Getting Started with
Omron WebMonitor

User Manual

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Disclaimer

The information and specifications described in this manual are subject to change without notice.

Latest Manual Version or Technical Support

For the latest version of this manual, or for technical support, see your local Omron website. Your local Omron website can be located by visiting **https://www.ia.omron.com** and selecting your region from the Global Network panel on the right side of the screen.

Security Measures

Anti-Virus Protection
Install the latest commercial-quality antivirus software on the computer connected to the control system and maintain to keep the software up to date.

Security Measures to Prevent Unauthorized Access
Take the following measures to prevent unauthorized access to our products:

- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to shut down unused communications ports and limit communications hosts and isolate control systems and equipment from the IT network.
- Use a virtual private network (VPN) for remote access to control systems and equipment.
- Adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong passwords and change them frequently.
- Scan for viruses to ensure safety of USB drives or other external storage devices before connecting them to control systems and equipment.

Data Input and Output Protection
Validate backups and ranges to cope with unintentional modification of input/output data to control systems and equipment.

- Check the scope of data.
- Check validity of backups and prepare data for restore in case of falsification or abnormalities.
- Safety design, such as emergency shutdown and fail-soft operation in case of data tampering or abnormalities.

Data Recovery
Back up and update data periodically to prepare for data loss.
When using an intranet environment through a global address, connecting to an unauthorized terminal such as a SCADA, HMI or to an unauthorized server may result in network security issues such as spoofing and tampering.
You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.
When constructing an intranet, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment. Take adequate measures, such as restricting physical access to network devices, by such means as locking the installation area.
When using a device equipped with the SD Memory Card function, there is a security risk that a third party may acquire, alter, or replace the files and data in the removable media by removing or unmounting the removable media. Please take sufficient measures, such as restricting physical access to the controller or taking appropriate management measures for removable media, by means of locking the installation area, entrance management, etc.

Software
To prevent computer viruses, install antivirus software on the computer where you use this software. Make sure to keep the antivirus software updated.
Keep your computer's OS updated to avoid security risks caused by a vulnerability in the OS.
Always use the latest version of this software to add new features, increase operability, and enhance security.
Manage usernames and passwords for this software carefully to protect them from unauthorized uses.
Set up a firewall (e.g., disabling unused communication ports, limiting communication hosts, etc.) on a network for a control system and devices to separate them from other IT networks.
Make sure to connect to the control system inside the firewall.
Use a virtual private network (VPN) for remote access to a control system and devices from this software.

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PREFACE

Welcome

Purpose of This Guide

This guide describes how to use Omron Microscan's Omron WebMonitor to visualize Omron Microscan Link values and images from compatible Omron Microscan smart cameras and vision systems. Omron WebMonitor runs on the web browser of your choice, including those found on tablets and smart phones.

Preface

CHAPTER 1

Omron WebMonitor Overview

This section provides a general description of the Omron WebMonitor interface.

Introduction

Omron WebMonitor allows you to visualize **Omron Microscan Link** values and images from compatible Omron Microscan smart cameras and vision systems. Omron WebMonitor runs on the web browser of your choice, including those found on tablets and smart phones.

Requirements

Omron WebMonitor supports Windows 7 (32-bit and 64-bit) and Windows 10.

Omron WebMonitor requires an HTML5-compatible browser:

- Internet Explorer 11 or later
- Google Chrome
- Firefox
- Mobile Safari (iPhone / iPad)
- Mobile Chrome on Android devices

The following browswers were explicitly tested for compatibility:

- Internet Explorer 11.0.2
- Google Chrome 33.0
- Firefox 28.0

Additional Notes:

- Safari for Windows is not supported.
- Internet Explorer 11 or later and Google Chrome 33 or later are recommended for extended Omron WebMonitor sessions.

Connecting

To launch Omron WebMonitor, use your favorite web browser and enter the address of your device in the browser's address bar. For example, if you have a Omron Microscan smart camera on your network at address **10.20.1.123**, you would enter:

If using a HAWK MV-4000, you can also type the name of the device, as in the example **http://HAWK5E7420**.

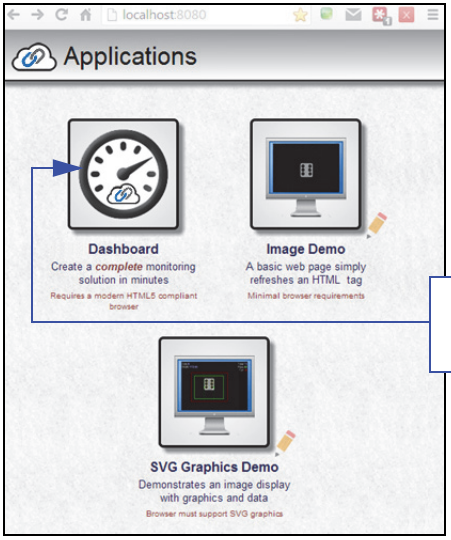
Omron WebMonitor also works with **Visionscape Software** and with **AutoVISION**'s Emulator.

To connect to a software-based job running in FrontRunner or AutoVISION:

First, be sure the job is running, and then type the following into your browser's address bar:

Note: You must specify port **8080** for a PC-based connection. If you are connecting to a PC-based system from a different machine on the network, use the IP address or name of the PC instead of the local host. For example, use **http://10.20.1.234:8080** if the PC's IP address is **10.20.1.234**.

Once you press the **Enter** key, you should see the following home page:



Click the **Dashboard** icon to launch the application.

Application Overview

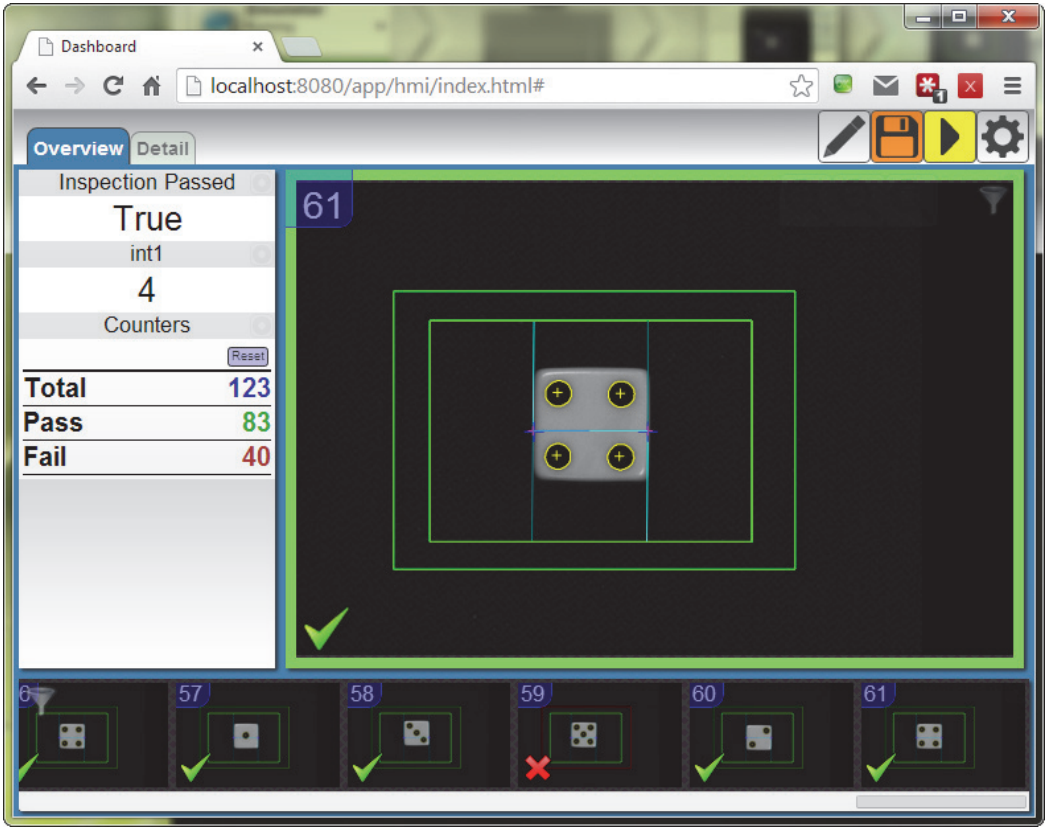
The Omron WebMonitor Dashboard user interface is a single page web app-style application. Most web pages show information that can typically extend beyond the bottom of the browser window, requiring the user to scroll to see it. They typically contain links to other pages, which is how the user navigates around a web site.

In contrast, Omron WebMonitor behaves more like an application, expanding to fill the browser window, and automatically adapting to any changes in the dimensions of the window. Although Omron WebMonitor allows you to define and use multiple display pages, they are all contained within a single web page.

The browser stores a maximum of 50 images. The camera stores images, image thumbnails, and data records that can be requested via the web page or API. When memory is full, the camera will first delete full-size images, then thumbnails, and ultimately the data records on a first in-first out basis.

This is a typical view of a Omron WebMonitor page.

Note: Clicking the **Reset** button in the **Counters** section only resets the counters in the WebMonitor interface - not on the camera.



Application Bar

The **Application Bar** is located at the top of the Omron WebMonitor interface.

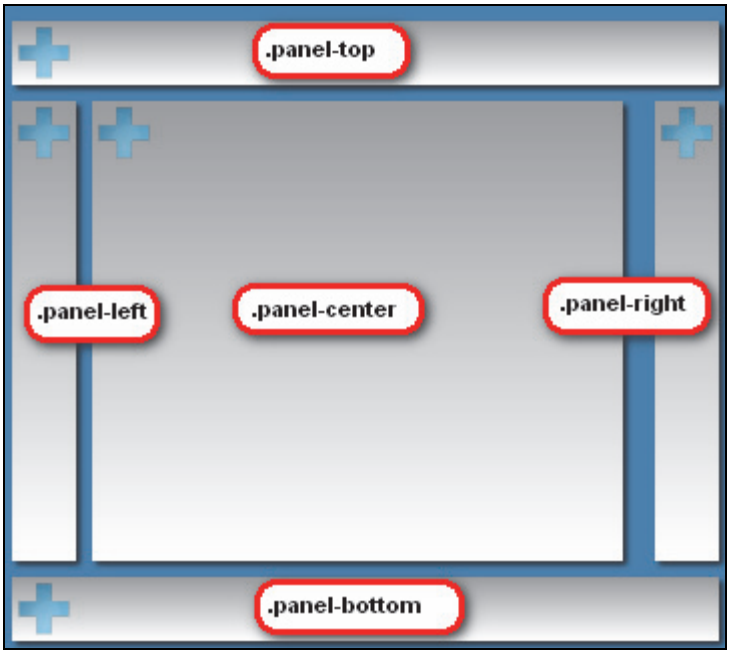
There are three components to the Appplication Bar:

- **A set of page selection buttons.** In the example above they appear as tabs, but the style can be customized if necessary.
- **A logo.** The position and contents of the logo can be customized.
- **A toolbar.** The toolbar provides access to various Omron WebMonitor settings and modes. The position and size of the toolbar can be customized.

Pages, Panels, and Widgets

The main area of Omron WebMonitor displays one of a number of **pages**. If there is more than one page defined, you can switch between them by using the page selection buttons on the application bar, or by using the arrow keys on your keyboard.

Each page is organized into a set of regions called **panels**. The following image shows an empty page to demonstrate the arrangement of the panels on a page.



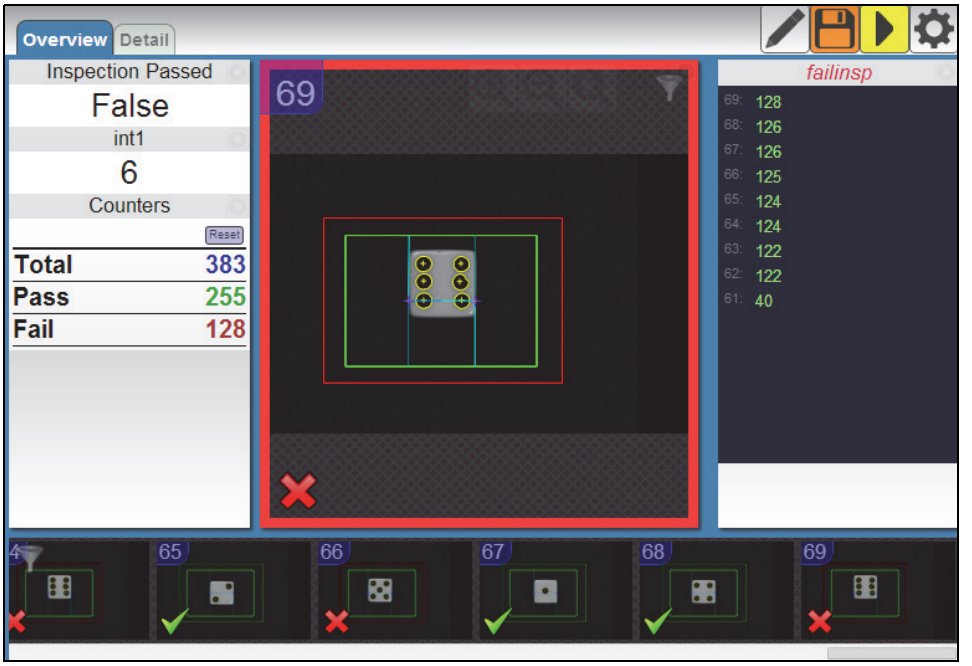
Note the names, which start with **.panel-**. It is not necessary to know these names to use Omron WebMonitor; however they do have significance if there should be need for customization. Customizing Omron WebMonitor requires the modification of CSS (Cascading Style Sheets). The names shown correspond to the CSS class selector for that panel.

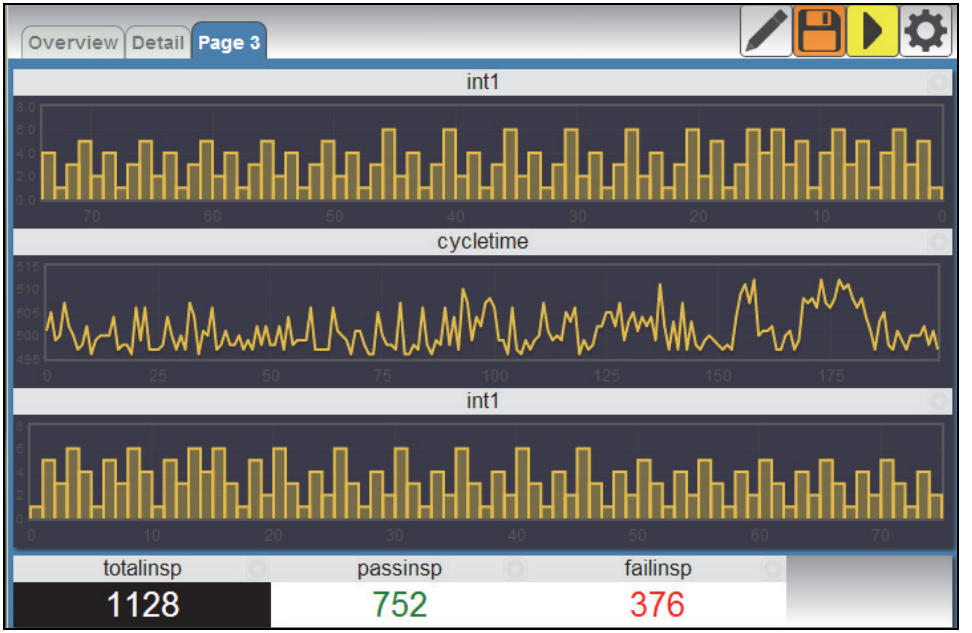
The purpose of the panels is to act as containers for a number of **widgets**. Each widget has the ability to visualize and interact with one or more items of inspection data such as Omron Microscan Link values, inspection counters, timing information, or images.

