How-to: SICK Lector OCR setup

Overview

In this guide you will learn how to:

- setup the SICK Lector 631 to read a single row of characters
- create a configuration file to use the device settings with Ensurance

Limitations

- only OCR, not OCR and barcode reading in the same case
- single row, up to 20 chars tested (real limit may be up to 64 characters)
- only [0-9, A-Z] characters at this stage (ask if need something else, hard limitation is ASCII-only at this stage and on top of that Sick Lector 631 limitations that apply)

Setup

Required items:

- SICK SOPAS software
- SICK Lector 631 (V2D631D-MXCXB0 or V2D631D-MXSXB0)
- Ensurance version >= 1.3.1

Establishing connection

> Do not use SOPAS and Voyantic's Code Reader Setup Tool simultaneously. For the purposes of this guide, use the Code Reader Setup Tool only when explicitly mentioned.

Open SOPAS. The software will automatically detect any Lector(s) in the network. Double click on the text to add the device to the project. Double click on the device icon to open the device configuration window.

When prompted, selected "Standard" user. The "Advanced" view contains the same options, but this guide covers the use of the "Standard" view.
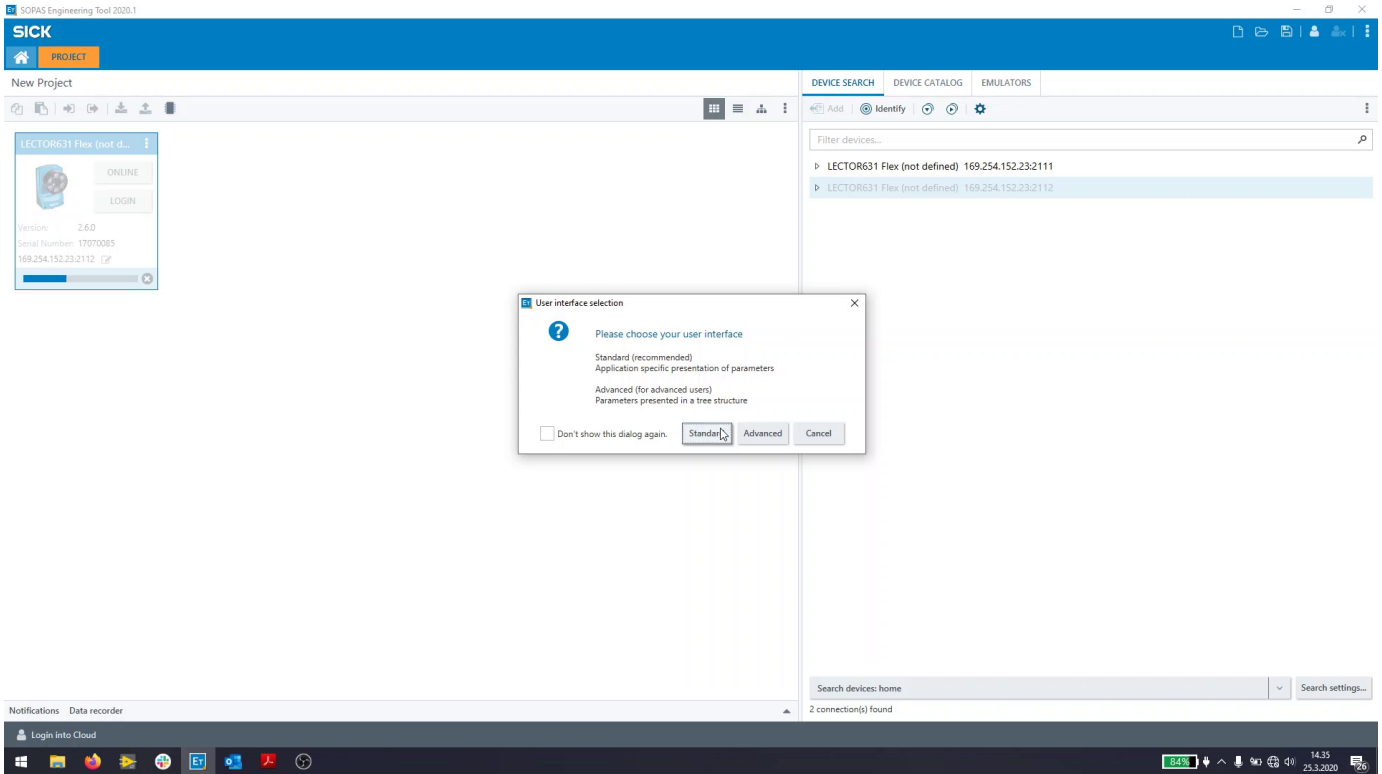
After the device window has loaded you may be prompted to upload of download the device settings. Select upload (read from device). Start by verifying that the connection has been established to the device, the fields should read "online" and "synchronized". If they do not, double click on the text that reads "offline" and select "upload" in the dialogue.
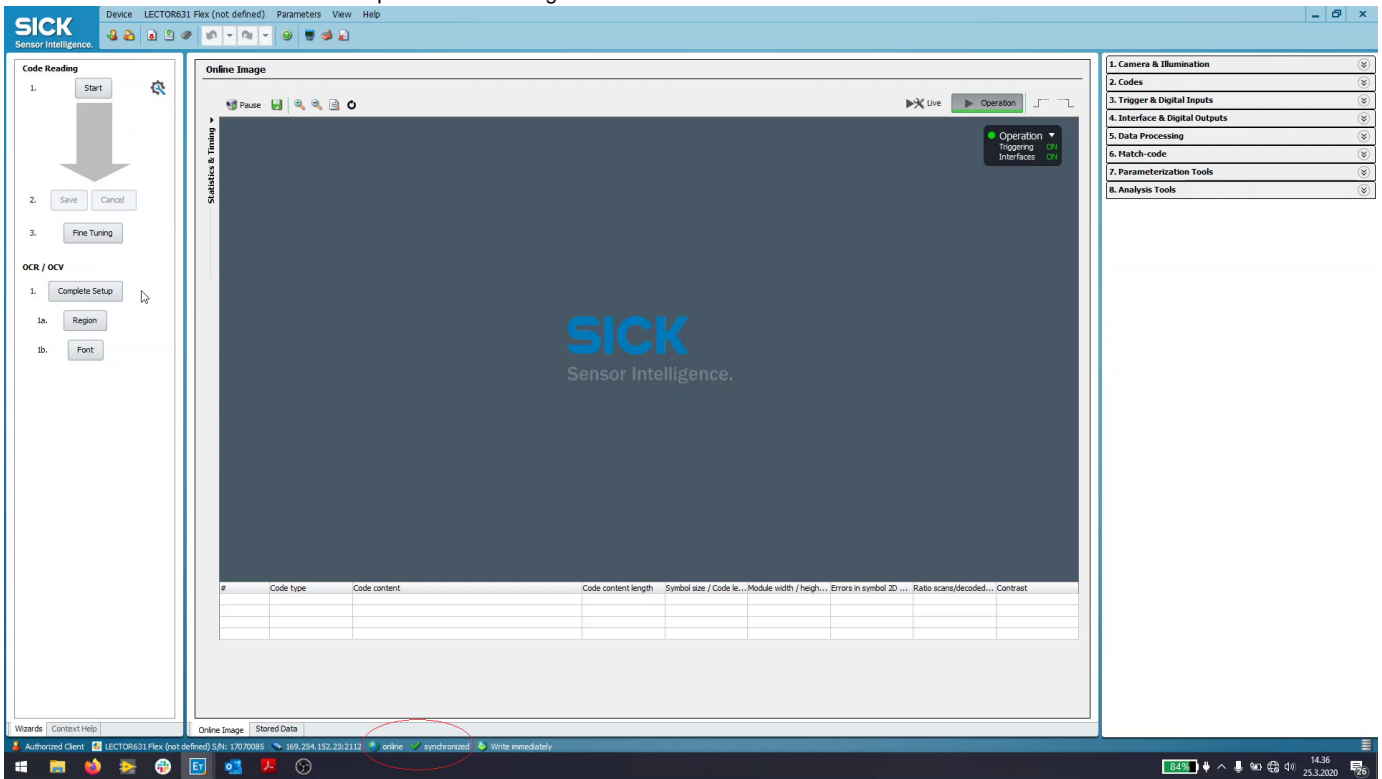
Getting started

