID associated with LightCameraSequence2

**},**

**{**

**"Name": "LightCameraSequence3",** // This string will be sent to Machine Interface via SM

**"CameraID": 2,** // Camera ID associated with LightCameraSequence3

**"LightID": 3**  // Light ID associated with LightCameraSequence3

**}**

**],**

**"Delaytime": 2000,**  // Time delay (in ms) between each Camera Optics Diagnostics (Value should always be greater than 1000 ms)

**"DecisionParameters": {**  // These parameters are used to decide Diagnostics Pass/ Fail. Any number of categories can be specified (Currently 2 are used).

**"Range": [**  // Set of pixels

**70,** // 1st category : 0 to 70

**170**  // 2nd category : 71 to 170

**],**

**"AcceptancePercentage": [** // Acceptance % for each category.

**1,** // 1st category

**20** // 2nd category

**],**

**"Comparison": [** // Comparison type for each category

**"LesserThan",** // 1st category

**"LesserThan"**  // 2nd category

**],**

**"AcceptableBlackBinValue": 10000** // Number of pixels with 0 value. Used for black spot identification. Typically should be greater than 100. If pixels with 0 values > AcceptableBlackBinValue, then Diagnostics will be failed.

**},**

**"DiagnosticsReceiverSequence": {** // Receiver of Diagnostics Results

**"ReceiverName": "UI",**

**"ReceiverID": 0**

**}**

**},**

**"PartsList": [** // Part Specific Parameters

**{**

**"Name": "160",** // Part Name

**"CameraIDs": [** // Used Cameras (Specify in terms of ID)

**0,**

**1,**

**2**

**],**

**"ReceiverSequence": [**  // Receiver of Image array during Inspection

**{**

**"ReceiverName": "Algorithm",**

**"ReceiverID": 0,** // Id is used in code to send image array

**"NoOfActiveCameras": 3** // It is used in code to send image array

**}**

**]**

**}**

**]**

**}**

**]**

**Image Acquisition Parameters**

**"ImageAcquisitionParameters": [**  //Number of elements in an array = Total number of cameras in system

**{**

**"Id": 0,**  // Camera ID

**"SessionID": "Top Left",** // \*\*\* Camera’s physical location specified as session name. Same name should be given in NI MAX.

**"Type": "Top Left",** // Physical location. Not used in code.

**"Model": "Point grey CM3-U3-50S5m",** // Model name available on camera. Not used in code

**"InterfaceType": "USB3",**  // Not used in code

**"SerialNumber": "x",**  // Serial number available on camera. Not used in code

**"Timeout": 500,**  // IMAQ Timeout for camera (HW).

**"GeneralCameraConfig": [** // Camera (HW)based parameters to be configured. All Active Attribute should be taken from NI Max --> Camera Attitudes or .ini files available in documents for each camera.

**{**

**"ActiveAttribute": "TriggerMode",** //It is to trigger the camera for acquisition

**"Value": "On"**  // On = External trigger,I.e Camera will Wait for the external controller’s trigger to start the acquisition , Off = Internal Trigger, I.e software itself will trigger the acquisition.

**},**

**{**

**"ActiveAttribute": "ExposureAuto",** //Setting up exposure Mode

**"Value": "Off"** //Off = takes value from the Exposure Time Attribute which is manually set by the user, On = Exposure time is set by the camera itself depending upon its requirement (Recommended Value is Off for better result)

**},**

**{**

**"ActiveAttribute": "ExposureTime",** //It is the time that camera sensor exposed to the light.

**"Value": "60"**  // Specified in Microseconds

**},**

**{**

**"ActiveAttribute": "GainAuto",** //Setting up Gain

**"Value": "Off"** //Off = takes value from the Gain Attribute which is manually set by the user, On = Gain is set by the camera itself depending upon its requirement (Recommended Value is Off for better result)

**},**

**{**

**"ActiveAttribute": "Gain",** //Gain is the amount of dust allowed with the image.

**"Value": "0"** //lower the gain value better the image quality

**}**

**],**

**"DefaultAOI": [**  //Specify the Area Of Interest for the diagnostic (without guides and light rim in the field of View)

**1944,** //Width

**1862,**  //Height

**474,** //Left

**30**  //Top

**],**

**"ReceiverSequence": [**  // Sequence in which default receiver will receive the images are specified it can be multiple based upon the lane

**{**

**"ReceiverID": 0,** //ID of the Default receiver used to receive images other than RUN time

**"Index": 0** //Image Order in which default receiver should receive

**}**

**],**

**"DefaultfileName": "ZenCAM\\Diagnostics\\Testimages\\top",** //File path used to read the Diagnostics images for offline testing.

**"Continuous": 1,**  //Acquisition configuration attribute to take image continuously or only once. 0 = One Shot, 1 = Continuous (Recommended=1)

**"NumberOfBuffers": 50,** // Acquisition configuration attribute Specifies number of buffers allocated for the acquisition

**"BufferNumberMode": 0,** //Mode to acquire image from Camera. 0 = Next, 1 = Last, 2 = Buffer number, 3 = Every, 4 = Last New. For detail under standing check Ni- IMAQdx User Manual. http://home.hit.no/~hansha/documents/lab/Lab%20Equipment/Vision%20System/resources/NI-IMAQdx%20User%20Manual.pdf.

**"acquisitionTimeout": 1000,** // unit = Millisecond. Delay time between every acquisition should be 0 if its online and for offline specify value at whatever speed machine needs to run(For next cameraID (1,2,…n) increment acquisition sTimeout value by 2ms)

**"ImageType": 0,** // Image type specified while creating buffer. 0 = Grayscale(U8),1 = Grayscale(I16), 2 = Grayscale(SGL), 3 = Complex(CSG), 4 = RGB(U32), 5 = HSL(U32), 6 = RGB(U64), 7 = Grayscale(U16)

**"Offline": true,**  //Used to switch between offline and Online acquisiton. True = Offline, Will take images from database for measurements, False = Online, Uses camera to get image for measurement

**"FrontPanelOpen": false ,** // Front panel Status. true = Front panel opened, false = Front Panel Closed

**"ColorCameraParam": {** //Configuration for RGb images, Not used for ZenGAGE.

**"PixelFormat": "BGRA 8 Packed",**

**"GammaEnable": true,**

**"GammaSelector": "sRGB",**

**"BalanceRationSelector": [**

**"Red",**

**"Blue",**

**"Green"**

**],**

**"BalanceRationRaw": [**

**95,**

**105,**

**115**

**],**

**"BalanceWhiteAuto": "Off",**

**"LightSourceSelector": "Daylight 5000 Kelvin"**

**},**

**"PartsList": [**

**{**

**"Name": "160",** //Part Name

**"ReceiverSequence": [**  // Sequence in which each receiver will receive the images are specified it can be multiple based upon the lane

**{**

**"ReceiverID": 0,** //ID of receiver used to receive

**"Index": 0** //images Order in which receiver should receive

**}**

**],**

**"AOI": [** //Region of interest based on part

**424,**  //Width

**940,**  //Height

**1980,**  //Left

**550** //Top

**],**

**"filePath": "ZenCAM\\Test Images\\1721\\Rack1Top"** //Part wise File path for offline testing (Follow the same order specified as ZenCAM --> Test Images --> Part Name --> Session ID

**}**

**]**

**}**

**]**