Each panel has special layout and behavior properties that can be exploited to create a wide variety of different layouts. The following table summarizes the position and properties of each panel:

Panel	Position	Properties
.panel-top .panel-bottom	Docked at the top or bottom of the page, fully stretching from the left edge to the right edge of the window.	Certain types of widgets are automatically stretched to fill the panel space horizontally. For example, if you should add a chart or a filmstrip to these panels, by default they will automatically stretch.
.panel-left .panel-right	Docked at the left or right of the page, they extend between .panel-top and .panel-bottom. The width of these panels is fixed (by default 194 pixels)	Widgets in these panels are typically stretched to fit exactly in the fixed width. If there is not enough vertical room to display all the content, scroll bars are made available.
.panel-center	This panel automatically stretches to fill the center area bounded by the other panels	An image widget placed in this panel automatically stretches to occupy the entire panel area. Any other widgets would then appear over the image.

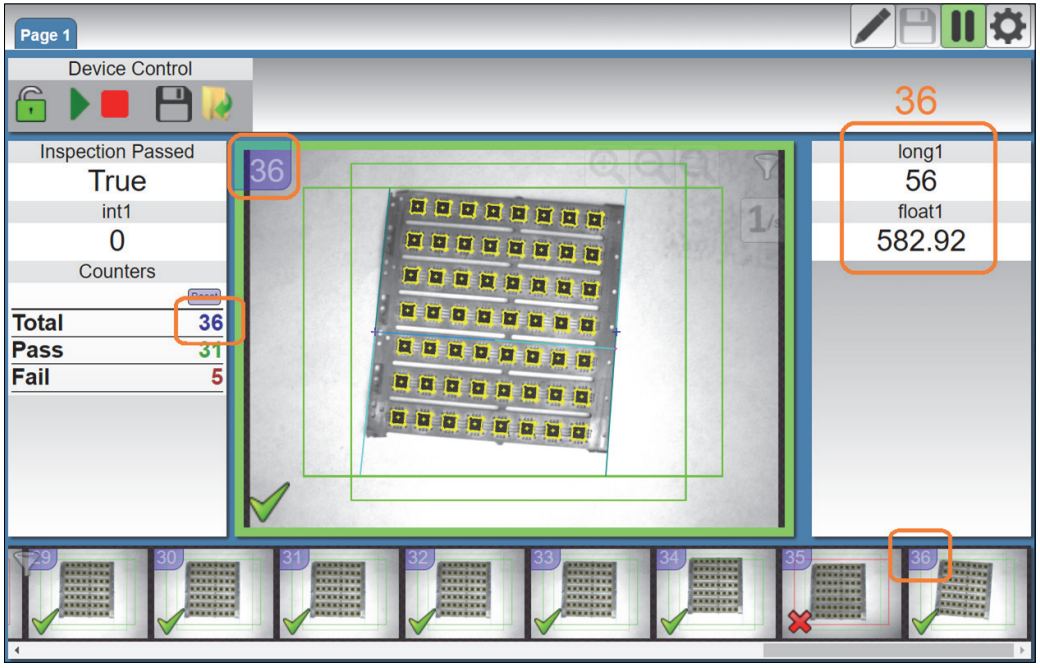
If a panel does not have content (i.e. no widgets are placed in it), it is hidden from view, with the other panels adjusted to occupy the available space. Examples of possible page layouts:





Data Event Identifiers

At the end of each inspection cycle, the relevant result data is collected into a record. This data is coherent, meaning that all the values are part of the same result, and therefore represent a snapshot of information as it was at that particular point in time. When Omron WebMonitor fetches this data, it associates each of the data records with a unique **Data Event Identifier**. This identifier is visible in various Omron WebMonitor widgets, and can help when making correlations between various pieces of data. It is also used internally, for example to highlight all items related to the same event when hovering over a displayed value or image.



Live and Review Modes

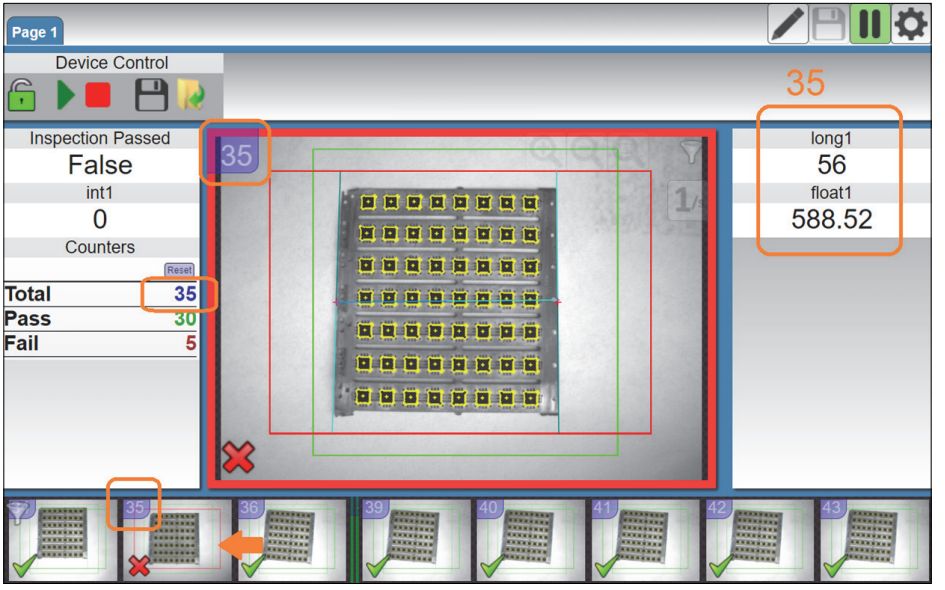
Omron WebMonitor has the following two fundamental modes of operation:

- **Live Mode:** In this mode, Omron WebMonitor is continuously fetching new data from the connected device. The amount and frequency of data received is balanced by bandwidth and performance constraints.

- **Review Mode:** In this mode, Omron WebMonitor is not receiving new data. Instead, you can view and analyze already captured historical data.

To switch between **Live Mode** and **Review Mode**, use the appropriate toolbar button in the **Application Bar**, or press **CTRL-R** on the keyboard.

When in review mode, clicking on one of the items in a historical widget (for example, a filmstrip, log, or chart) will automatically load all the other widgets with data with the same Data Event Identifier. Clicking on **Filmstrip Entry** will load the image into the image widget, and display the inspection counts, Omron Microscan Link values, and other elements as they were at that time. Likewise, you can click on a log entry with similar results.



Omron WebMonitor Web HMI Storage Limits

Up to the last 100 records are stored on the camera, including at least one failure record. If the last failure record is older than the most recent 100 records, that record plus the latest 99 passing records are stored for a total of 100 records.

Up to 100 of the latest SVG records are stored on the camera.

The number of images stored on the system is dependent on the camera configuration's buffer count. At most this will be the buffer count as defined in the system's Camera Definition and Buffer Counts setting. This count is reduced by buffers being processed or waiting for triggers in a pipeline mode. For example, a camera with 16 buffers in pipeline triggering mode with one image in process would have a maximum of 14 of the most recent image records saved for retrieval.

Note: Pipeline Mode is automatically enabled when the job is triggered so the acquisition of the next cycle can be overlapped with the processing of the current cycle.

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CHAPTER 2 Layout Editing

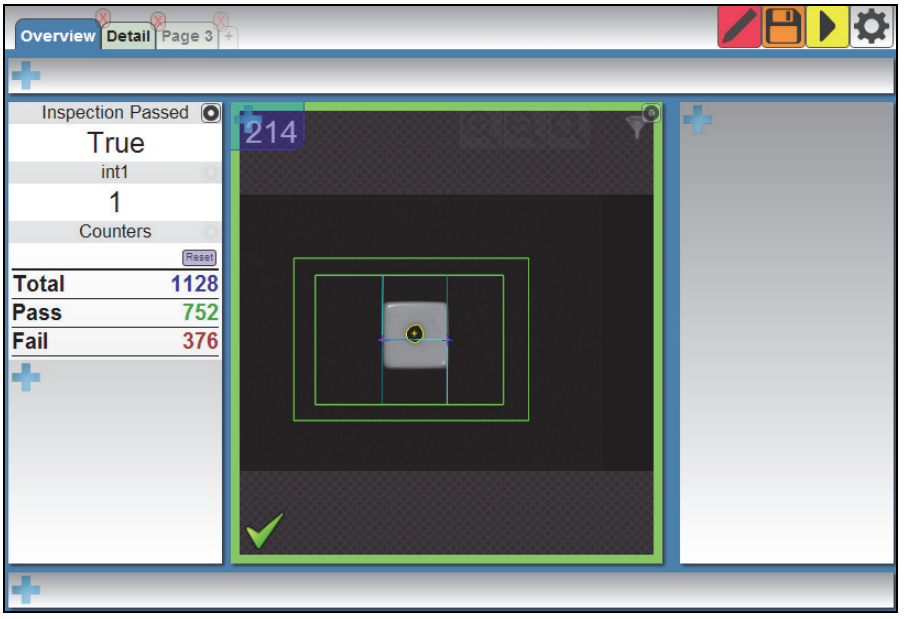
This section describes how to optimize the layout of the Omron WebMonitor interface for your application.

Layout Edit Mode

Layout Edit Mode can be toggled at any time by pressing this toolbar button:

or by pressing **F10** on the keyboard.

In Layout Edit Mode, all panels are visible even if they are empty of widgets:



Notice that the top, right, and bottom panels can now be seen even though they are empty of widgets.

When a change is made to the layout, the **Save** icon in the toolbar will be highlighted.

Before Change:

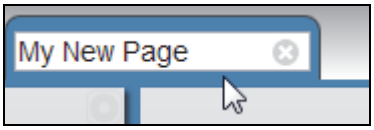
After Change:

Clicking the **Save** button will save the layout changes to the camera.

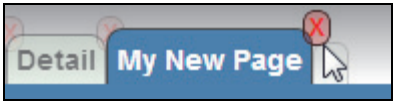
Creating, Editing, and Removing Pages

When in **Layout Edit Mode**, an extra button appears to the right of any existing page selector buttons. Pressing this button will create a new empty page.

To change the title of a page, double-click the title (or long-press on a touchscreen device). Type a new title and press **Enter** to accept or **Esc** to cancel.

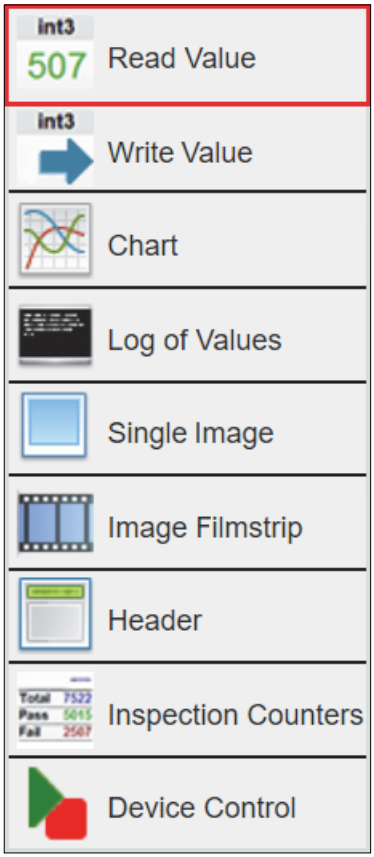


To delete a page, click on the **X** that appears in the upper right corner of the page selector button. Note that this is only available when in Layout Edit Mode.



Inserting and Configuring a Widget

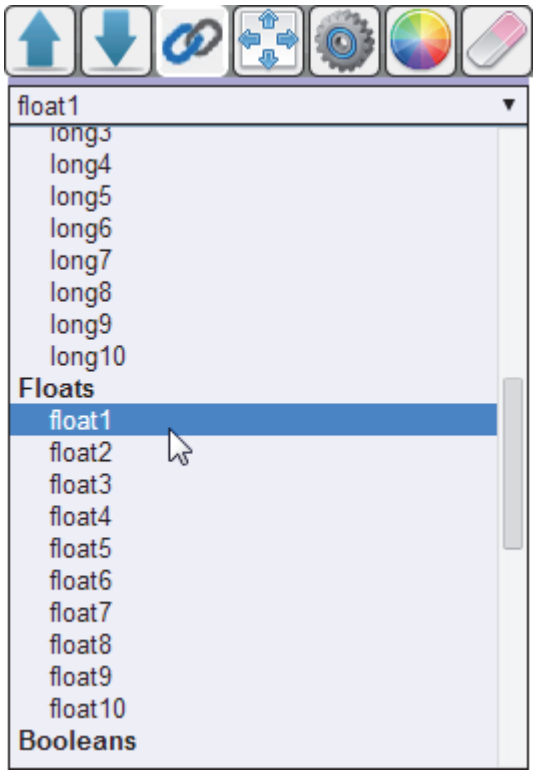
When in Layout Edit Mode, note the + buttons in each panel. Pressing one of these buttons will bring up a menu of available widgets to insert.



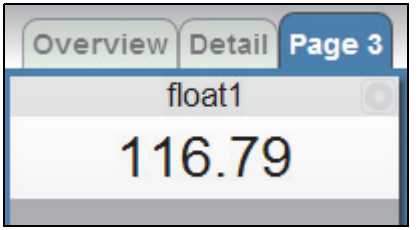
Clicking **Single Value**, for example, will insert a widget that displays one Omron Microscan Link value. The settings panel for the newly inserted widget is shown automatically:

Buttons on the settings panel may vary from widget to widget. Clicking on the Omron Microscan Link icon:

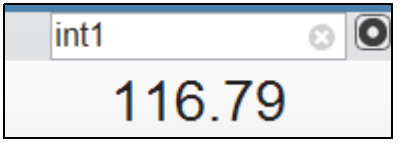
will show a combo box selector allowing a choice of Omron Microscan Link tags to monitor in the widget.



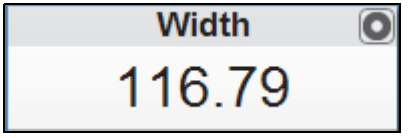
Selecting **float1** in this example will “link” the widget to the Omron Microscan Link tag float1:



To change the title of the widget, double-click the header (or long-press on a touchscreen device).



Type a new title and press **Enter** to accept or **Esc** to cancel.



Note: Omron Microscan Link tags such as "int1" or "float1" must first be assigned in AutoVISION by linking a value in the job to the link tag of a compatible type.

The Widget Settings Panel

Notice the  button in the upper right corner of the widget. This button appears on all widgets (but is nearly invisible unless you hover over the widget). Pressing the button will show the settings panel for that widget.