To begin with, the device needs to be initialized. This may be achieved in two different ways:
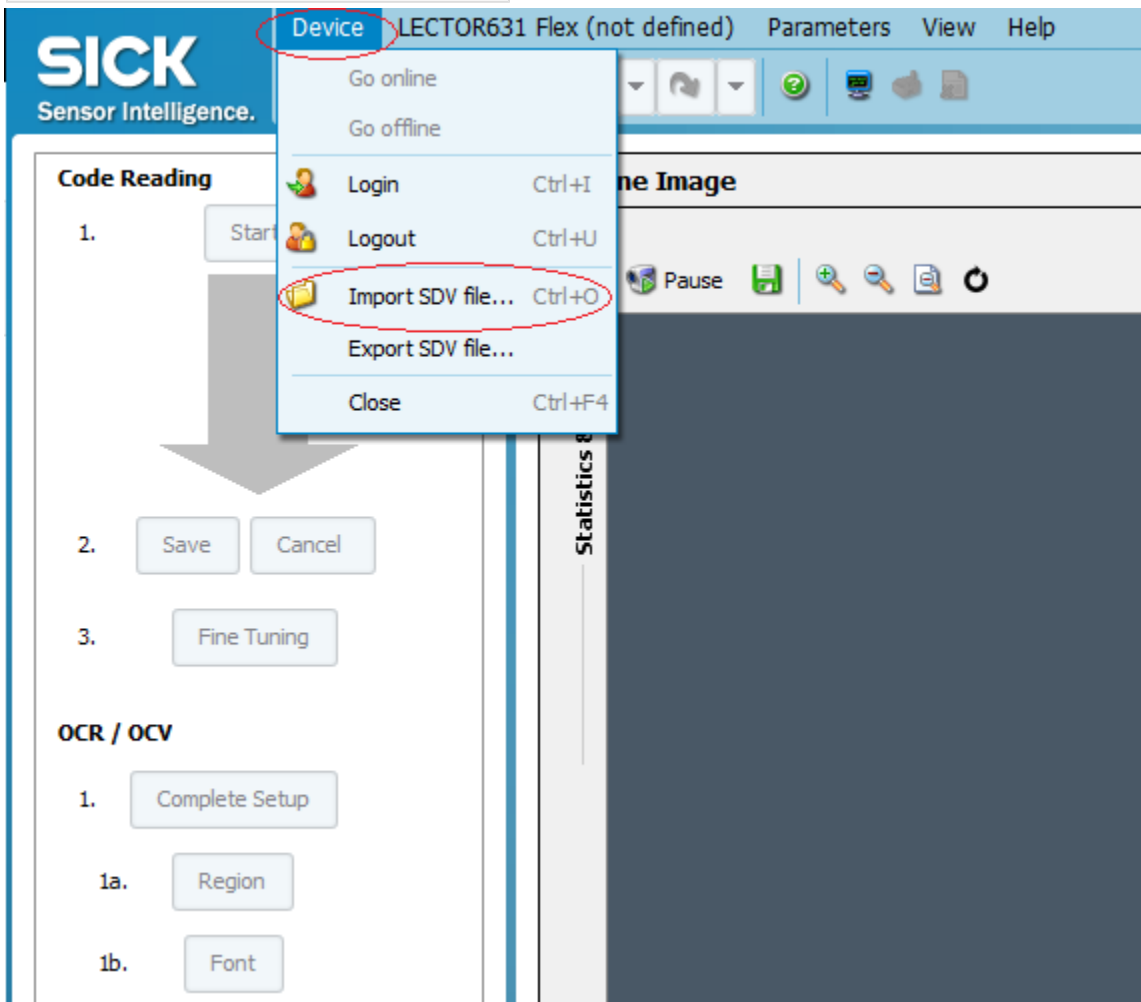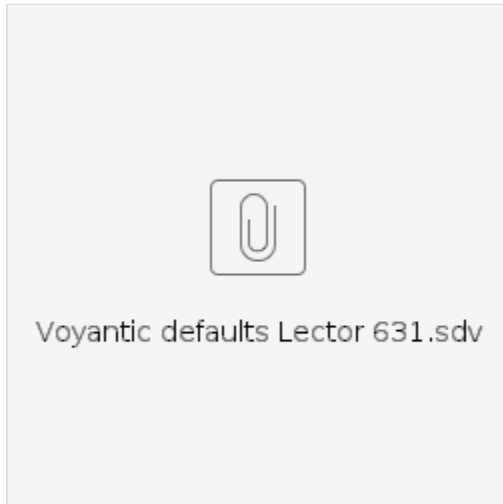
1. Import a SDV file with the Voyantic default settings in SOPAS

