Smart-VS Plus WebApp

USER'S GUIDE

Smart Vision Sensor

DATALOGIC

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This manual refers to software version 1.5.0 and later.

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Patents

See www.patents.datasensing.com for patent list.

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Smart-VS Plus WebApp

Before using a Smart-VS Plus device, a Teaching procedure must be performed. Teaching can be completed either using the embedded HMI (refer to the Smart-VS Plus Quick Reference Guide) or the Smart-VS Plus WebApp graphic user interface.

NOTE: To access the Smart-VS WebApp, Google Chrome is the recommended Internet browser.

To access the Smart-VS Plus WebApp, connect to the device IP address (factory default: 192.168.3.100) via Ethernet.

For systems that support the Link-Local Multicast Name Resolution (LLMNR) protocol, you can connect to the Smart-VS by typing **smart-vs/** in the address bar (if there is only one device on the network) or **smart-vs-[Serial Number]/** (e.g. smart-vs-c12345p/) if there are multiple devices on the same network.

NOTE: In case of a new device, the user is automatically redirected to the Dashboard Page (see "Dashboard Page" on page 2**).**

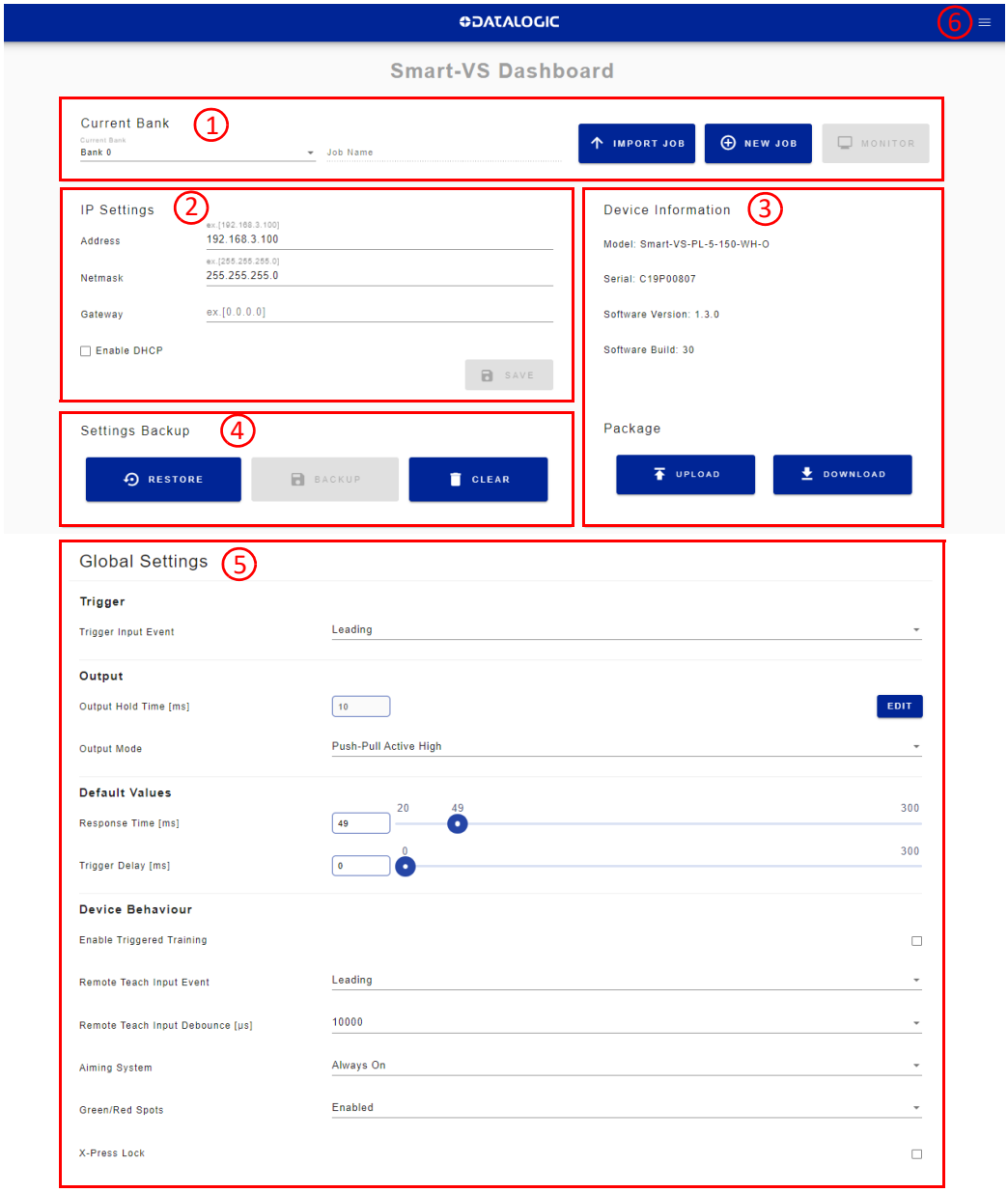
NOTE: In case of an already trained device, the Monitoring page is displayed (see "Monitoring" on page 12**).**