The buttons you will see on the settings panel include the following:

Icon	Function	Supported Widgets
	Move widget up within its panel. Will be disabled if widget is the first one in the panel.	All
	Move widget down within its panel. Will be disabled if widget is the last one in the panel.	All
	Link the widget to an MSLink tag. Pressing this button shows a selector with tag names organized into categories.	Single Value, Chart, Log
	Change settings specific to the widget. For example, the Single Value Widget settings allow specification of dimensional units or to change the text displayed when a boolean is true or false.	Single Value
	Change the size of the widget. Some common choices are: **min** — Fit into the minimum possible width. Widget will stretch horizontally if necessary to fit content **fixed** — The width of the widget will be fixed to the width of the left and right panels. This width can be customized, but by default it is 194 pixels. **half** — The width of the widget will be fixed to half of the width of the left and right panels. This allows two widgets to sit side by side within a side panel. **stretch** — The width of the widget will be extended to fill the width of the panel.	All – choices depend on widget type
	Change the text color of the widget to one of a fixed pallet of choices.	Single Value
	Change the view mode of the widget. Certain widgets will have different options for how to display information. Press this button to select one of the viewing options.	Chart
	Delete the widget	All

CHAPTER 3 Tags

This section provides a list of tags and describes their functions.

Omron WebMonitor Tags

Omron WebMonitor widgets can be “linked” or associated with a number of data sources. These mostly correspond to Omron Microscan Link tags, but Omron WebMonitor offers additional items that are not strictly Omron Microscan Link tags. This document will refer to all of these items as tags. The tags available are:

Category	Tag Name	Function
Status	inspPassed	The pass/fail status of the inspection
Counters	totalinsp	A count of the total number of inspections
	passinsp	A count of the number of passed inspections
	failinsp	A count of the number of failed inspections
	totalinsp-interval	A special version of totalinsp which can be reset to zero at any point in time. Resetting this count does not affect the actual count maintained by the vision system.
	passinsp-interval	A special version of passinsp which can be reset to zero at any point in time. Resetting this count does not affect the actual count maintained by the vision system.
	failinsp-interval	A special version of failinsp which can be reset to zero at any point in time. Resetting this count does not affect the actual count maintained by the vision system.
Statistics	cycletime	The processing of the inspection cycle in milliseconds
	idletime	The time not spent processing between one inspection start to the next. Measured in milliseconds.
	drawtime	The time spent by the inspection drawing graphics. Measured in milliseconds.
Integers	int1 – int10	The first 10 MSLink integers
Longs	long1 – long10	The first 10 MSLink longs
Floats	float1 – float10	The first 10 MSLink floats
Booleans	bool1 – bool10	The first 10 MSLink booleans
Strings	string1 – string10	The first 10 MSLink strings
Internal	log	A log of diagnostic information
	recordId	The internal record identifier associated with the current item

MSLink Connects between Job and WebMonitor

MSLink Connects between Job and WebMonitor		
Type	**Inputs to WebMonitor from Running Job**	**Outputs from WebMonitor to Running Job**
Integer	int1 – int10	int130 – int139
Long	long1 – long10	long130 – long139
Float	float1 – float10	float130 – float139
Boolean	bool1 – bool10	bool170 – bool179
String	string1 – string10	string110 – string119

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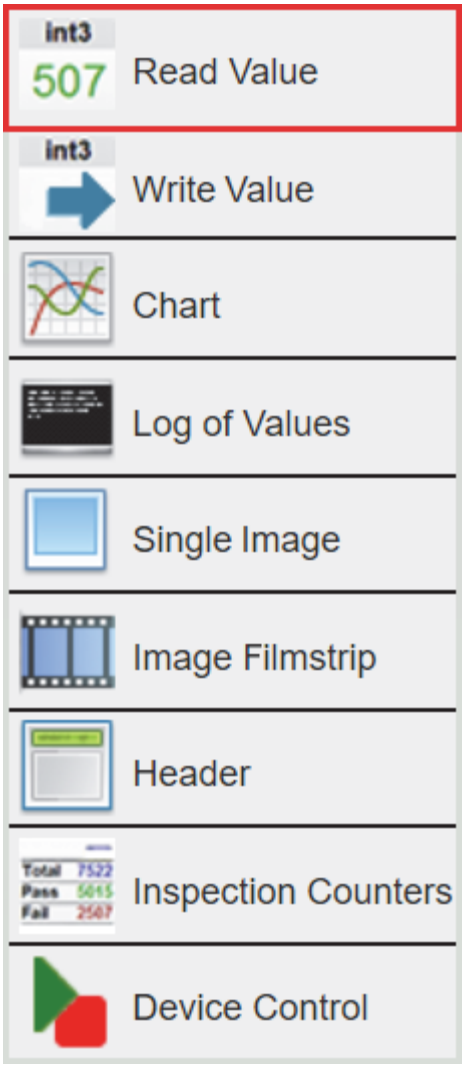
CHAPTER 4 Widgets

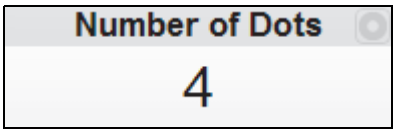
This section gives a detailed description of each widget available in the Omron WebMonitor interface.

Read Value Widget



The **Read Value** widget shows a user-defined title and a value.

An example of a user-defined title and value is shown below.



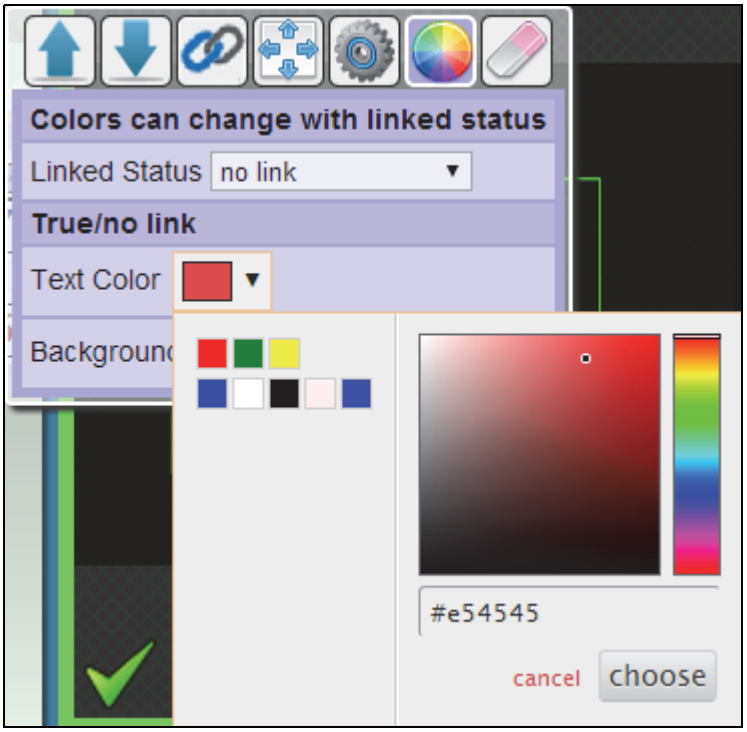
The title can be edited by double-clicking on it (or long-pressing on a touchscreen device). To link the displayed value to a tag, use the settings button:

and select the Omron Microscan Link tag selector:

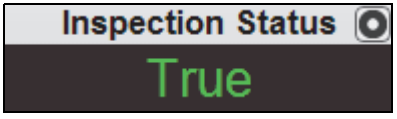
from the settings panel. Select the color selector:

to select a different text color for the displayed value.

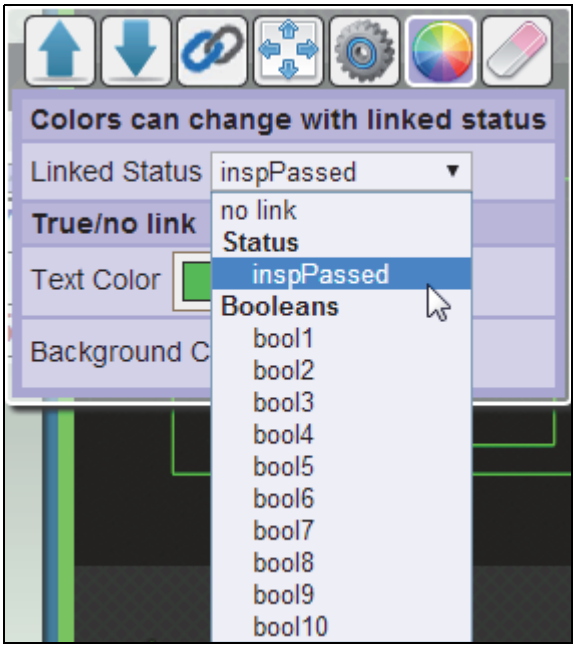
With the **Linked Status** option set to **no link**, you can use the **Text Color** and **Background Color** color options to change the colors of the **Read Value** widget.

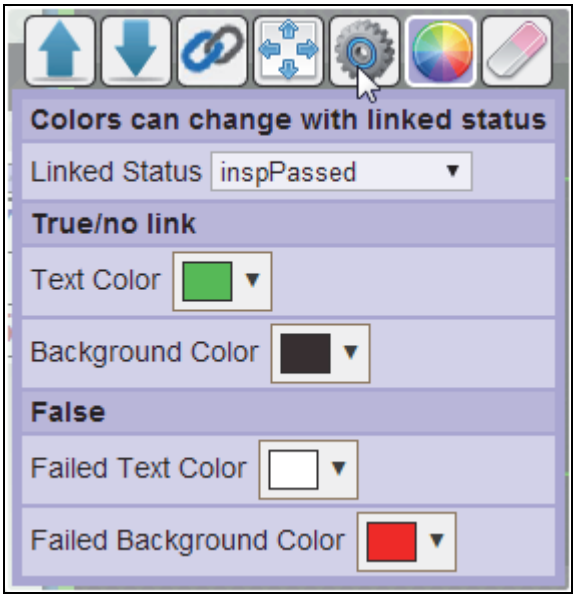


The **color picker** allows you to select colors in several different ways. You can click on the spectrum or specify a hex color value. Previous color choices are also available as a palette.

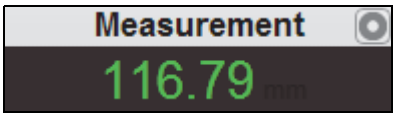


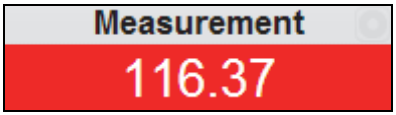
It is also possible to change the colors based on the true / false value of an additional linked status item. For example, you can change the look of a displayed measurement based on whether the inspection has passed or failed. Selecting **inspPassed** for a **Linked Status** will show additional color options.





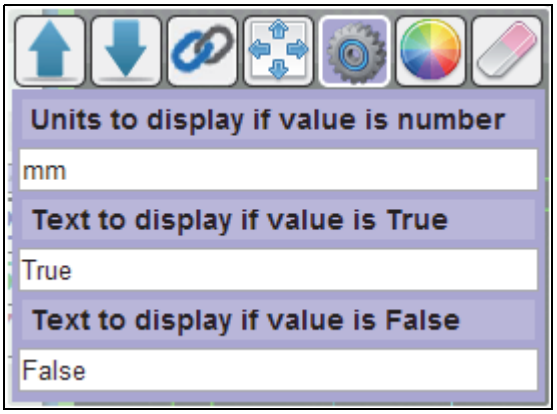
The specified colors will now be used depending on the value of **inspPassed**.



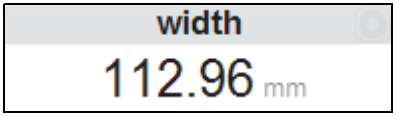


Selecting the widget options button:

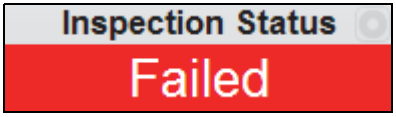
will display additional setup options.



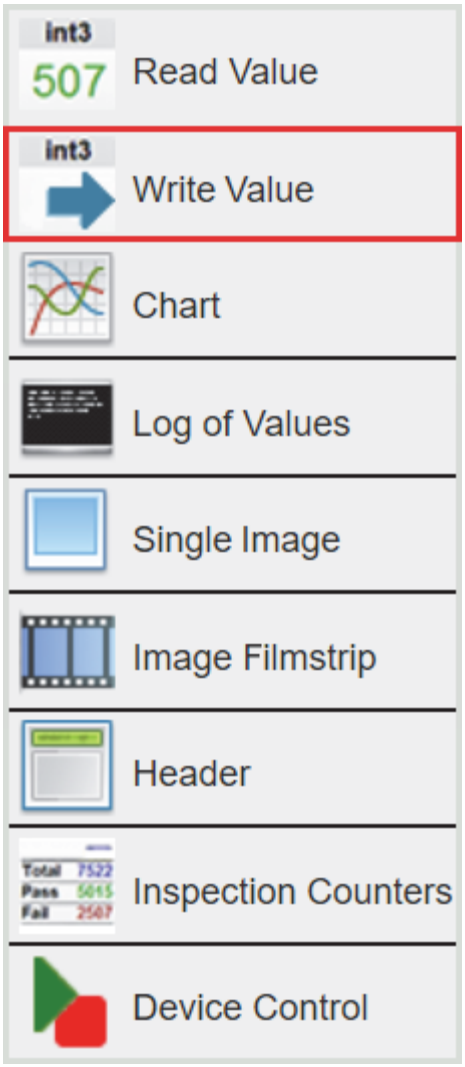
If desired, text representing the units to display can be specified. This will only apply if the value displayed is a number.



If the value displayed is boolean, the text to display for True / False can be changed. For example you may want to change this to Passed / Failed.



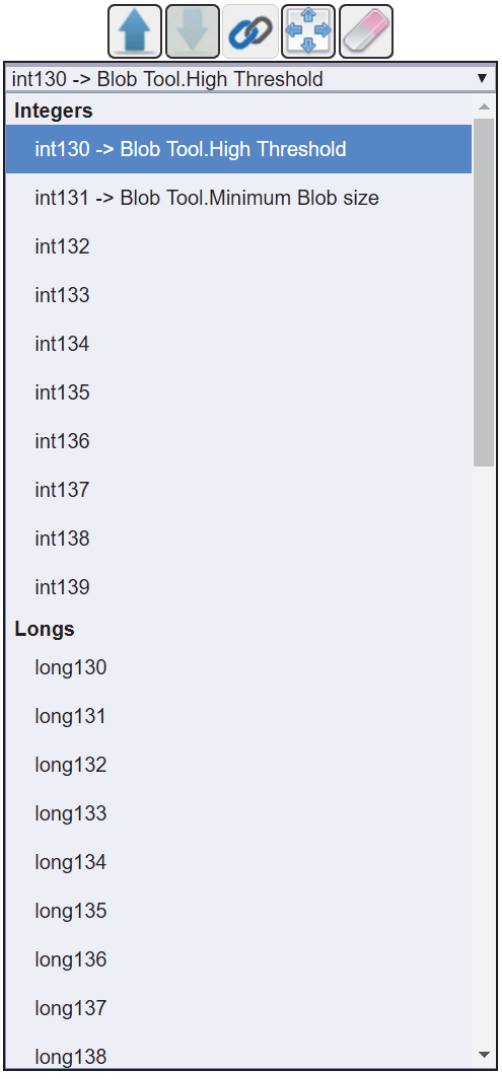
Write Value Widget



The **Write Value** widget allows you to connect to an Omron Microscan Link tag and then modify the value of that tag by typing a new value in a text box, or, in the case of a **StatusDm**, by using a dropdown to switch between True and False options. This widget can then be used to make changes to settings in your job, such as thresholds or match strings, as long as the datums in question have been linked to Omron Microscan Link tags that are accessible by Omron WebMonitor.