2. Use Voyantic's Code Reader Setup Tool to load Voyantic default settings

Instructions for case 1

Complete the dialogue. To create this file, follow case 2 and then select "Export SDV file…" in SOPAS. To load the parameters, select "Import SDV file…"

Voyantic default settings file (Firmware 3.1.1.14):

Instructions for case 2

Open Voyantic Code Reader Setup Tool. Click on "Reset Reader to Default". Close the Code Reader Setup Tool and continue to SOPAS.

Field of view settings

Place your sample text in front of the code reader, preferably at an angle of ~15 degrees. Click on "Live" to view the device's field of view. If your text is outside the frame, move either the code reader or your text until you can see it in the live feed. If the image appears blurry, use a 2mm hex key to adjust the device's focus until the image appears sharp. To mask out the redundant image area, click on "1. Camera & Illumination and select "Increase Performance". Scroll down and adjust the "Image region of interest control" to remove the parts of the image that contain the background and are not relevant for the task.
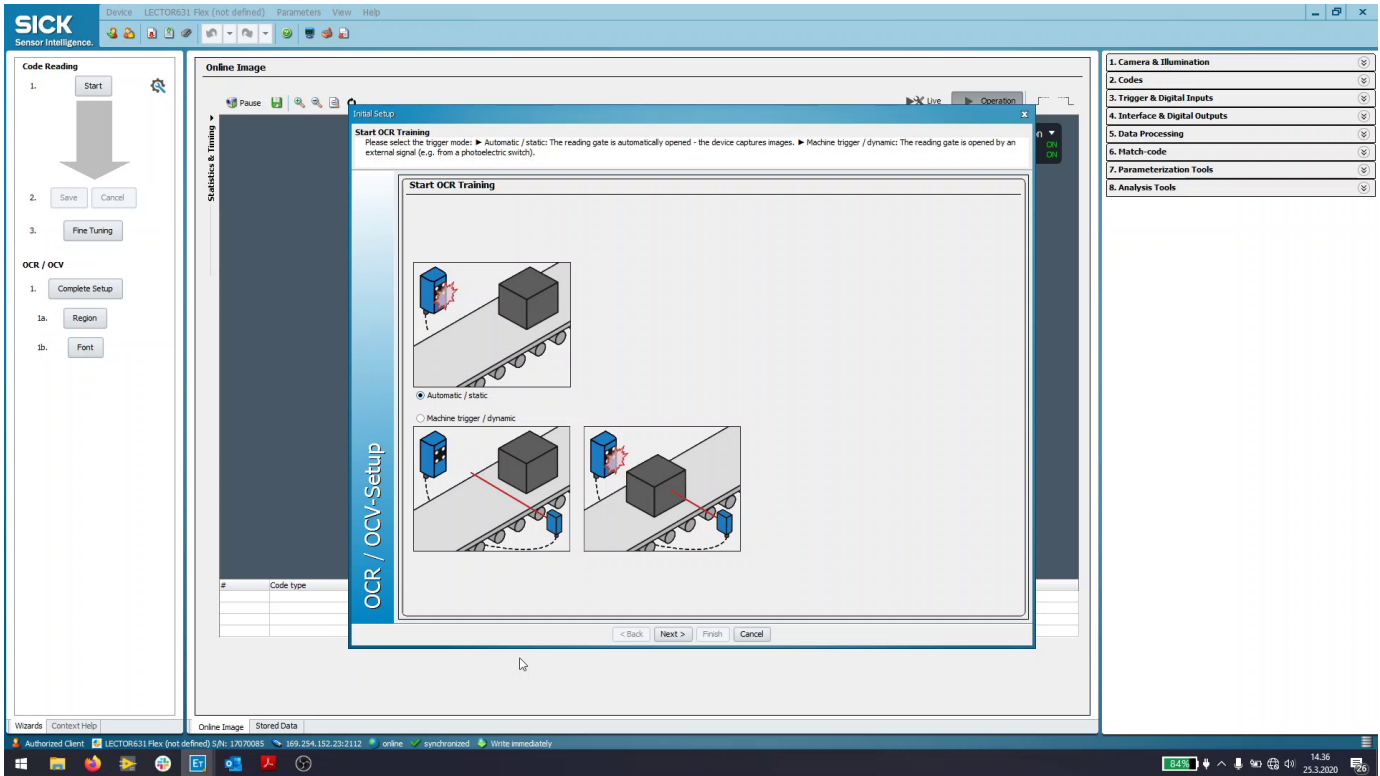

OCR configuration

In the lefthand pane, navigate to OCR / OCV and select "Complete Setup". Select "Automatic / Static".