NOTE: A I/O Settings page is also available to adjust the device settings (see "I/O Settings" on page 15**).**

NOTE: Device information and the software update feature are available on the Dashboard Page**.**

DASHBOARD PAGE

When connecting a new device, the “Smart-VS Dashboard” page is displayed showing:



AREA	DESCRIPTION
1	**Current Bank** (see "Current Bank" on page 3)
2	**IP Settings** (see "IP Settings" on page 3)
3	**Settings Backup** (see "Settings Backup" on page 3)
4	**Device Information** (see "Device Information" on page 4)
5	**Global Settings** (see "Global settings" on page 4)
6	**Hamburger icon** (see "Hamburger icon" on page 4)

Current Bank

Allows to change the bank in use.

Import Job

To import a job previously downloaded on PC from another Smart-VS.

New Job

To create a new job through the Teaching wizard. Refer to "Teaching" on page 5.

Monitor

Allows to go to the monitoring page if the selected bank is configured.

IP Settings

Under IP Settings, the Address and Netmask fields can be edited to configure any static IP address, while the Gateway field is optional.

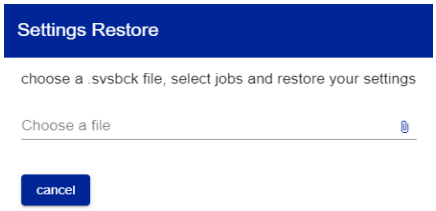
Furthermore, by enabling DHCP, the device automatically acquires the IP address. There must be a DHCP server in the network. If there is no DHCP server, the device will assign itself an IP address in the local link range (169.254.0.0/16).

Settings Backup

When a Settings Backup of a device has been completed, this button allows importing all jobs and global settings of that device.

Restore

Opens the following window:



After selecting the backup file (. `svsbck` format), select one or more job you want to restore and confirm. The global settings will be restored automatically. At the end of the procedure, the Monitoring page is displayed.

Backup

Only available if there is at least one job on the device. Allows to save all the jobs on the device in a . `svsbck` file.

Device Information

Show device information (model, serial number, software versions).

Upload

To upload a firmware package.

Download

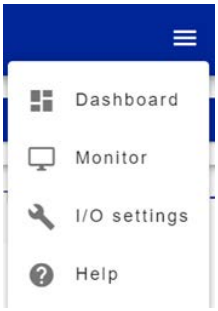
To download the device firmware package.

CAUTION: Do NOT perform the Settings Restore and Upload Package operations while the device is receiving trigger signals.

Global settings

Refer to "I/O Settings" on page 15.

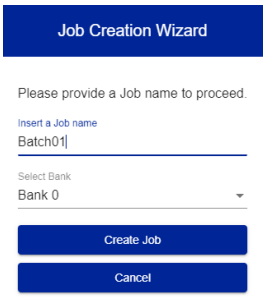
Hamburger icon



AREA	DESCRIPTION
Dashboard	Opens the Dashboard page
Monitor	Opens the Monitor page
I/O Settings	Opens the I/O Settings page
Help	Opens the Smart-VS WebApp User's guide