After inserting a Write Value widget in your layout, the widget will be displayed with the options toolbar opened, as shown here:

The widget will always default to using tag **int130**, but you can click the link icon to select a different tag:



Similar to the Read Value widget, the Write Value widget gives you a list of **Integer**, **Long**, **Float**, **Boolean**, and **String** tags to choose from. But while the Read Value widget allows you to select tags 1 through 10 for each data type (int1 – int10, float1 – float10, etc.), the Write Value widget allows you to select the following tag ranges:

Integers: 130 – 139

Longs: 130 – 139

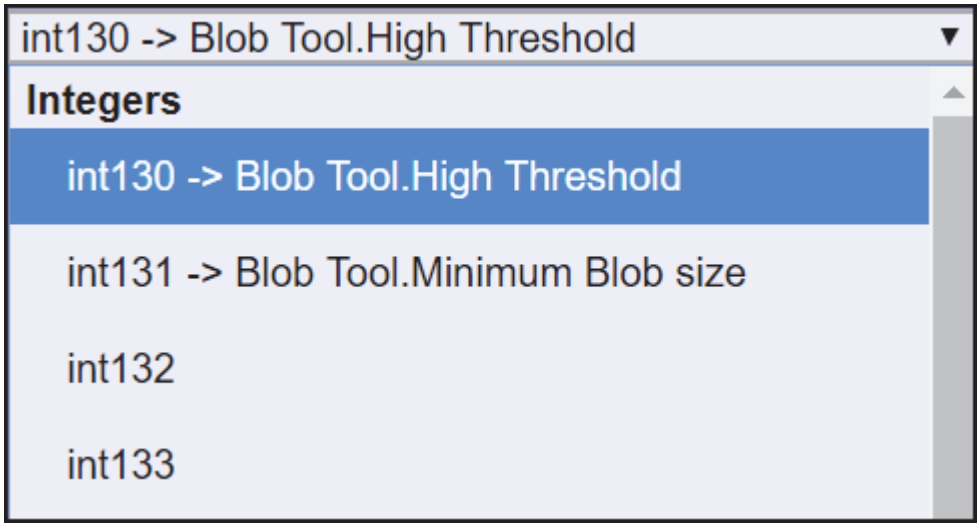
Floats: 130 – 139

Booleans: 170 – 179

Strings: 110 – 119

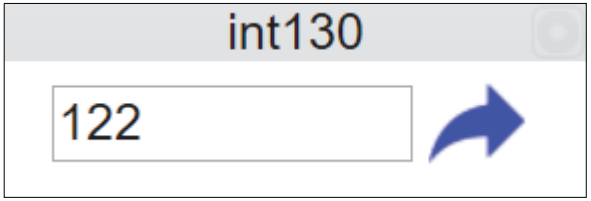
The reason for these ranges is that the numeric tags from 101 to 124, the boolean tags from 101 to 164, and the string tags from 101 to 107 are part of the output assemblies for PLC communications. This means that you cannot write to any tags in those ranges when using a PLC. To be consistent for all users – regardless of whether you are connected to a PLC or not – you can only connect to tags that are outside the control of the PLC.

Also note that any tags linked to datums in the currently running job are identified by listing the name of the step and the datum to which the tag is linked:



In the above example, the tag **int130** is linked to the datum **High Threshold** of the step named **Blob Tool**. **int131** is linked to the datum **Maximum Blob Size** of the step **Blob Tool**. The tags **int132** and **int133** are not linked to anything in the job.

Once a Write Value widget has been added and you have selected the tag to which you want to write, the widget will look similar to this:



The text box shows the current value of the tag. In the above example, **int130** is linked to the **High Threshold** datum of a **Count Tool**, and that threshold value is **122**. To change the value, type the new value and then Enter to send it to the camera. You can also force a send by clicking the blue right arrow button shown above.

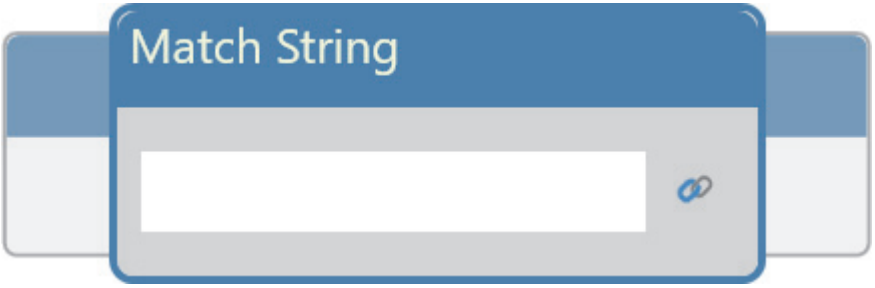
Setting Up Links in a Job

Adding a Write Value widget to the Omron WebMonitor layout allows you to modify the value of a datum in the job. For this to work, you must be sure to link the datum in question to a tag with which Omron WebMonitor can communicate.

For example, assume you want to control the **Match String** of a **Symbology Tool**. You would **Link the Datum in the Job** and **Connect the Write Value Widget in Omron WebMonitor**.

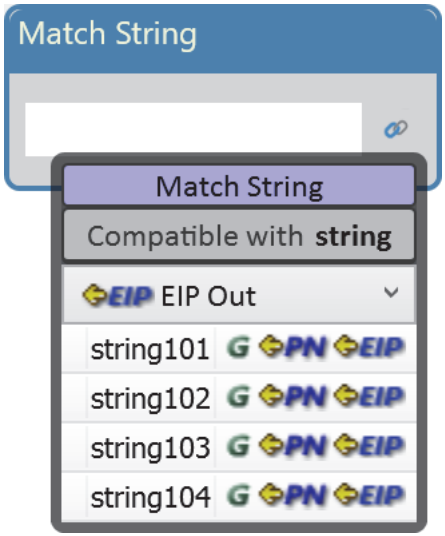
Link the Datum in the Job

Open the Job in **AutoVISION**, go to the **Decode Tool**, and open the **Match String** editor:



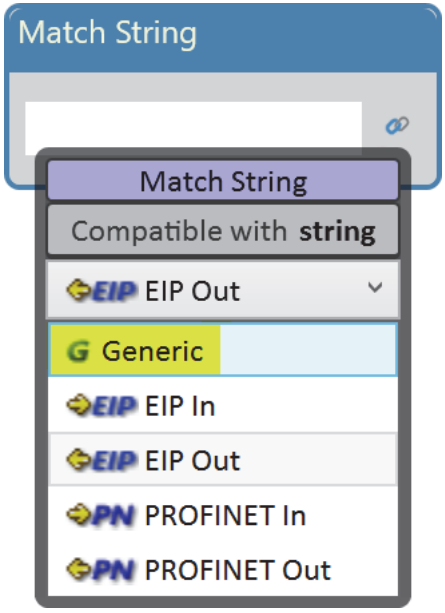
Click the link icon to open the link editor.

Notice that the link category combo box defaults to **EIP Out**.



These tags are reserved for use by PLCs.

Instead, use the combo box to switch to the **Generic** category:



This gives you access to the full range of available tags. The Write Value widget can connect to string110 through string120. For this example, select **string110**. Now switch to the **Run** view in AutoVISION.

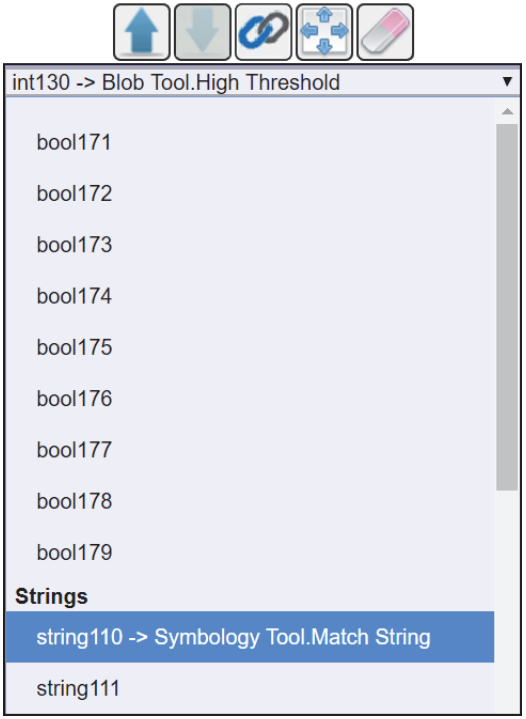
Connect the Write Value Widget in Omron WebMonitor

Now you have a job on the camera with a **Decode Tool** that has its Match String datum linked to string110. You can now add a Write Value widget to the Omron WebMonitor layout, and configure it to write to string110, allowing you to set the Match String of the Decode Tool.

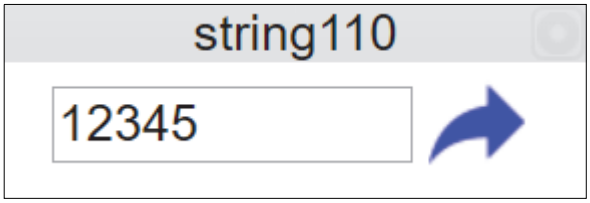
- In Omron WebMonitor, click the Edit Layout button in the top-right corner.

- In the right-most panel, click the **Add Widget** button.

- Then select the **Write Value** option from the dropdown. The newly-added widget connects to int130 by default. For this example, change the tag to **string110** by clicking the link button to open the list of available tags, and then scrolling down until you are able to select string110.

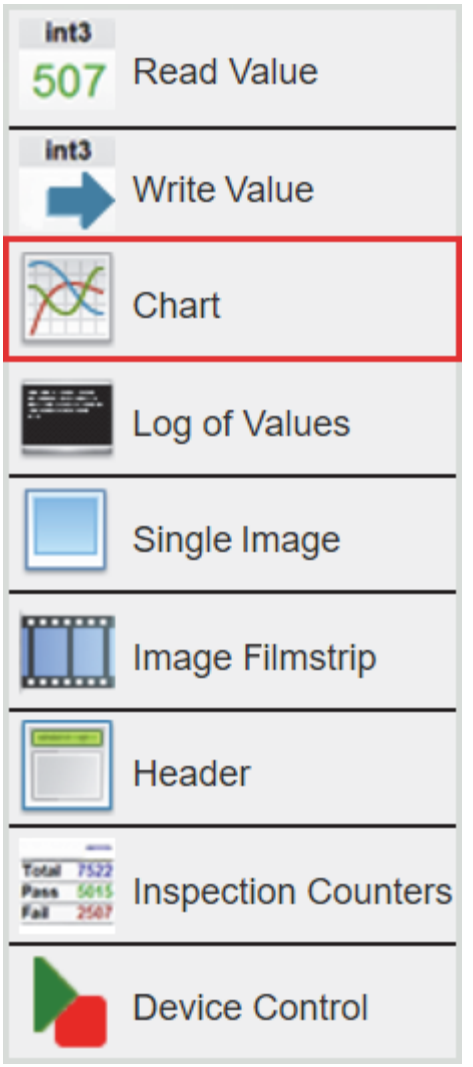


The widget should now look similar to this:



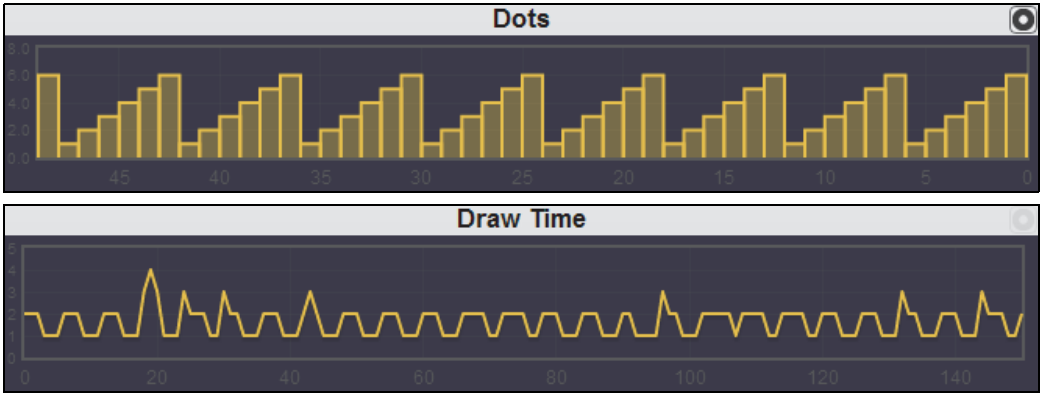
- The text box shows the existing Match String value, if any. Type your new match string here. To send the new Match String to the camera, either type Enter or click the blue arrow button.

Chart Widget



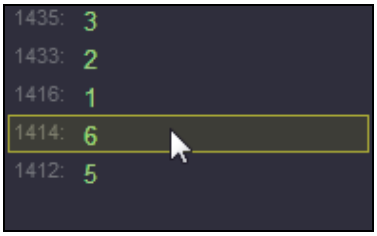
The **Chart** widget shows a chart of tag values over time.

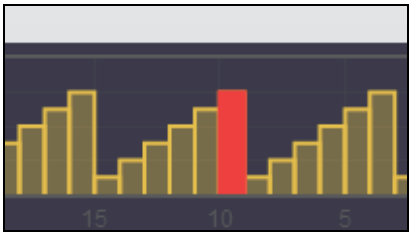
There are two types of charts available: **Bar** and **Line**.



The chart is automatically scaled so that the minimum and maximum values are contained on the chart, and the amount of data shown corresponds to the available history depth.

Data on the Chart widget reads from right to left, with the most recent values on the right. When a data event is hovered over, the corresponding chart value is highlighted.





The chart title can be edited by double-clicking on it (or long-pressing on a touchscreen device). To link the chart to a tag, use the settings button:

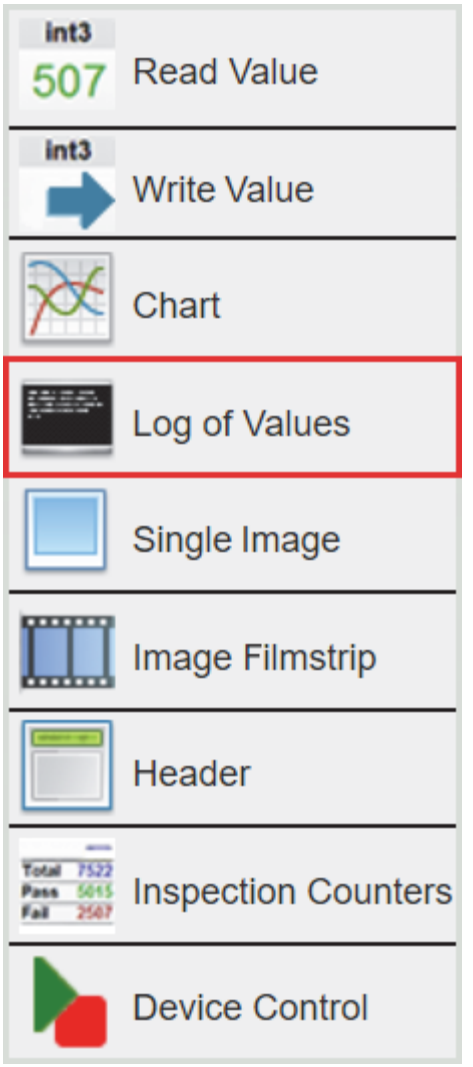
and select the Omron Microscan Link tag selector:

from the settings panel.