Begin by clicking on "Image Settings". Follow the instructions. If after finishing the text appears legible and has a good contrast to its background, this step is complete. You may also want to adjust the shutter time, brightness, contrast or die size later on further finetune the parameters. Note that this will likely make any barcodes unreadable.

Secondly, click "Edit OCR region". Drag and resize the blue box around the text to be identified. There are multiple options for positioning the area, select the one that suits your application.
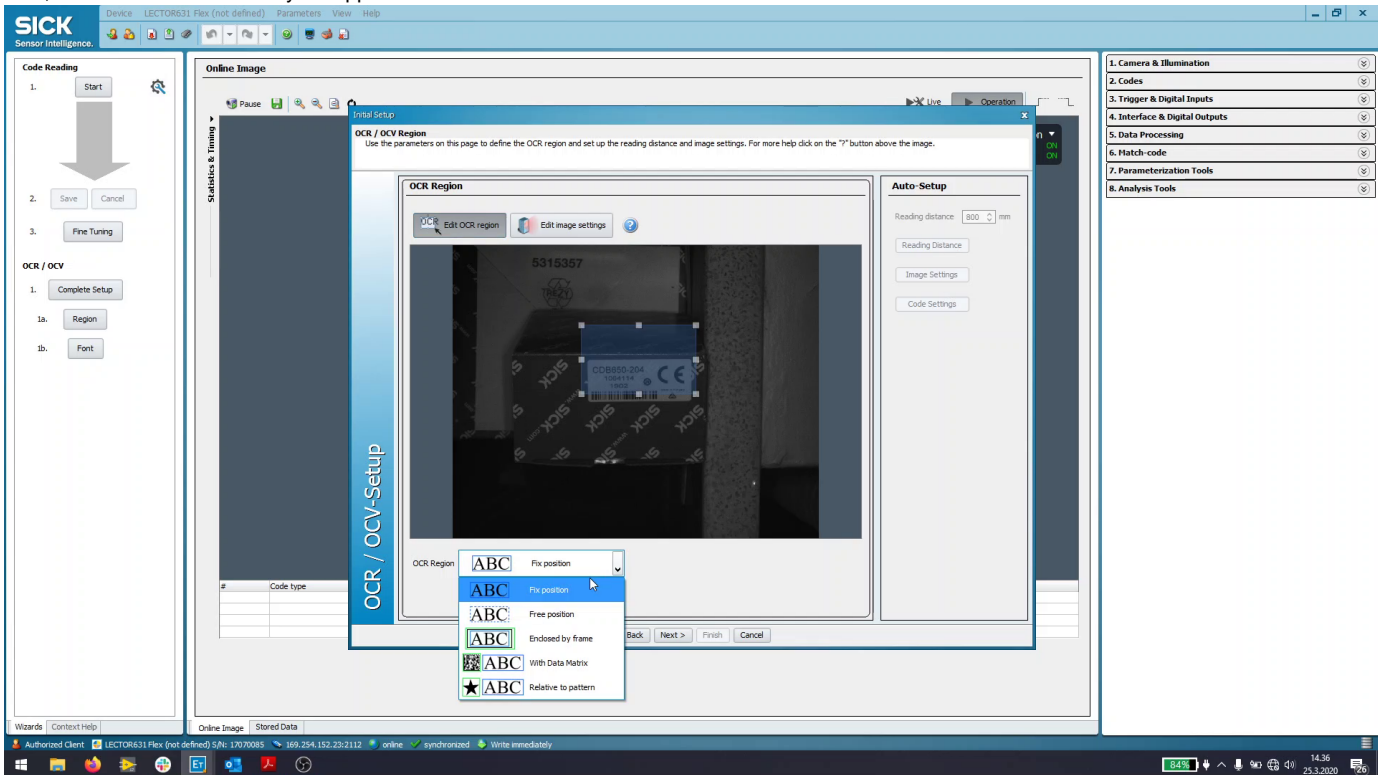
Unselect Multirow. Enter the expected number of rows and characters. If the detected count does not match with the expected, click on "Capture new image" again. If they still do not match, refer to the troubleshooting section and return to this step afterwards.