TEACHING

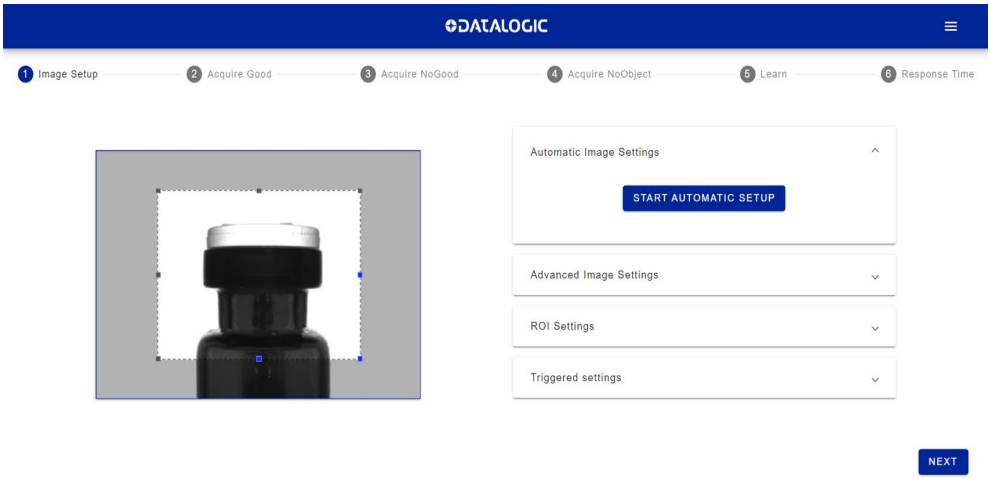
To perform Teaching on your Smart-VS Plus device, enter a job name, select the bank where to store it, click on the Create Job button, and follow the procedure described below.



Step 1: Image Setup

On the **Image Setup** page, select *Start Automatic Setup* to automatically set the Focus Distance, the Exposure Time, and the Sensor Gain parameters (suggested). Alternatively, select *Advanced Image Settings* to manually set the parameters.

It is also possible to move the Field of View based on the application needs, which can be useful when objects of different batch formats must be inspected on the same line. To do this, simply click on the image and drag it throughout the gray area.

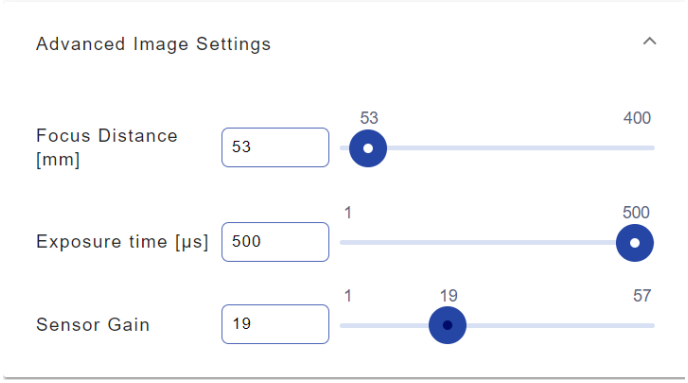


After completing image setup, click NEXT.

Advanced Image Settings:

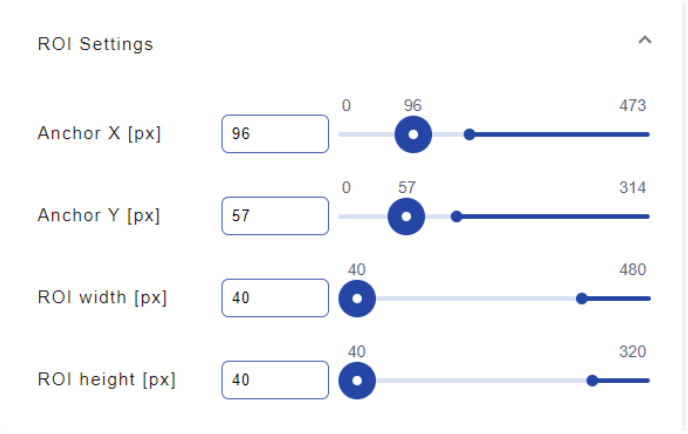
The "*Advanced Image Settings*" button allows to modify the image settings calculated with the automatic procedure.

The available parameters are Focus Distance, Exposure Time and Sensor Gain.



ROI Settings

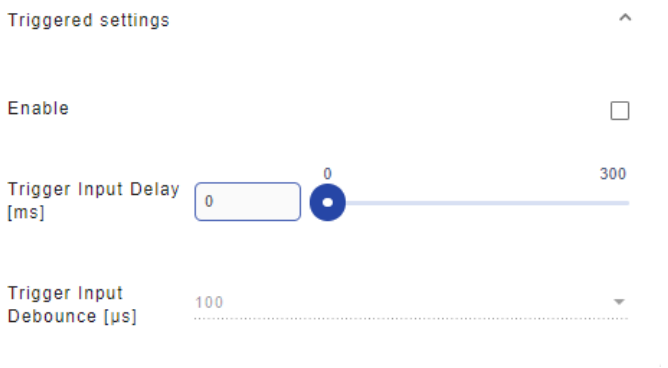
The "*ROI Settings*" button allows to modify ROI values that are Anchor X, Anchor Y (that together represent the upper left point of the ROI) and ROI width and ROI height.