To select a different chart type, select the **View Mode** button:

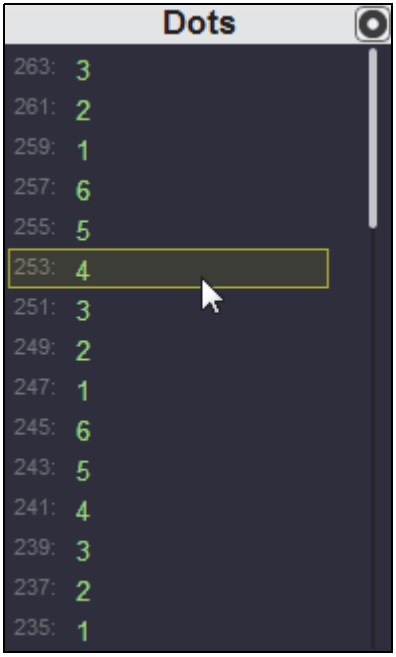
from the settings panel.

Log of Values Widget



The **Log of Values** widget shows the values of the linked tag as a historical list.

The most recent value is at the top, and older values are listed in descending order below.



To the left of each displayed value is a number representing the corresponding **Data Event Identifier**. This corresponds to similar values seen in other widgets. Hovering over one of the values higlights all values that correspond to the same event.

For example, if a filmstrip is displayed, the image that corresponds to the highlighted value will also be highlighted.

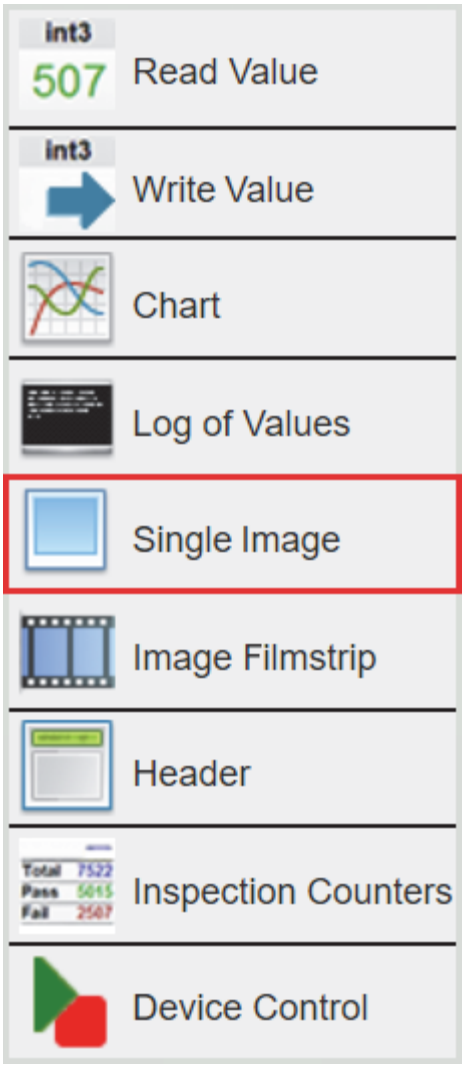
The title can be edited by double-clicking on it (or long-pressing on a touchscreen device).

To link the log values to a tag, use the settings button:

and select the Omron Microscan Link tag selector:

from the settings panel.

Single Image Widget



The **Single Image** widget represents the most central function of Omron WebMonitor. It shows an image and its associated graphics.

Note: Omron WebMonitor does not currently support display of color images from color cameras.

The Single Image widget also permits zooming and panning to support pinch gestures on touchscreen devices. The graphics are rendered as vector graphics, so zooming shows more detail instead of making the lines thicker.

Note: If using Internet Explorer, the lines will appear thicker as you zoom in.

When added to the center panel, the Single Image widget automatically expands to occupy the full area. Any other widgets added will appear over the image.

The Single Image widget also displays a thick border whose color represents the inspection status (**green = pass**, **red = fail**). In the bottom left corner either a **green check** or **red X** is displayed, corresponding to the inspection status indicators within the **Image Filmstrip Widget**.

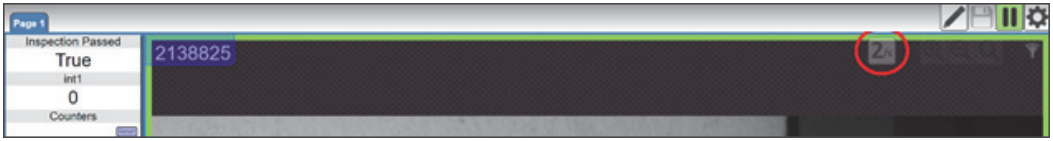
The **Data Event Identifier** is displayed in the upper left corner.

A zoom toolbar appears when hovered over.

Click to zoom in and to zoom out. The button zooms and centers the image to be contained completely within the widget. If using a mouse, the scroll wheel can be used to zoom in and out. If using a touchscreen device, pinch gestures can be used.

Refresh Rate Selection

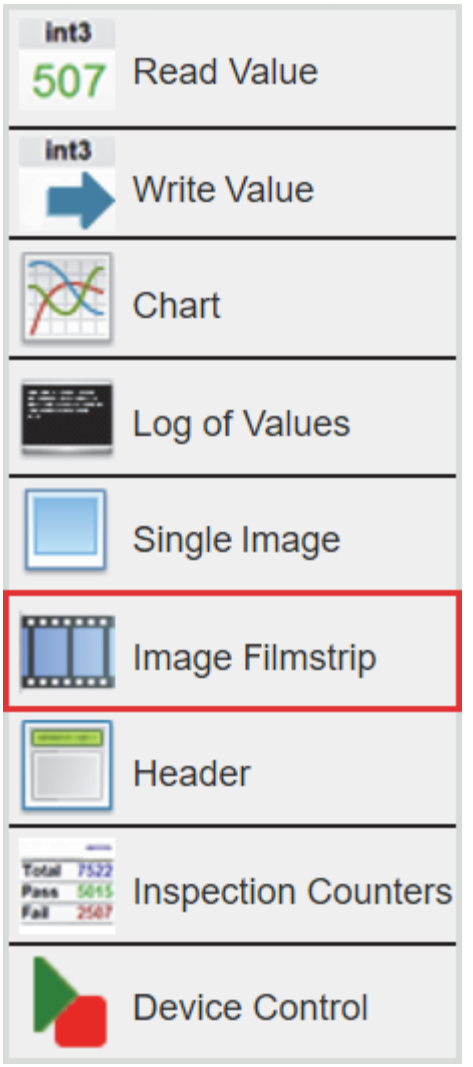
Omron WebMonitor has an internal timer that is used to refresh the image and data in the dashboard. The **Single Image Widget** provides a dropdown control that can be used to control the image and data refresh rate. It defaults to **1** refresh per second, but it can be changed to **2/s**, **4/s**, **8/s** or **max**, where “max” means it will refresh the data on the page as fast as it can. The control for refresh rate is in the upper-right corner of the widget, next to the zoom buttons:



Placing your mouse over this button will cause a button dropdown to pop up, and this will present you with all available refresh rate options, including max, which is indicated by the red-lined speedometer icon:

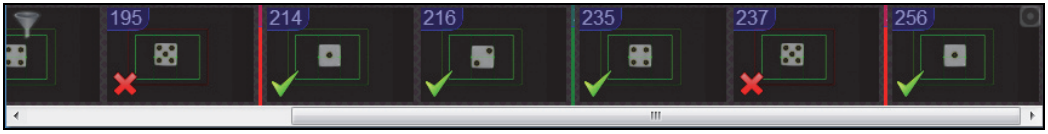
The top-most button indicates the current selection and is used to open up the dropdown. In the dropdown list, the current selection is highlighted blue. Click the refresh rate option you want and the dropdown will close, while the new selection will be displayed in the main button as shown above. So, if you clicked the **8/s** button, the dropdown will close and the main button will show the **8/s** icon:

Image Filmstrip Widget



The **Image Filmstrip** widget shows a history of images.

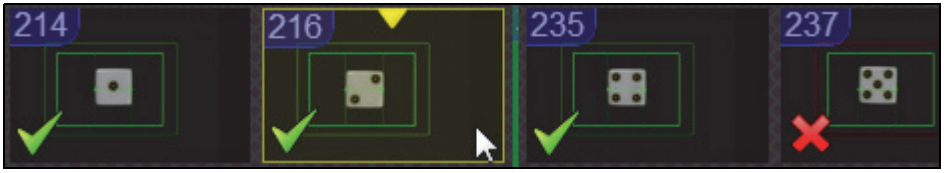
Images are displayed from right to left, with the most recent images appearing on the right.

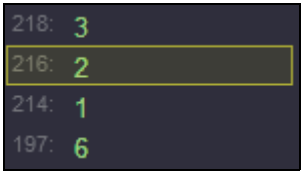


Each filmstrip entry shows the inspection status by displaying either a **green check** or **red X** in the lower right corner. The data event ID is shown in the upper left corner.

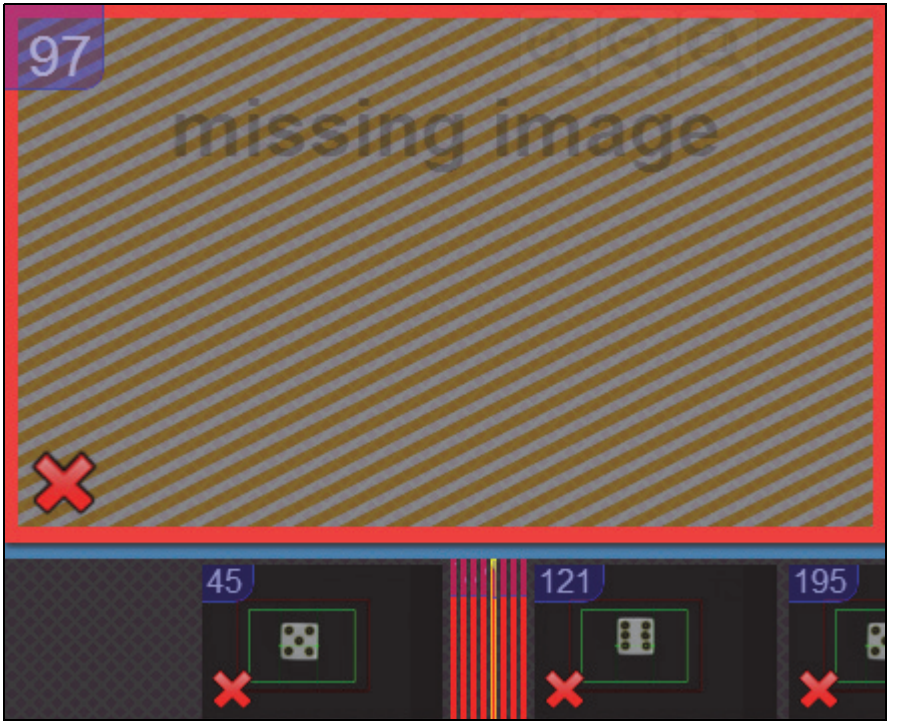
It is important to note that not every image can be captured by Omron WebMonitor. The number of images available depends on bandwidth and timing considerations. Therefore, it is likely that some images will be missing (even though the rest of the data for that inspection is available). Any missing images are represented in the filmstrip by vertical bars colored **red** for failed inspections or **green** for passed inspections.

Hovering over an item in the filmstrip will highlight all data corresponding to the same data event. You can also hover over the missing image bars.

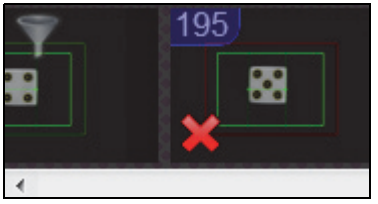




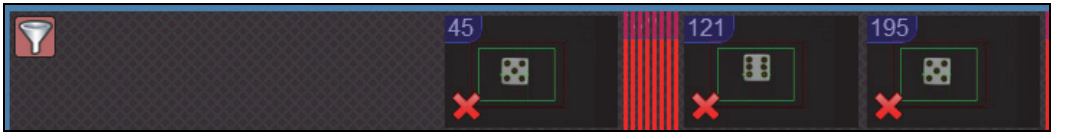
Clicking the filmstrip entry will select that item for review. This will load the widgets with the data as it was at the time the event was recorded. If the image is missing, any image widgets will display a **missing image** placeholder.



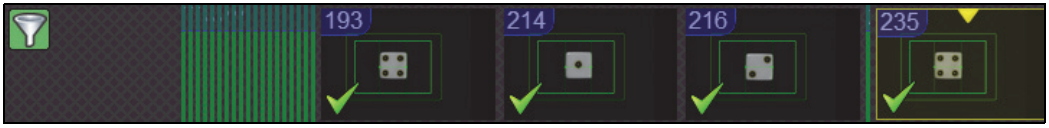
In the upper left corner of the **Image Filmstrip** widget is a **filter button**. Clicking this button will filter what is shown in the filmstrip.



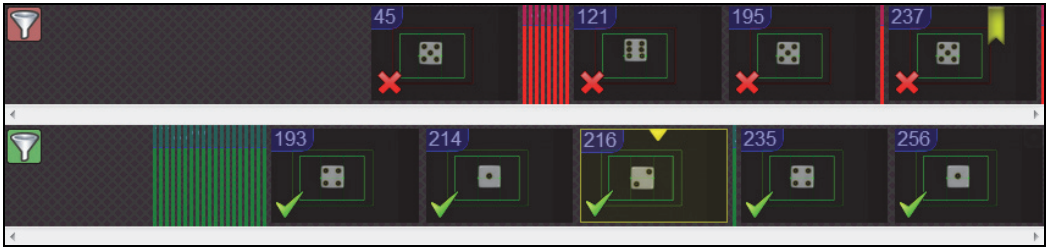
When the filter button is first clicked, only failed items will be displayed.



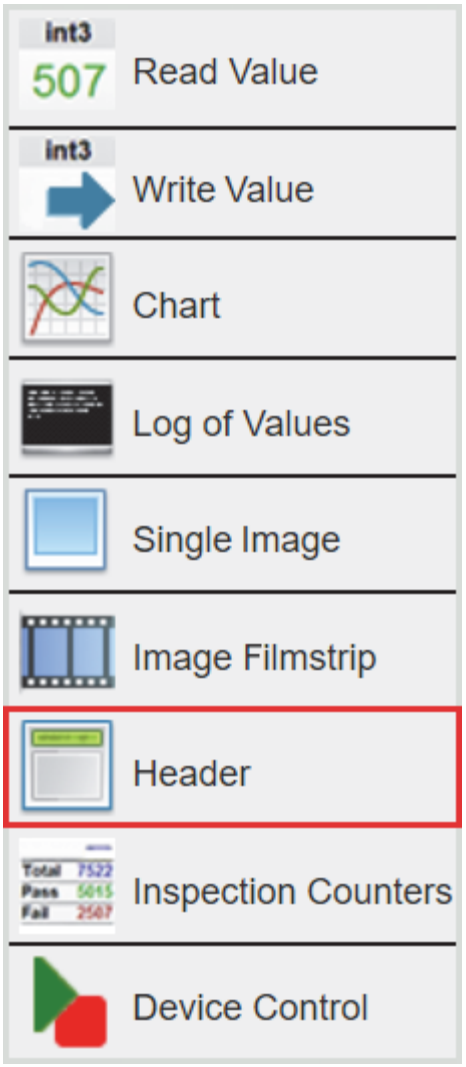
Clicking the filter button again will change the filter so that only passed items are displayed.