See if all characters have been detected. Pay attention combined characters due to poor spacing (2 in 1 bounding box) and consecutive rows being recognized as a single character.
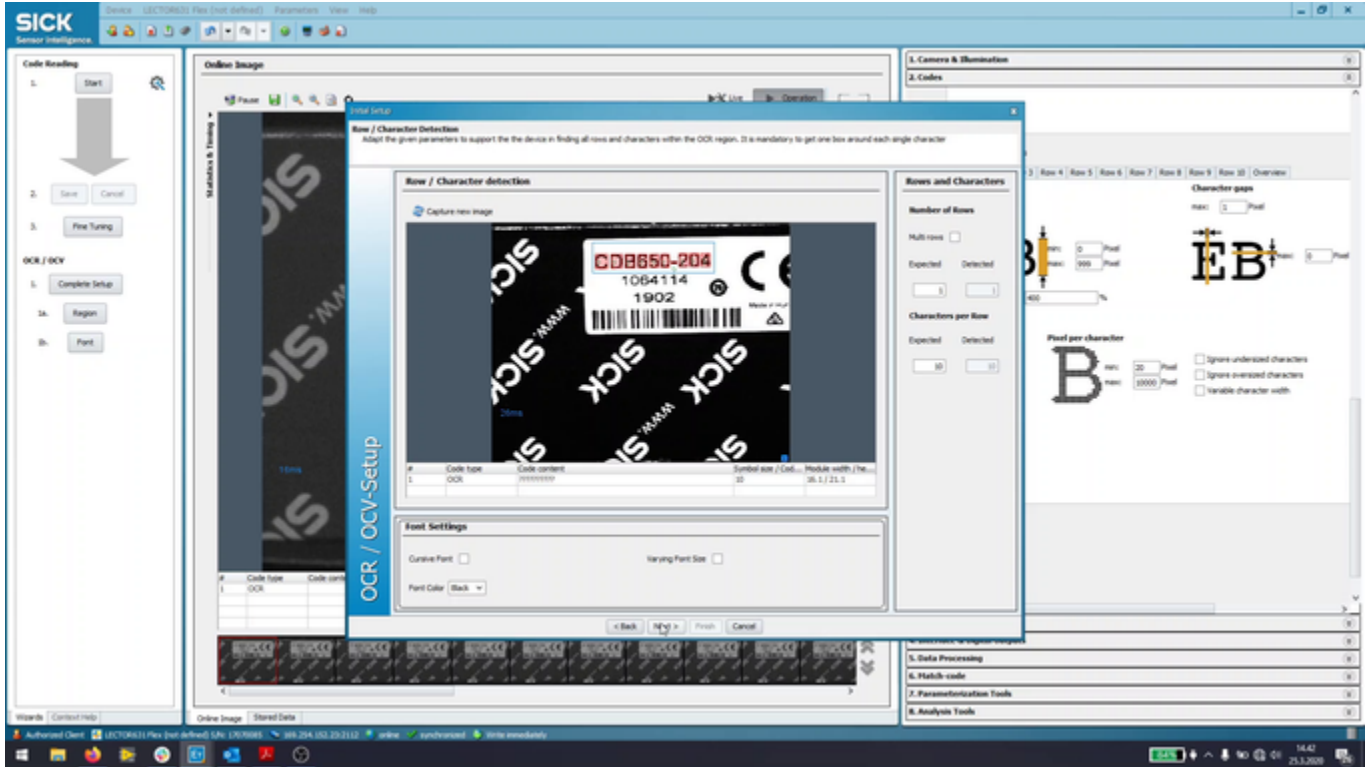
Teach the found characters to the device. It is necessary to each and every single one of possible characters that may be encountered during the testing to be taught to the device. Click on "Do training" to add the taught items to the OCR definitions in the device. If the current item did not cover all of the possible characters, continue with the following items until all possible characters have been taught.

Troubleshooting

- Start using the on-screen ruler by right clicking the image and dragging. Measure each rows character height, width and row gap. If multiple font sizes are present, repeat for each instance.
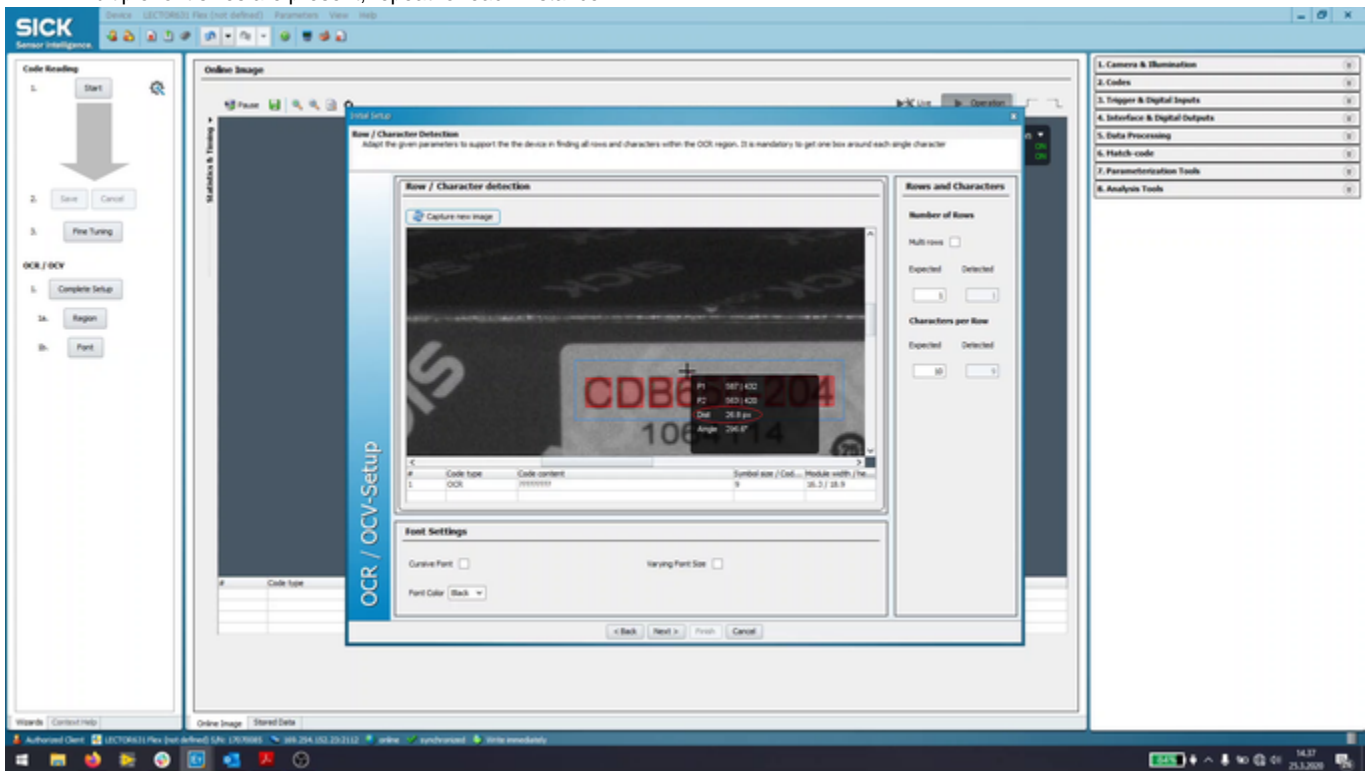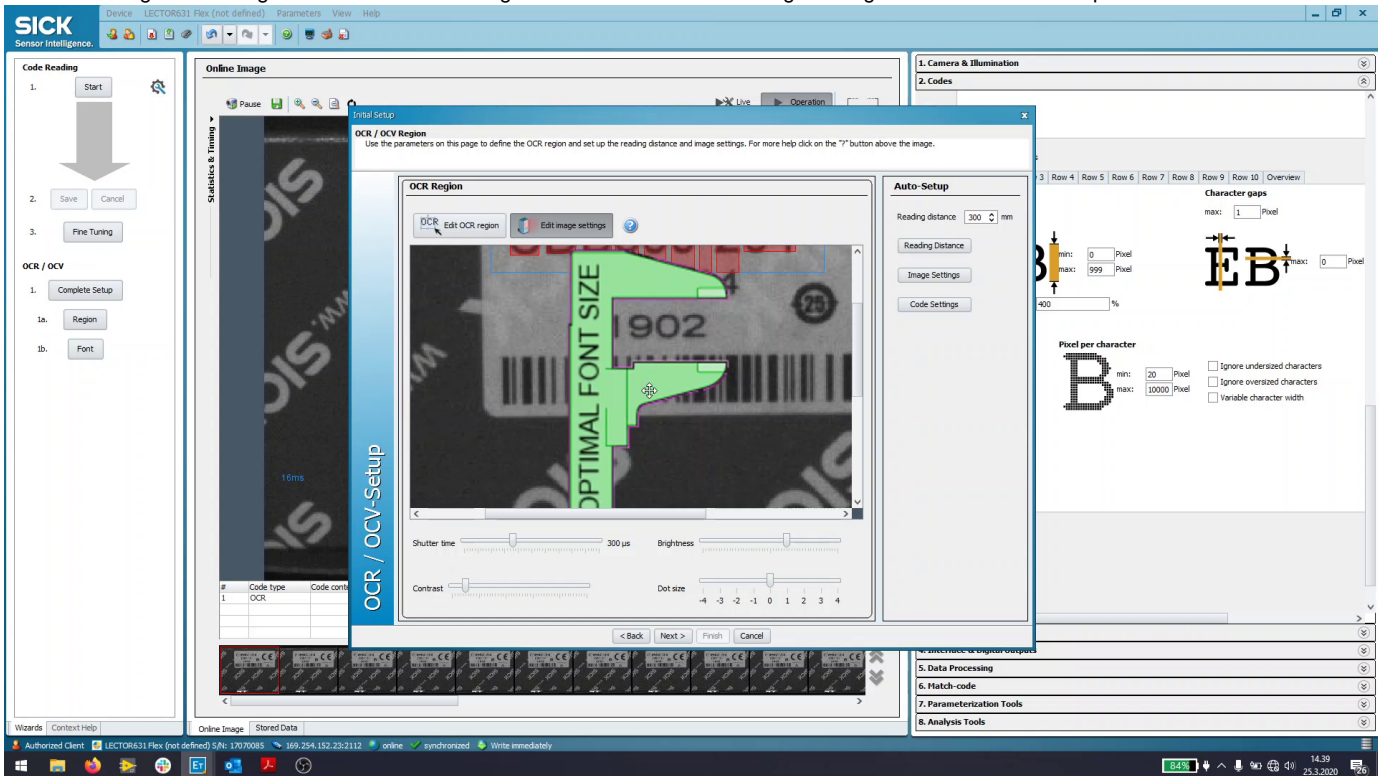
- Close the OCR window and open 2. Codes OCR. Adjust both Row settings and Character settings to fit with your observations.