NOTE: When the "*Next*" button is pressed, the ROI dimensions can be slightly changed automatically to improve algorithm behavior.

Trigger Settings:

The "*Trigger Settings*" button allows to enable training in triggered mode by configuring the parameters relating to the trigger.



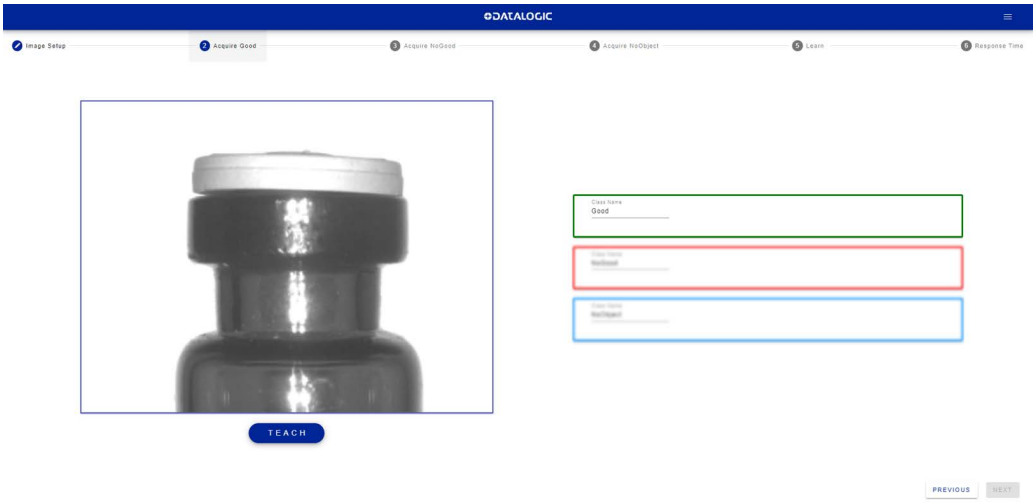
When enabled, the trigger mode modifies the acquisition of the images and therefore adds to the GOOD, NO GOOD and NO OBJECT selections.

Step 2: Acquire GOOD

On the **Acquire GOOD** page, if the triggered mode is not enabled, one or more GOOD objects can be acquired by clicking on the *Teach* button. If the triggered mode is enabled, there will be two buttons: **CONTINOUS** and **START**. When START button is clicked, every image acquired will be added to the GOOD objects. Clicking instead the CONTINOUS button, the Smart-VS will switch working like when the triggered mode was not enabled

It is recommended to acquire as many GOOD images as the known number of instances to be treated as GOOD.

NOTE: The GOOD, NO GOOD and NO OBJECT boxes can store up to 20 images. The GOOD and NO GOOD boxes must each have at least one image, while the NO OBJECT box has no minimum number of images. Consequently, either the GOOD box or the NO GOOD box can store a maximum of 19 images.



NOTE: Click on an acquired object in the GOOD box and select DELETE to delete it.

After adding at least one object, you can click *Next* and go to the Acquire NO GOOD page.