Since it is permitted to have multiple instances of widgets, you can sort pass and fail images into two groups.

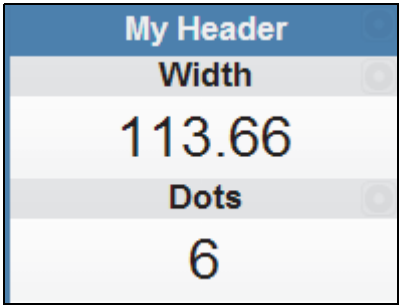


Header Widget



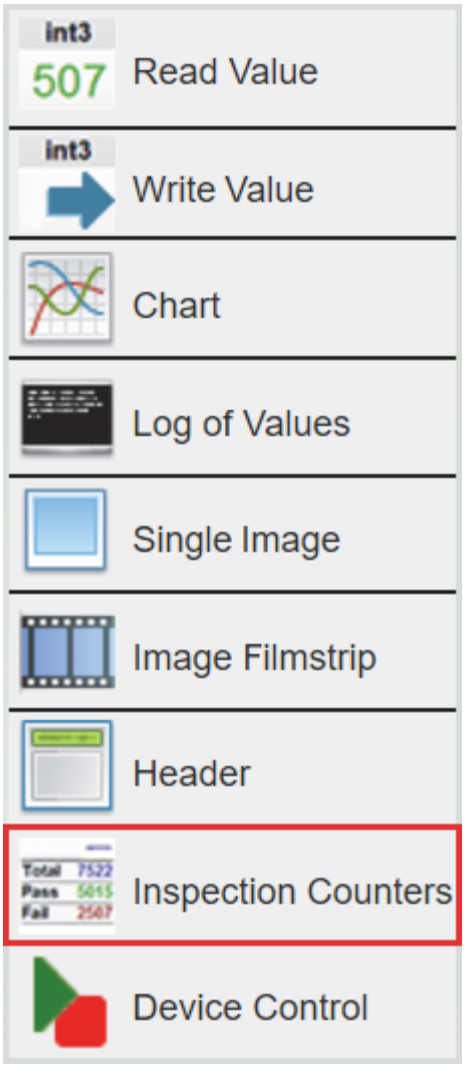
The **Header** widget displays a user-configurable header.

The header can be used to identify a group of widgets if necessary.



The title can be edited by double-clicking it or by long-pressing on a touchscreen device.

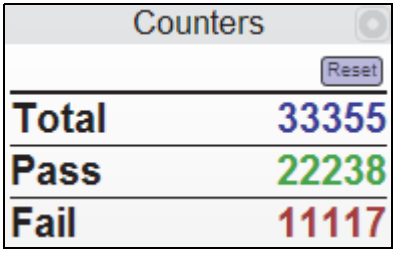
Inspection Counters Widget



The **Inspection Counters** widget displays the values of the interval version of the inspection counts (**totalinsp-interval**, **passinsp-interval**, **failinsp-interval**).

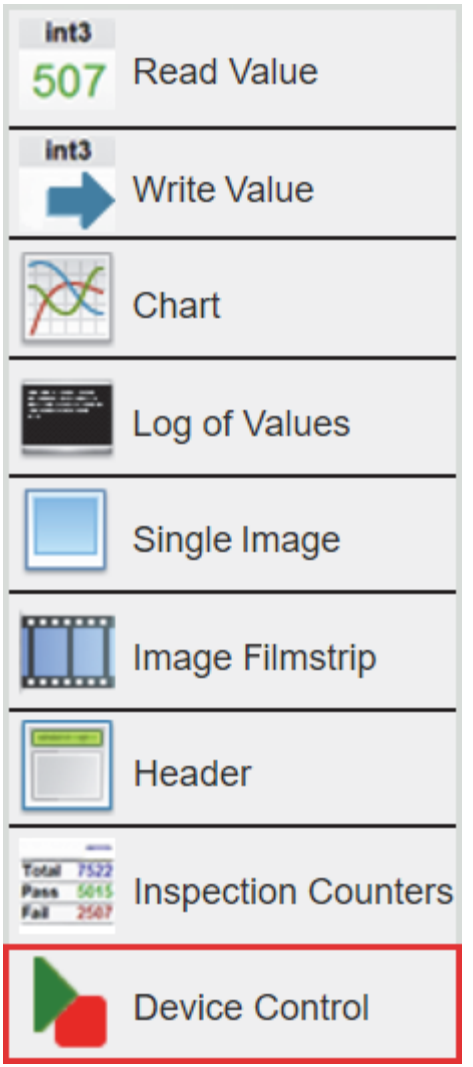
Displaying the values of the interval version of inspection counts allows the counters to be reset to zero without affecting the vision system's actual counts.

Important: Resetting Inspection Counters does not reset counts on the camera. It only resets counts in the WebMonitor user interface.



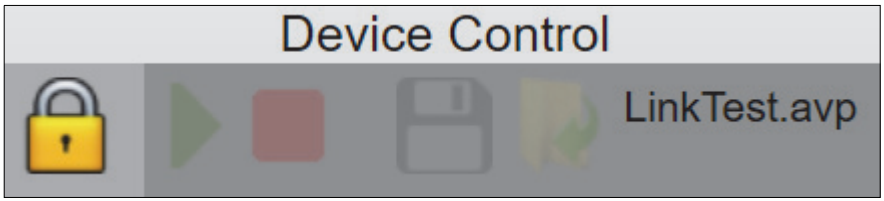
The title can be edited by double-clicking it or by long-pressing on a touchscreen device.

Device Control Widget



The **Device Control** widget allows you to start and stop inspections, and to change the currently loaded job.

When you insert a Device Control widget into your layout, you will see something similar to the following:



No configuration or set up of the Device Control widget is necessary. The widget is ready to use as soon as you insert it.

Note: You should only insert one Device Control widget into your layout. Inserting two or more could result in interface functionality errors.

Take Control Button

To start / stop or change jobs on your device, you must first take control of the device. When you see the yellow lock icon at the left end of the widget, the device is locked (not under your control).

Click the **Take Control** button to enter the username and password as shown below.

If you enter the correct username and password, you will be granted control of the device. The button will change to a green unlocked icon to indicate that the device is now under your control, and all of the buttons in the widget will be enabled, as shown below.

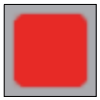
If the device is already being controlled by another PC, or by AutoVISION or FrontRunner, the lock icon on the Take Control button will be red.

This indicates that you cannot take control of the device until it is released by the other user.

Start Button

Clicking the **Start** button puts the inspections into Run mode on the device. This button is highlighted in light blue when inspections are already running.

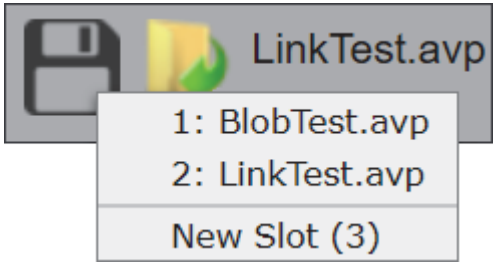
Stop Button



Clicking the **Stop** button takes all inspections out of Run mode. This button is highlighted in light blue when inspections are already stopped.

Save Job Button

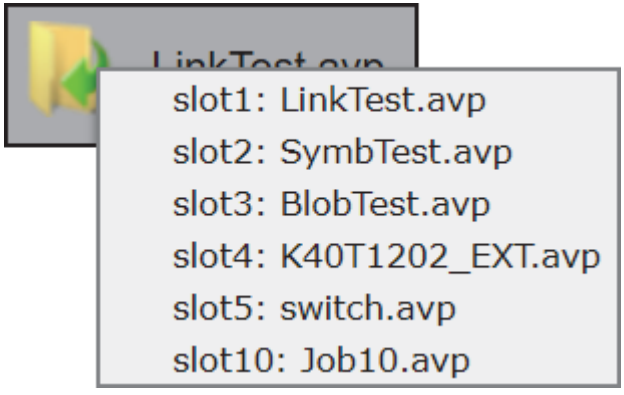
If you are using the **Write Value** widget to make changes to values in the job, you can click the **Save Job** button to re-save that job to its current slot or to a new slot. A context menu will appear when you click the Save Job button.



This menu shows that the current job, **LinkTest.avp**, is saved to **slot 2**, and another job named **BlobTest.avp** is saved to **slot 1**. You would choose **2: LinkTest.avp** to re-save the job to the same slot. Or you can choose **New Slot (3)**, which will save the job to the next available slot on the device, which, in this case, is **slot 3**.

Job Change Button

Clicking the **Job Change** button will switch between the jobs that are saved in flash memory on the device. Clicking this button will cause a popup menu to appear that shows a list of all jobs loaded on the device.

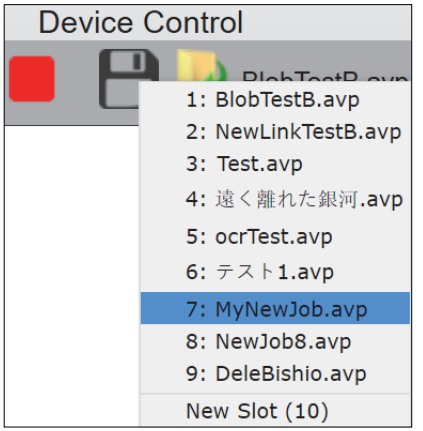


Click on the job to which you want to switch, and it will be loaded. The name of the currently loaded job is always displayed to the right of the Job Change button. In this example, if you click on **slot2: SymbTest.avp**, then the text **Changing...** would be displayed to the right while the job change is happening. When the changeover was complete, you would see the following:

If the job change fails, a short error message will be displayed instead of the AVP name.

Save Slot As

When you save a job to a slot, you will be asked to enter a job name. Enter a job name of your choice and click **OK** to save the job to the specified slot.



5

CHAPTER 5 REST APIs

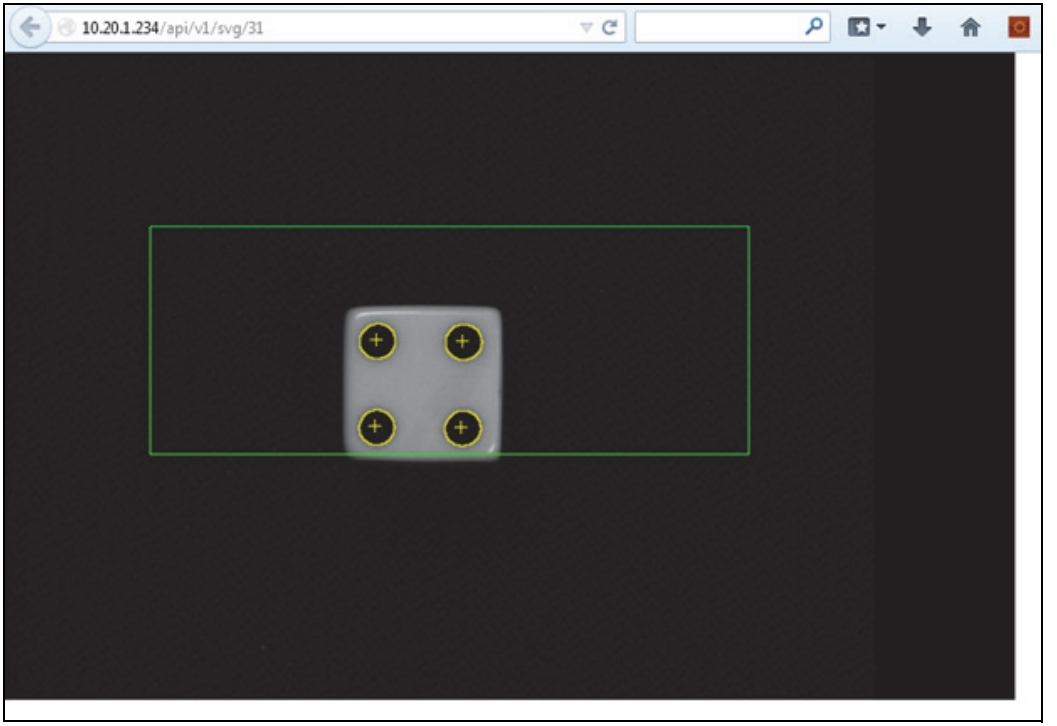
This section describes how to use REST (Representational State Transfer) APIs to access data from the camera.

REST APIs

REST APIs allow you to access data from the camera over the web standard HTTP protocol.

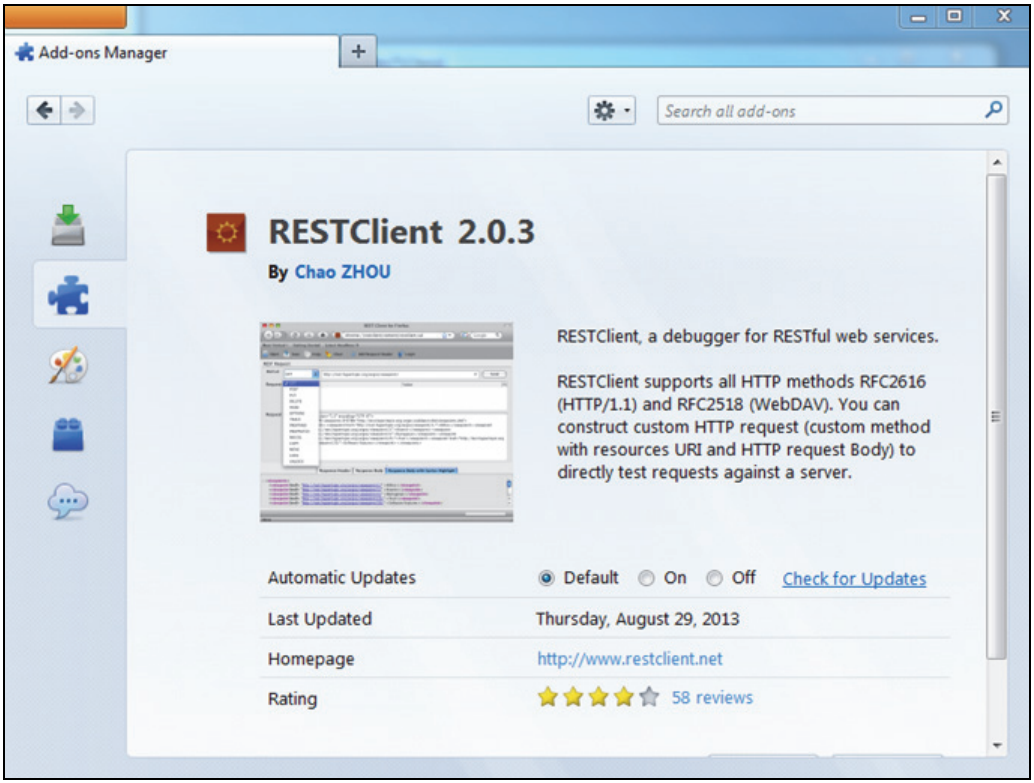
Using a web browser, requests to the camera are made using the IP address of the camera as the URL root. Version 1 of the APIs are accessed using the path prefix of **/api/v1/**.