- Check optimal font size. Adjust camera distance if necessary to reach the best results. You may move the "Optimal font size" -caliper by clicking on the image window. The measuring tool is active in the "Edit image settings" window of OCR setup.

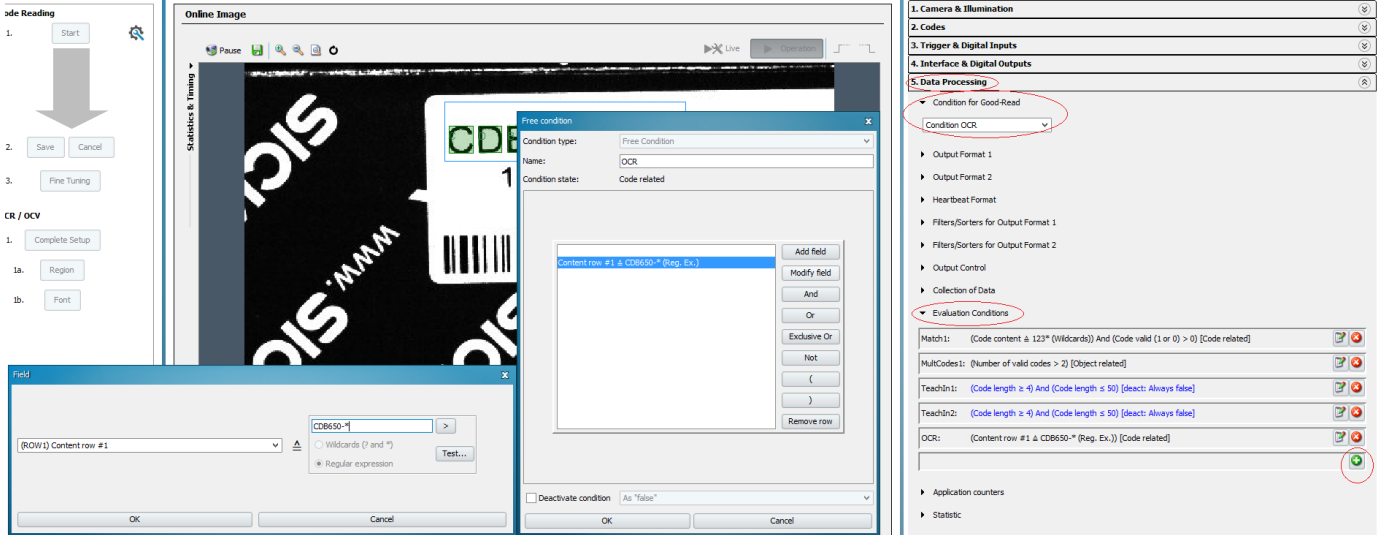## Determining the pass/fail condition

The pass/fail condition may be determined in two ways:

1. Process specific information, e.g. the text always starts with 123, followed by 10 random numbers, ending in 0.

2. Setting a matching limit value for each read character. If the read characters sufficiently matches the taught prototype, the text has been correctly read. This requires testing and experimentation with product samples and conditions for determining the limit, i.e. pass or fail.
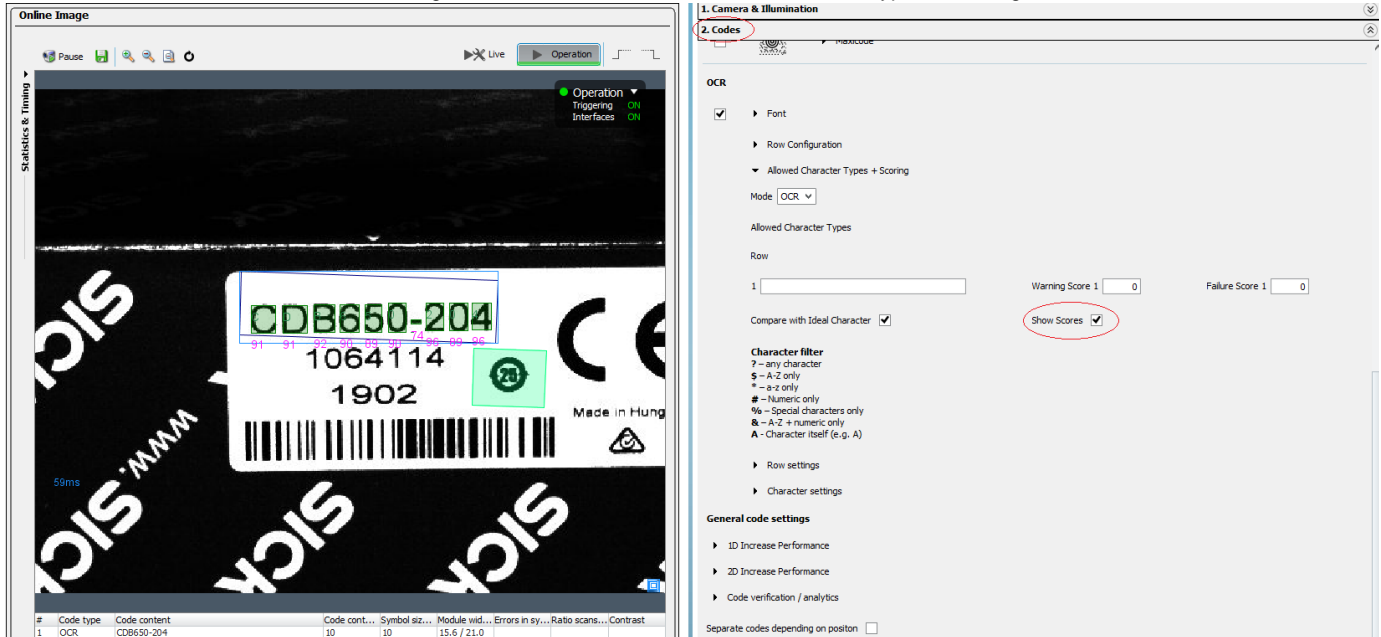
Instructions for case 1

Navigate to "5. Data Processing", "Evaluation Conditions". Click on the green button to create a new condition. The sample condition "OCR" would accept any text that reads "CDB650-" followed by a arbitrary number of following characters of any type. Content row #1 refers to the first row result from OCR. You may use boolean logic to combine multiple conditions. To tie the condition to the pass/fail signal, select "Condition for Good Read" and select your condition from the dropdown menu.

Instructions for case 2

To enable the scores for each character, navigate to "2. Codes", "OCR" "Allowed Character Types + Scoring" and Enable "Show Scores".

To setup the pass/fail condition, follow the instructions for case 1 but select different metrics. You may use character scores or minimum score as a basis for determining pass/fail.

Result formatting

To receive the OCR data as a result in Ensurance, open "5. Data Processing" , "Output Format 1". Right click on the white area inside "For each code" and select ROW1. Click to the right and outside of the box and press enter, "CR""LF" should appear, finishing the result formatting. The combination of carriage return and linefeed is used as an escape character, so they **must** be included.

1. Camera & Illumination	⊗
2. Codes	⊗
3. Trigger & Digital Inputs	⊗
4. Interface & Digital Outputs	⊗
5. Data Processing	⊗