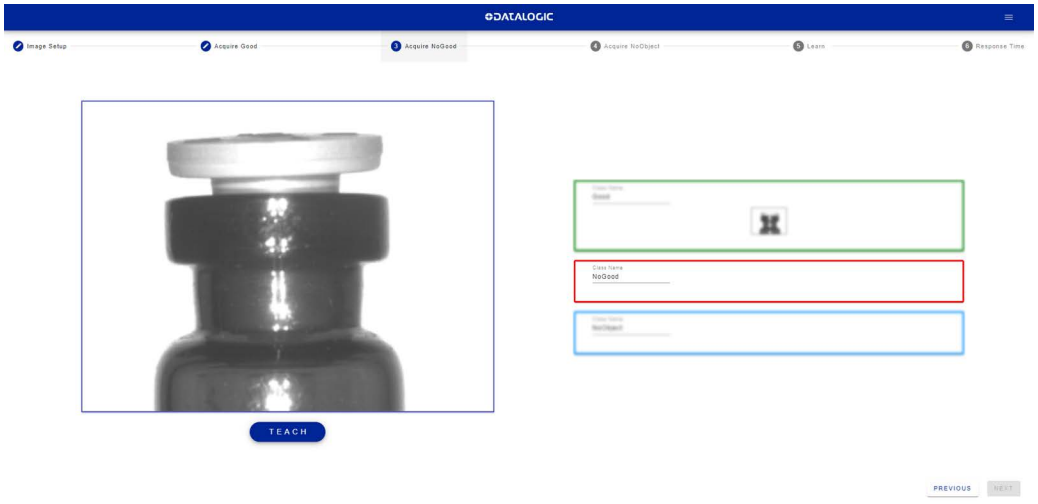
Step 3: Acquire NO GOOD

On the **Acquire NO GOOD** page, if the triggered mode is not enabled, one or more NO GOOD objects can be acquired by clicking on the Teach button. If the triggered mode is enabled, there will be two buttons: CONTINOUS and START. When START button is clicked, every image acquired will be added to the NO GOOD objects. Clicking instead the CONTINOUS button, the Smart-VS will switch working like when the triggered mode was not enabled.

On the **Acquire NO GOOD** page, one or more NO GOOD objects can be acquired by clicking on the *Teach* button.

It is recommended to acquire as many NO GOOD images as the known number of instances to be treated as NO GOOD.

NOTE: The GOOD, NO GOOD and NO OBJECT boxes can store up to 20 images. The GOOD and NO GOOD boxes must each have at least one image, while the NO OBJECT box has no minimum number of images. Consequently, either the GOOD box or the NO GOOD box can store a maximum of 19 images.



NOTE: Click on an acquired object in the NO GOOD box and select DELETE to delete it.

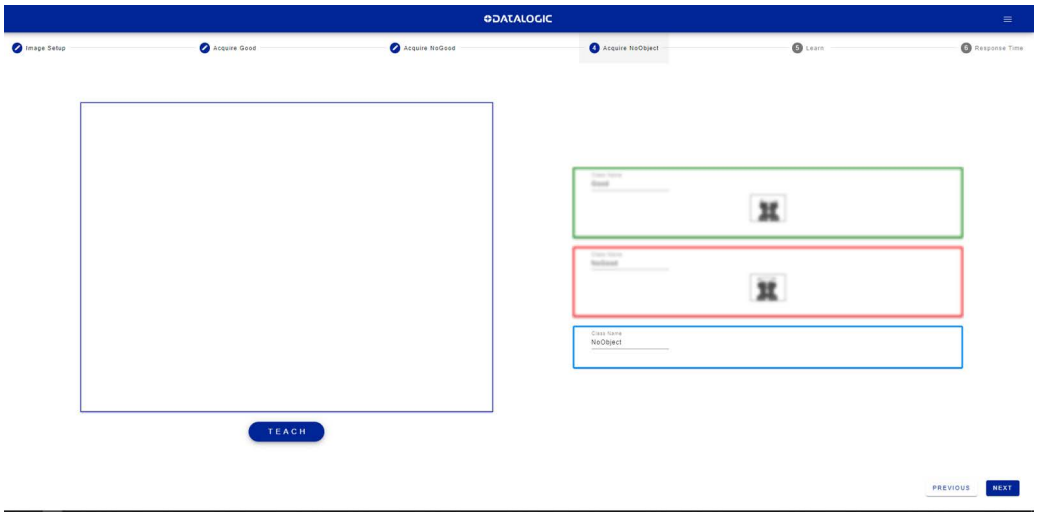
After adding at least one NO GOOD object, you can click on the *Next* button.

Step 4: Acquire NO OBJECT

On the **Acquire NO OBJECT** page it is not mandatory to acquire one or more NO OBJECT objects, it is therefore possible to skip this step by clicking the *Teach* button.

If the triggered mode is not enabled, one or more NO OBJECT images can be acquired by clicking on the Teach button. If the triggered mode is enabled, there will be two buttons: CONTINOUS and START. When START button is clicked, every image acquired will be added to the NO OBJECT objects. Clicking instead the CONTINOUS button, the Smart-VS will switch working like when the triggered mode was not enabled.

NOTE: The GOOD, NO GOOD and NO OBJECT boxes can store up to 20 images. The GOOD and NO GOOD boxes must each have at least one image, while the NO OBJECT box has no minimum number of images. Consequently, either the GOOD box or the NO GOOD box can store a maximum of 19 images.