For example, to access the **SVG API** of a camera at IP address **192.168.188.2**, the URL to the REST service would be: **http://192.168.188.2/api/v1/svg**.

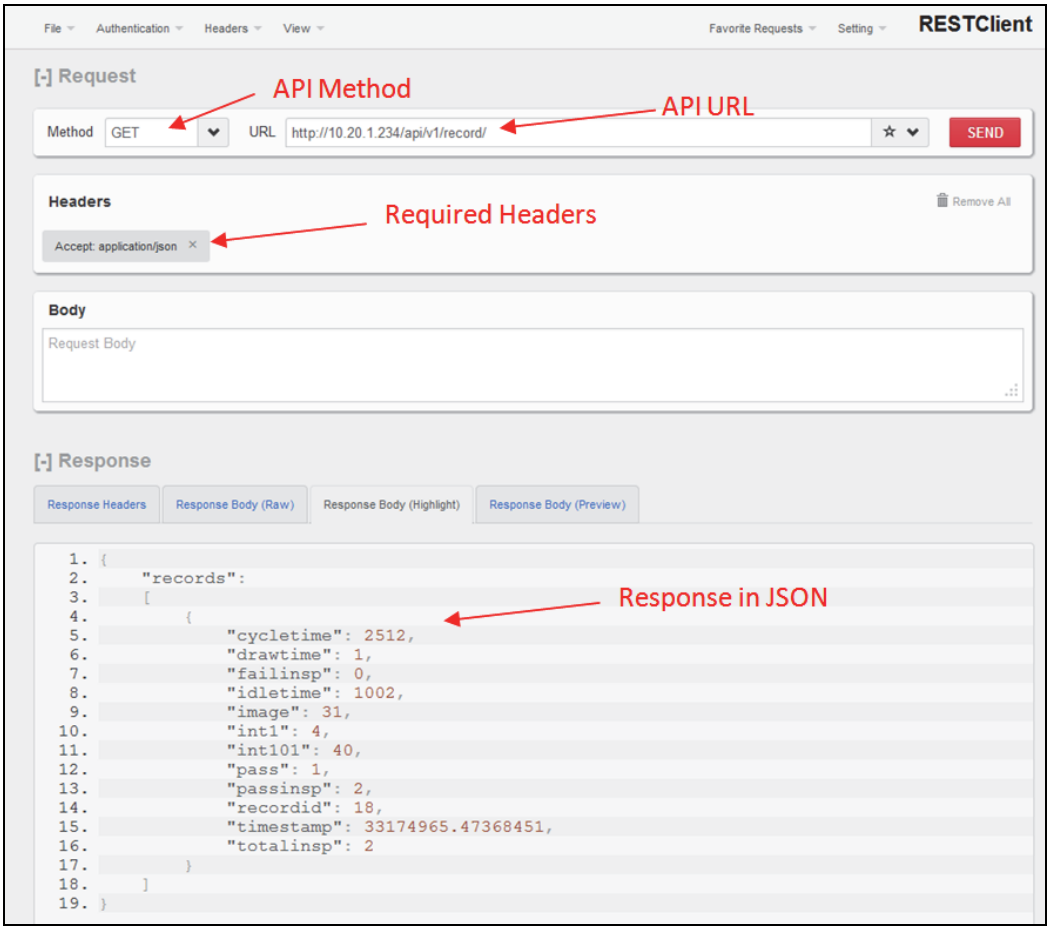


REST APIs are also used to exchange data with the camera. To interact with the camera's APIs using a standard web browser, a REST client browser add-on can be used. There are a variety of REST clients available for most browsers.

The following example shows **RESTClient** for the **Firefox** browser.



Using a REST client, a request to receive data in **JSON** format can be made to the camera and viewed in the browser.



command

This API passes the body of the message to the serial command processor. The result string from the serial command processor is returned as the body of the response message.

The body of the message is a command string just as it would be typed into a serial terminal to the camera, with no extra quotes or delimiters. A terminating CR or LF is not necessary.

Resource URL

```
PUT /api/v1/command

Content-Type: text/plain

Accept: text/plain

Body: "command text"
```

Response Body

```
Command response as text
```

Example

```
PUT /api/v1/command

Content-Type: text/plain

Accept: text/plain

jobinfo
```

Response Body

```
slot4=EIP_demo.avp?
```

data

This API sets or retrieves the value of a tag, tag array or all tags in a service. The response is in JSON and the header must declare it is accepted. When setting data, the body must be in JSON with a top level element named “data” with the values to be set.

Resource URL

```
GET /api/v1/data/<service>

Accept: application/json

GET /api/v1/data/<tag>

Accept: application/json

GET /api/v1/data/<tag><n>

Accept: application/json
```

parameter	value	example	description
count	<n>	api/v1/data/int1?count=2	number of items to return when used with <tag><n>

```
PUT /api/v1/data/<tag><n>
Content-Type: application/json

{ “data” : “<input data>” }
```

Examples

URL

```
GET /api/v1/data/float1?count=2
```

Response Body

```
{ “data” : [1.234, 5.678] }
```

URL

```
PUT /api/v1/data/int5
```

Body

```
{ “data” : “123” }
```

stats

This API retrieves the inspection statistics for up to 10 inspections or resets the counters. The response is in JSON.

Resource URL

```
GET /api/v1/stats

Accept: application/json

PUT /api/v1/stats
```

A PUT clears the inspection counters. No other arguments are needed.

Examples

URL

```
GET /api/v1/stats
```

Response Body

```
{
"totalinsp" : [ 19, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"passinsp" : [ 19, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"failinsp" : [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"trigover" : [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"procover" : [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"fifoover" : [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0] ,
"timeout" : [ 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
}
totalinsp: Total inspections
passinsp: Passed inspections
```

```
failinsp: Failed inspections

trigover: Trigger overruns

procover: Process overruns

fifoover: FIFO overruns

timeout: Inspection Timeouts
```

URL

```
PUT /api/v1/stats
```

record

This API retrieves an inspection record result. With no report index, the latest report is returned. A specific inspection record can be retrieved by appending the index to the URI. Arguments can be added in the form of argument=value to filter the return set of records that match the filter requirements.

Inspection records will contain the following data in addition to any global data values in use by Omron Microscan Link within that inspection.

cycletime	Cycle time in ms
drawtime	Time used to render graphics for display in ms
failinsp	Cumulative number of failed inspections
idletime	Number of ms the camera was idle between inspections
image	The ID of the image used in this inspection. The SVG or image can be retrieved using the SVG or IMAGE APIs by appending this ID to the request. eg. /api/v1/svg/33
pass	1 if the inspection passed, 0 if failed
passinsp	Cumulative number of inspections passed
recordid	The reference ID for this record. This record can be retrieved individually by appending this ID to the /record request. eg. /api/v1/record/21
timestamp	A timestamp for the inspection in ms
totalinsp	Cumulative total number of inspections

Resource URL to Get Last Record

```
GET /api/v1/record

Accept: application/json
```

Response Body

```
The last completed record in a json array called "records"
```

Example

```
GET /api/v1/record

Accept: application/json
```

Response Body


```
{
  "records": [
    {
      "bool1": 1,
      "bool101": 1,
      "bool2": 1,
      "bool3": 1,
      "cycletime": 3485,
      "drawtime": 2,
      "failinsp": 2,
      "float1": 476.5,
      "float101": 1000,
      "float2": 344.5,
      "float3": -1.999999999898905,
      "idletime": 3433,
      "image": "0x000002750000e29d",
      "int101": 92,
      "int102": 4,
      "int2": 3,
      "long1": 3989,
      "long101": 87,
      "pass": 1,
      "passinsp": 1,
      "processtime": 40,
      "recordid": 11,
      "string1": "123456",
      "string101": "123456",
      "timestamp": 625.6532238,
      "totalinsp": 3
    }
  ]
}
```

Resource URL to Get a Specific Record

```
GET /api/v1/record/<recordid>

Accept: application/json
```

Response Body

A single record with the matching record I.D. if it exists; an empty array if it does not.

filters

Records can be filtered by the contents of the record by appending the filter requirements as arguments to the request. A specific value can be specified (eg. int1=4). The symbols (a,b) [a,b] can be used to specify a range of values to include () for a non-inclusive range, [] for inclusive. (and [can be used independently on either end of the range (eg. (4,10] or [5,11) for values 5,6,7,8,9,10)

For example, to include all inspections from record I.D. 5 to 10:

```
GET /api/v1/record?recordid=[5,10]
```

To include recordids from 5 to 10, not including 5:

```
GET /api/v1/record?recordid=(5,10]
```

To include all record I.D.s following record I.D. 5 to an unbounded limit, omit the second argument.

```
GET /api/v1/record?recordid=(5,]
```

Filters can be combined to further limit the returned results. To get all the records between 100 and 200 inclusive that failed only:

```
GET /api/v1/record?recordid=[100,200]&pass=0
```

Special filters to limit the number of returned results start with '!' include !count and !last. When used with a filter range request !count=<x> can limit the number of results returned to x. To return up to the first 5 records starting at record 100:

```
GET /api/v1/record?recordid=[100,]&!count=5
```

Instead of returning the first 5 records matching the filter conditions !last=1 can be used to return the last set of matching records. To return the last failed record only from all records:

```
GET /api/v1/record?recordid=[1,]&!count=1&!last=1
```

image

This API retrieves an image with a default type of PNG. Buffer can be either from an index or most recent.

Note: Image ID is found via the **record** command.

Resource URL

`camera URL /api/v1/image`

retrieves the most recent acquired image.

`camera URL /api/v1/image/<id>`

retrieves image for the buffer id.

parameter	value	example	description	
format	{png | jpg}	format=jpg	JPG or PNG image type	optional, default png

returns an image object of type PNG by default.

Examples

URL

`10.20.1.191 /api/v1/image/0x00011eed000a1e1f`

Response Image

svg

This API retrieves the SVG graphics for a given image ID.

Note: Image ID is found via the **record** command.

Resource URL

```
camera URL /api/v1/svg/<id>
```

Examples

URL

```
10.20.1.191 /api/v1/svg/0x00011eed000a1e1f
```

Response Image

file

This API retrieves a directory listing for the web server directory or sub directory of the web server using a GET request. It also allows for uploading of files via a POST request. If the file uploaded ends with the extension .zip the file will be unzipped in the specified folder.

Resource URL

```
GET /api/v1/file

Accept: application/json
```

retrieves the root file directory of the web server.

```
GET /api/v1/file/<path>

Accept: application/json
```

retrieves image for the sub directory <path>.

Returned Data Values

```
name  Directory or file name

dir   True if a directory, false if a file

size  File size if object is a file, in bytes

POST /api/v1/file

Content-Type:  multipart/form-data
```

uploads a file to the root folder of the web server.

```
POST  /api/v1/file/<path>

Content-Type: multipart/form-data
```

uploads the attached file to the sub directory <path>.

GET Example

URL

```
GET /api/v1/file/app
```

Reply

```
{
      "data": [
            {
                  "name": "hmi",
                  "dir": true,
                  "size": 0
            },
            {
                  "name": "img_demo",
                  "dir": true,
                  "size": 0
            },
            {
                  "name": "svg_demo",
                  "dir": true,
                  "size": 0
            }
      ]
}
```

POST Example HTML Form File Selector

```
<form method="POST" action="/api/v1/file/app/myapp"
enctype="multipart/form-data">
      <input type="file" name="file" />
      <input type="submit" value="Upload" />
</form>
```

POST Example jQuery Ajax Call Using FormData from an HTML Form File Selector

```
<form id="target" enctype="multipart/form-data">
      <input id="file" type="file" name="file" />
      <input type="submit" value="Upload" />  <br/>
</form>
var fdata = new FormData($('form')[0]);
$.ajax({
      url: '/api/v1/file/app/myapp',
      type: 'POST',
      data: fdata,
      cache: false,
      contentType: false,
      processData: false,
      success: function(data, textStatus, jqXHR){
      }
});
```

CHAPTER 6

Installing and Updating Omron WebMonitor on a Smart Camera

This section describes how to install and update Omron WebMonitor on a smart camera for use with AutoVISION and Visionscape.

Installing Omron WebMonitor on a Smart Camera

The Omron WebMonitor web interface can be installed on Omron Microscan smart cameras using the **Smart Camera Firmware Update Tool**.

A .zip file containing Omron WebMonitor files is placed on the PC during AutoVISION installation, and that .zip file is pushed to the camera during a firmware upgrade using the Smart Camera Firmware Update Tool.

The Smart Camera Firmware Update Tool sends the. zip file by FTP along with the other firmware files. The camera extracts the files from the .zip file as part of the upgrade process.

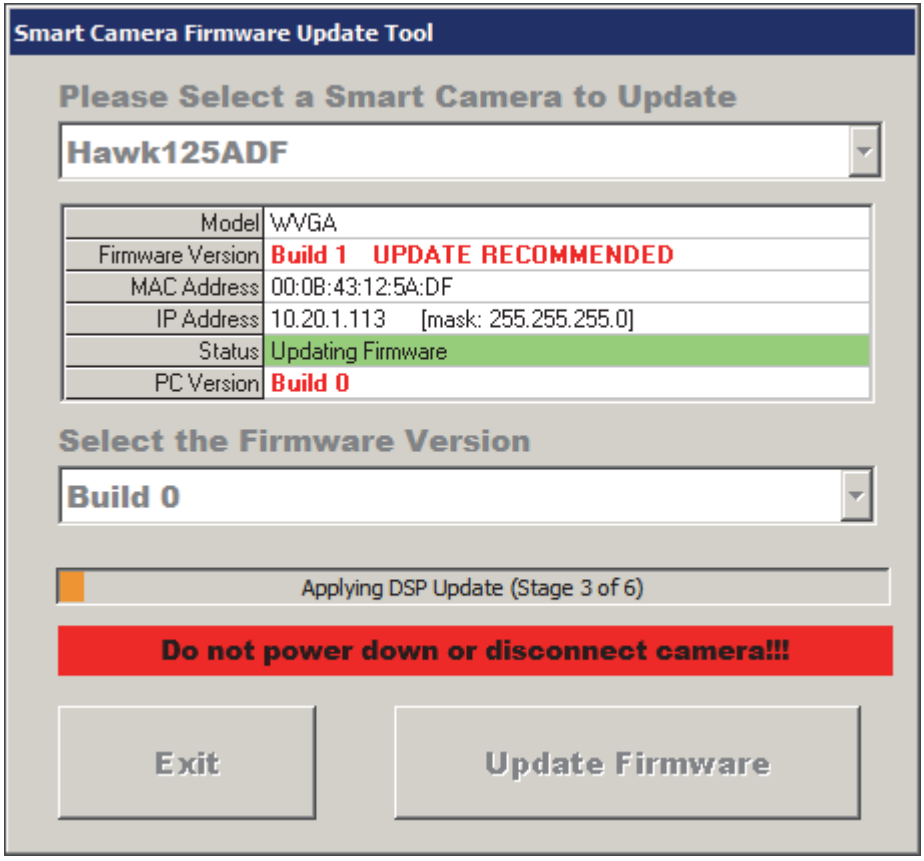
Note: The Omron WebMonitor .zip file is sent by FTP only when the smart camera is being upgraded.