▶ Condition for Good-Read

▼ Output Format 1

🪄 Wizard

❓ ➕

If Good read

For each code

📝 📝 **ROW1** var s

STX 0x2

Else

NoRead

CR 0xd **LF** 0xa **ETX** 0x3

▶ Output Format 2

▶ Heartbeat Format

▶ Filters/Sorters for Output Form

▶ Filters/Sorters for Output Form

▶ Output Control

▶ Collection of Data

▶ Evaluation Conditions

▶ Application counters

▶ Statistic

💾 Parameters…

Condition

STX Special character…

General code items ▶

|||||| BC - Code content

CL - Code length

IWA - Code ID

MC - Multi Count

1D specific items ▶

RSD1DV - Ratio scans/decoded scans value

S1D - Scans on 1D codes

SD1D - Decoded scans on 1D codes

2D specific items ▶

MX2 - Module X size in pix

MY2 - Module Y size in pix

OCR ▶

ROW1 - Content row #1

ROW2 - Content row #2

ROW3 - Content row #3

ROW4 - Content row #4

ROW5 - Content row #5

ROW6 - Content row #6

ROW7 - Content row #7

ROW8 - Content row #8

ROW9 - Content row #9

ROW10 - Content row #10

NROWS - Number of rows

OCVMATCH - OCV Match

ISO/AIM code quality ▶
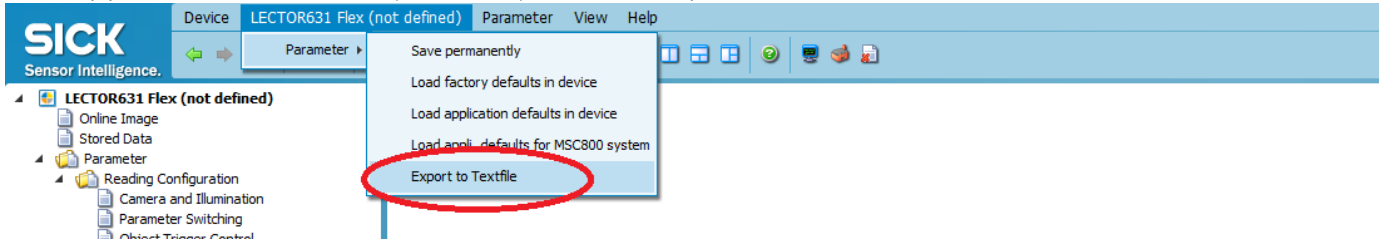
Code Analytics ▶

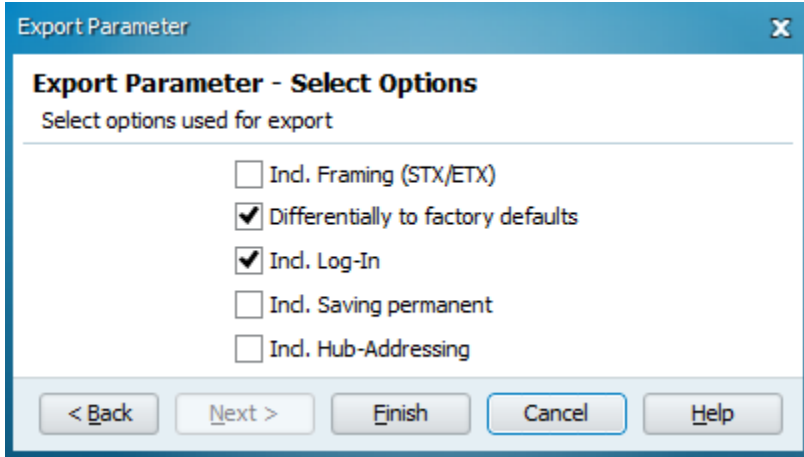**Code application identifiers** ▶

Creating a configuration file

For Ensurance

To enable Ensurance to configure the device in the future, you must export a configuration file.
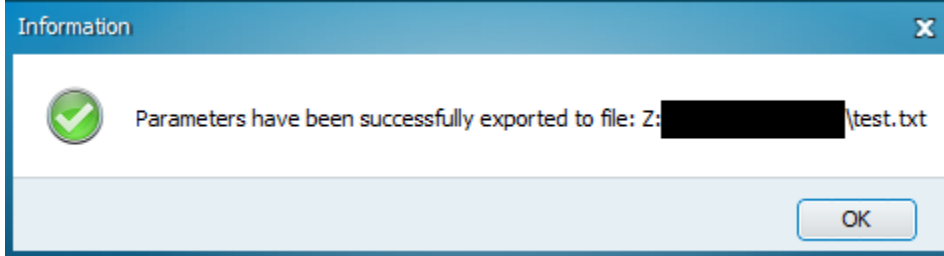
On the top pane, click on Lector631 Flex (device name)->Parameter->Export to text file.

Select the name and path of the .txt, when saving confirm that the file settings are as follows:
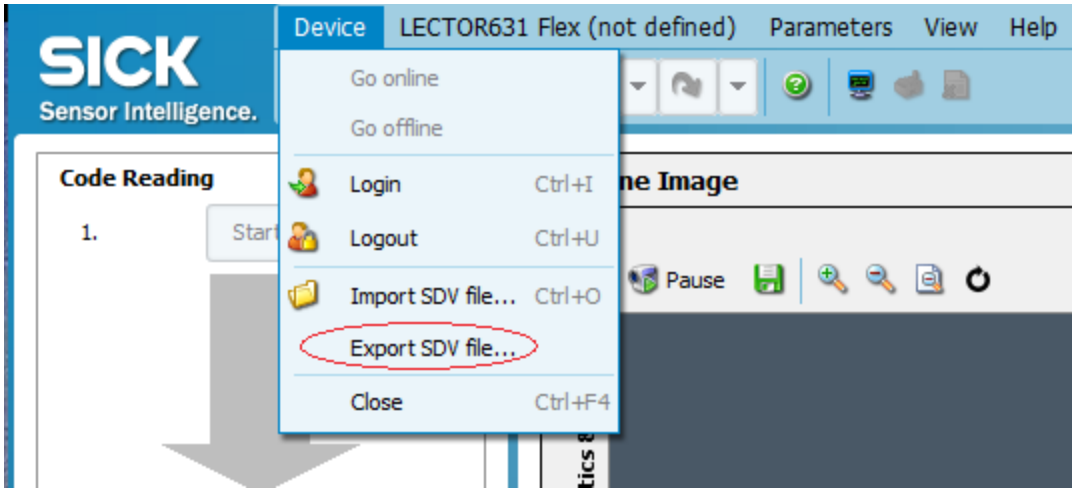

Click on Finish to create the file. SOPAS will give a popup with successful write of the file and its path.

> Please do not load these configuration files when using the Code Reader Setup Tool

For SOPAS

Follow the instructions in the image below.

Configuring Ensurance

Open Ensurance Case Builder. Add a Barcode reader process step. Define the parameter file as the file exported from SOPAS.