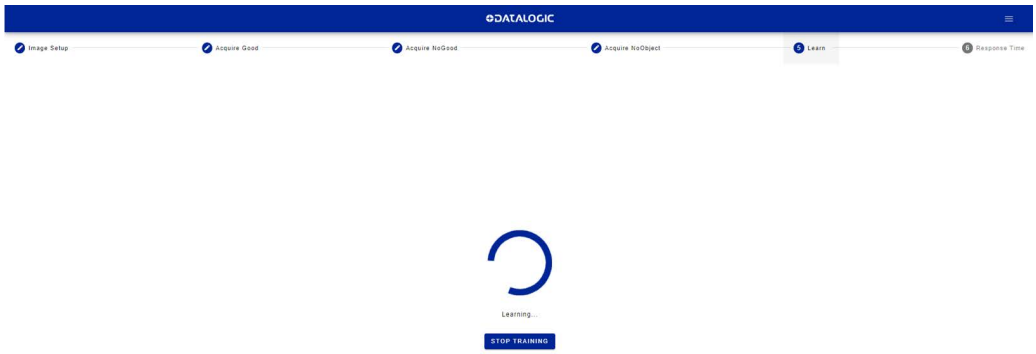


NOTE: Click on an acquired object in the NO OBJECT box and select DELETE to delete it.

Once completed the NO OBJECT acquisition (if needed), you can click the *Teach* button.

Step 5: Learn

This step is completed automatically. If it takes too long, you can stop the procedure clicking on the *Stop training* button.

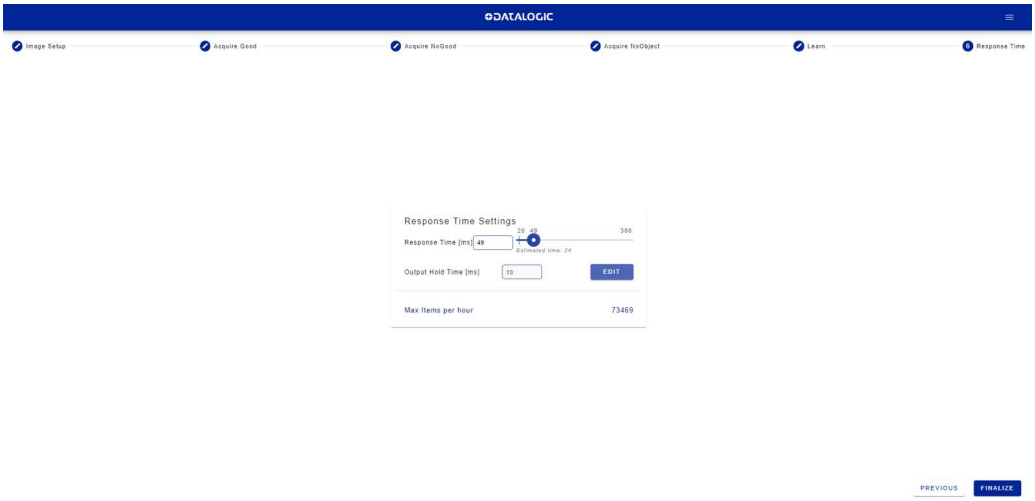


Once the device is trained, the Smart-VS WebApp switches to the Monitoring page.

Step 6: Response Time

This step allows to change the response time of the job. The smart-VS calculates an estimate of the time needed to perform the classification which can be read in the “Estimated Time” label.

NOTE: The time set by the user can never be less than the time estimated by the device.

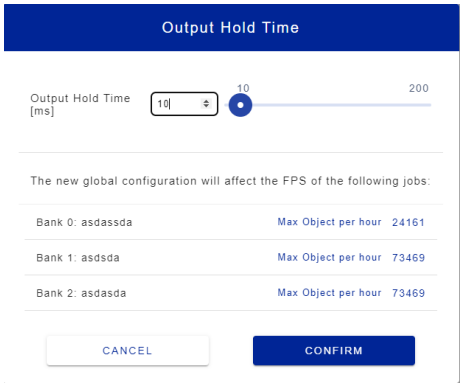


Acquiring at too high frequency can generate a blockage on the output line degrading the performance of the device. This means that the maximum acquisition frequency depends on two timings:

- Job Response Time: Resp_T_ms
- Output_Hold_Time: Out_HT_ms

The maximum number of objects that can be analyzed by the device is 3600 * 1000 / max(Resp_T_ms, Out_HT_ms).