Firmware and Omron WebMonitor install in six stages:

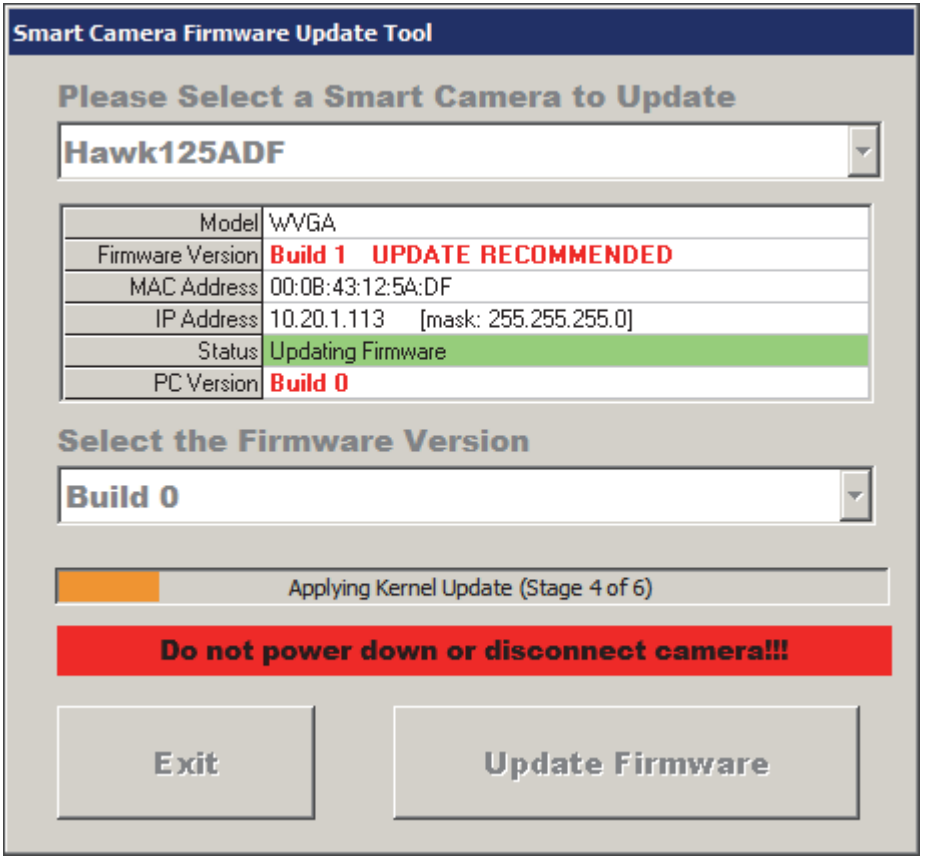
- Transfer;
- Prepare;
- Apply DSP Update;
- Apply Kernel Update;
- Apply Web Interface Update (Omron WebMonitor Update);
- Reboot.

The images on the following pages show examples of a simultaneous Omron WebMonitor and firmware installation process.

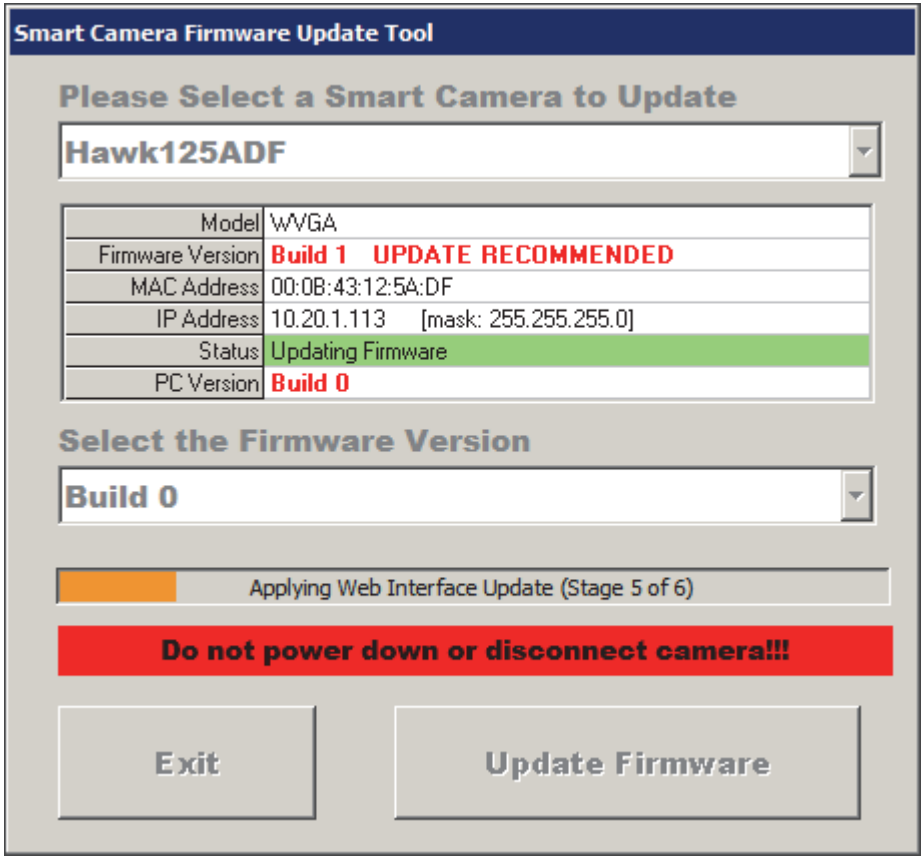
Apply DSP Update



Apply Kernel Update

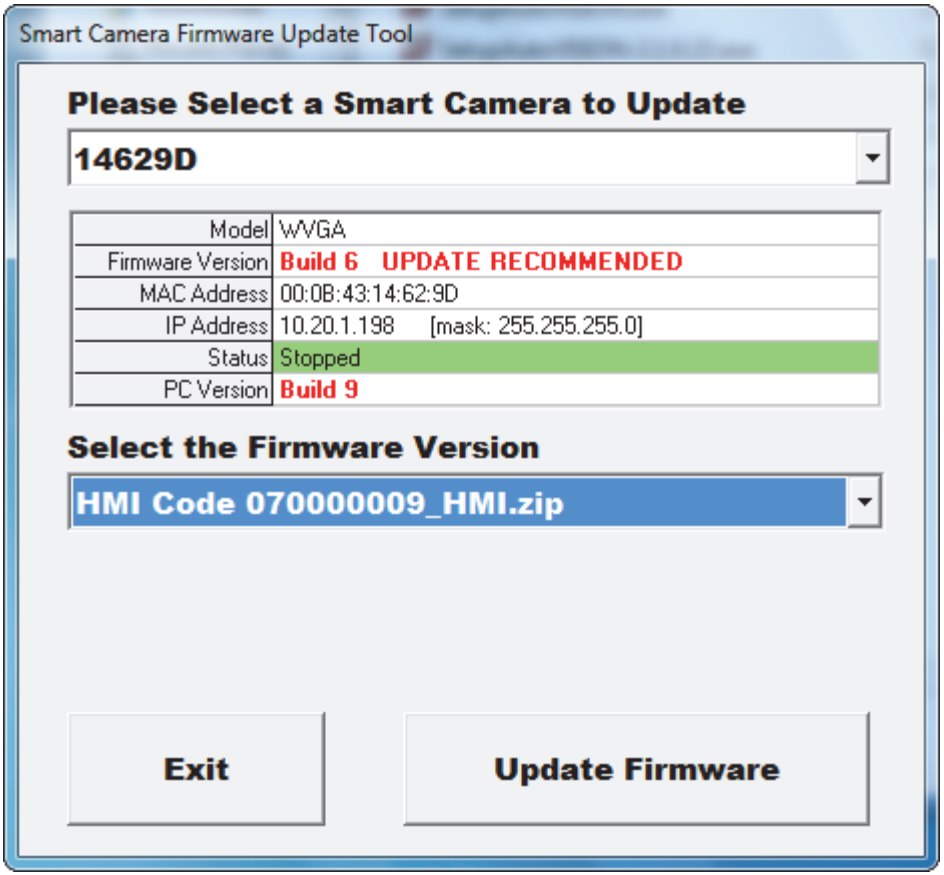


Apply Web Interface Update (Omron WebMonitor Update)



Updating Omron WebMonitor on a Smart Camera

Omron WebMonitor is automatically updated as part of any camera firmware upgrade. It is also possible to update Omron WebMonitor by itself without updating other camera firmware. This is done by pressing the **Control-W** key combination while selecting the camera to update from the dropdown list.



Once the camera has been selected, choose the desired version of Omron WebMonitor in the **Select the Firmware Version** dropdown menu and then click the **Update Firmware** button. A camera reboot is not necessary after the update and the unpacked Omron WebMonitor files are immediately ready for use.

APPENDIX A

Changing the Omron WebMonitor HTTP Port for PC-Based Systems

This section contains information about how to change the Omron WebMonitor HTTP port for PC-based systems.

Changing the Omron WebMonitor HTTP Port

The Omron WebMonitor HTTP port for PC-based systems can be changed to a value other than 8080 by adding a registry key. This is useful when software is installed on PCs that are already using port 8080 for an application other than Omron WebMonitor.

Important: This function is for PC-based systems only. Cameras are fixed at port 80.

For 32-Bit Systems

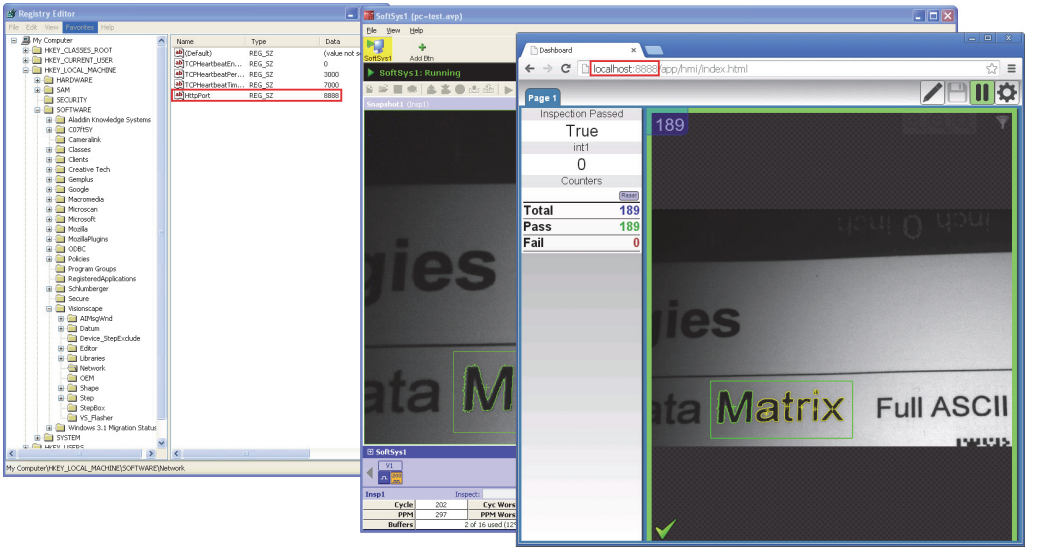
To change the Omron WebMonitor HTTP port to a value other than 8080, add the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Visionscape\Network\HttpPort

The **[HttpPort]** value must be a string containing the desired port number.

You must also cycle the Visionscape Backplane when changing the server setting.

The example below shows the HTTP Port changed from 8080 to **8888**. Notice that the **localhost** address now shows 8888 as the port number.



For 64-Bit Systems

To change the Omron WebMonitor HTTP port to a value other than 8080, add the following registry key:

HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Visionscape\Network\HttpPort

The **[HttpPort]** value must be a string containing the desired port number.

You must also cycle the Visionscape Backplane when changing the server setting.

As in the example above, the **localhost** address will show the new port number.

APPENDIX B

Omron WebMonitor Localization

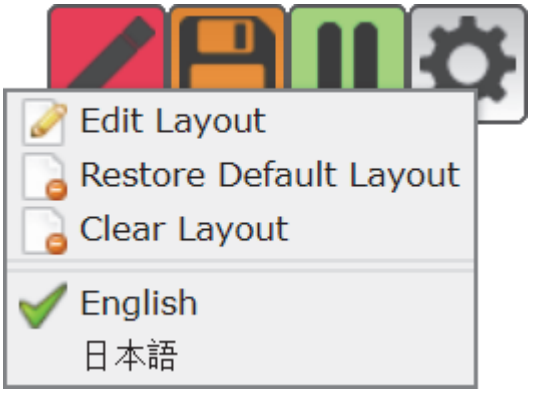
This section contains information about how to translate and localize the Omron WebMonitor user interface.

Omron WebMonitor Localization

Omron WebMonitor can display text in multiple languages. A language resource file must be added to the device for each supported language.

Switching Between Languages

Change languages in Omron WebMonitor from the settings menu in the upper-right corner:



Note: Only English and Japanese are currently installed by default.

Any languages that have been added to the device are automatically added to the end of the menu shown above. A check mark is displayed next to the currently active language. Click the language you wish to use, and the Omron WebMonitor page will be re-loaded in that language.

Language Resource Files

Location: The language files must be located here on the device:
\http_mv\app\hmi\locales

Naming Convention: The name of the file should be **<country code>_resources.json**, where **<country code>** refers to the 2-digit country code designation for the language. For example, German is **de**, English is **en**, Chinese is **zh**, etc. The resource file for German would be named **de_resources.json**.

Contents: A language resource file is a .json file that must have the following contents:

```
{
   "name": "English",
   "countryCode": "en",
   "data": {
        "KEY_INSP_PASSED":        "Inspection Passed",
        "KEY_COUNTERS":       "Counters",
        "KEY_ACTION":        "Action",
         …
```

name: This is the text that you want to be displayed in the **Settings** menu of Omron WebMonitor for this language.

countryCode: This is the 2-digit code for your language, the same code with which you named your file. These codes can be found here:

https://en.wikipedia.org/wiki/List_of_ISO_639-1_codes

data: This is where the key / value pairs are stored. Omron WebMonitor uses the keys in this section to look up the correct strings to display.

Adding a New Language

1. Always start with the English resource file, "en_resources.json". Make a copy of this file, and rename it using the country code of your new language. For this example, let's assume that we are creating a new file with German translations, so the name would be "de_resources.json".
2. Open the file in any text editor (Notepad++ works well), and change the following:
   - name: Change this to "Deutsche".
   - countryCode: Change this to "de".
3. Now send this updated file to your translation house. They should translate all of the English strings in the "data" section into German. **Note:** It is imperative that the key values in this section NOT be changed, only the values should be translated.
4. When your translated file is returned to you, simply copy it to your camera, putting it in the \http_mv\app\hmi\locales folder.
5. Now reload Omron WebMonitor, and your language will be automatically detected, and offered as an option in the settings menu.

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