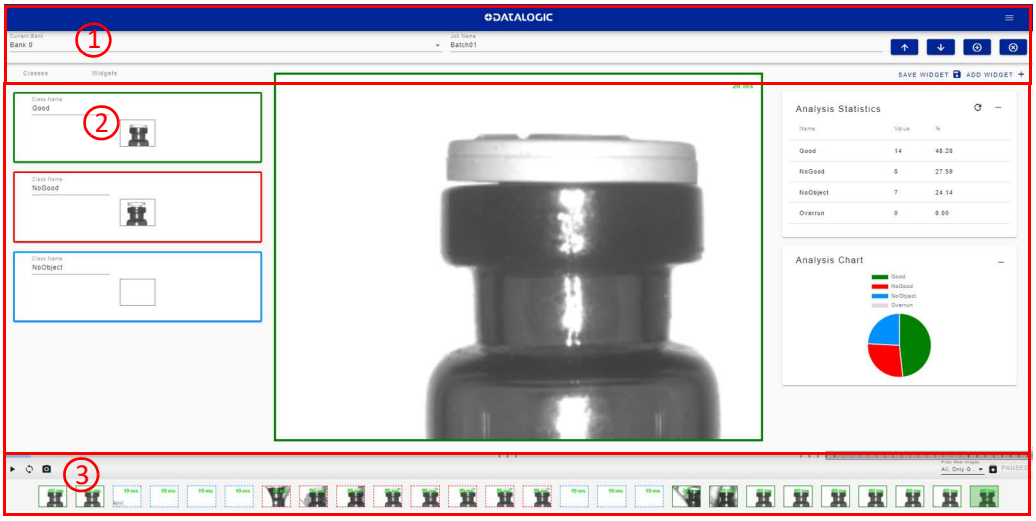
To achieve the maximum performance of the job in terms of speed, it may be necessary to modify the Output Hold Time by clicking on the **EDIT** button. Once pressed this window is displayed:



Since the output hold time is a global parameter used by all jobs, the smart-VS shows how the maximum number of objects that can be analyzed by each job present on the device changes as this parameter varies.

MONITORING

The **Monitoring** page is divided into an upper bar, a main area, and a bottom bar.



AREA	DESCRIPTION
1	**Upper bar** (see "Upper Bar" on page 12)
2	**Main area** (see "Main area" on page 13)
3	**Bottom bar** (see "Bottom bar" on page 13)

Upper Bar

The **upper bar** contains the job name to the left. Use the drop-down menu to switch to another job (if present).

NOTE: If you want the selected job to be the running and startup job, click on the *Play* button before leaving the page.

Next to the job name, the following icons are present:

ICON	DESCRIPTION
	**Upload job**: uploads a job from your PC (`.svscfg` file)
	**Download job**: downloads the current job on your PC
	**Add new job**: switches to the Training wizard to create a new job
	**Delete job**: deletes current job
	**Save Widget:** save current configuration of the widget
	**Add Widget:** open a new windows to select the widget to be added and where

Main area

The **main area** includes:

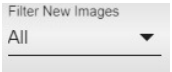
- the statistics box to the left. This shows the statistics concerning the ongoing acquisitions. These are active by default, but can be changed or removed.
- the cropping area at the center.
- empty area at the right available for custom widget.

Bottom bar

The **bottom bar** displays an archive of acquisitions (filmstrip).

NOTE: When the device receives no trigger event, the Monitoring page only displays the statistics box to the right and a blank filmstrip.

To start acquiring objects, the following options are available:

ICON	DESCRIPTION
	Save and Play with External Trigger
	Play with Self-Trigger
	Single shot
	Show all images or a multiple selection of these categories: GOOD, NO GOOD, NO OBJECT and OVERRUN
	Download the filmstrip (refer to "Download the filmstrip" on page 14)

The *Play* button is also a *Save* button: click on it before leaving the page to store any change.

NOTE: The *Play with Self-Trigger* button is not an actual operating mode (output signals are not driven). It is only intended for demonstration purposes or preliminary checks in static condition.

Next to the *Play* icons, the acquisition results are displayed as green bars for GOOD objects, red bars for NO GOOD objects, blue bars for NO OBJECT and gray bars for OVERRUN[1] occurrences.

Click on the *Pause* icon to stop acquisition and enable all available functions.

Dragging the gray box along the bottom bar displays the acquisitions included in that interval. You can now perform **Incremental Training**: click on an acquired image and select GOOD, NO GOOD or NO OBJECT to add it to the corresponding acquisition box. It is also possible to drag and drop acquired images to the GOOD / NO GOOD / NO OBJECTS box or from one box to another.

After clicking on one of the *Play* icons, the newly added acquisitions will be used by the device in addition to those stored during the initial Teaching procedure.

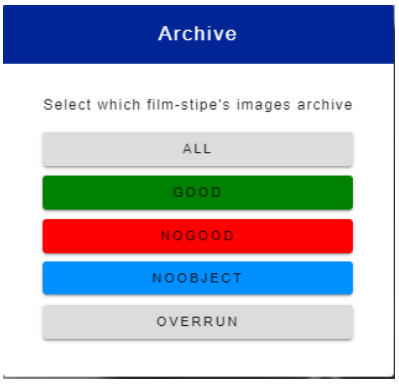
1. Overrun occurrences are mostly due to a noisy trigger signal and/or a too fast sequence of trigger events (e.g. more than two events every 50 ms). Choose a proper Debounce filter time and/or adjust the line speed to have 20 pieces per second.

Furthermore, the Smart-VS WebApp allows image saving. Any image shown in the WebApp can be saved clicking on it and selecting *Save*.

NOTE: It is recommended to enable the browser option “Ask where to save each file before downloading”.

Download the filmstrip

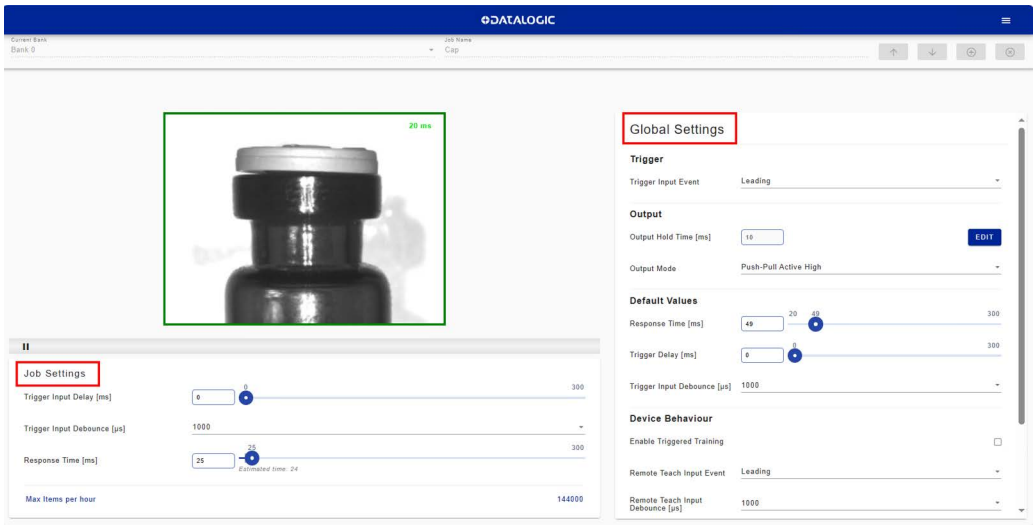
The download button opens a window where it is possible to choose which filmstripe download from the archive.



I/O SETTINGS

This page contains Job Settings and Global Settings.

It can be reached using the hamburger icon on the upper right corner.



The parameters under Job Settings are variable for each job, which means that any change will only be valid for the current job:

- **Trigger Input Delay**: the delay to apply prior to the acquisition process of the trigger event. It is measured in time (ms). This parameter can be adjusted along with image acquisition: images are shown on the related window.
- **Trigger Input Debounce**: filter debounce time measured in µs.
- **Response time**: refer to "Step 6: Response Time" on page 11.

The parameters under Global Settings are common to all jobs, which means that any change will be valid for all jobs:

- **Trigger Input Event**: can be either Leading or Trailing.
- **Output Hold Time**: the time (ms) during which the output data remains valid.
- **Output Mode**: available selections are NPN, PNP, Push-Pull active High, Push-Pull active Low.
- **Response Time:** This is the default response time for new job. It is the one used for the job created following the Button Teaching Procedure, it is displayed and can be changed for the job created following the teaching though WebApp.
- **Trigger Delay:** This is the default trigger input delay for new job. It is the one used for the job created following the Button Teaching Procedure, it is displayed and can be changed for the job created following the teaching though WebApp.
- **Trigger Input Debounce**: This is the trigger input debounce time for new job. It is the one used for the job created following the Button Teaching Procedure, it is displayed and can be changed for the job created following the teaching though WebApp.
- **Enable triggered Training**: allows to enable triggered training for configurations made with the button.
- **Remote Teach Input Event**: available selections are Leading and Trailing.
- **Remote Teach Input Debounce**: filter debounce time measured in µs.
- **Aiming System**: available selections are Always ON, Always OFF, Calibration Only.
- **Green/Red Spots**: available selections are Calibration Only, Enabled, Disabled.
- **X-Press Lock**: when selected, the button teaching procedures are disabled.

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