INTERSTACKS

Machine/Sensors   Stack   MyStacks Dashboard

MyStacks IoT Platform

Web: interstacks.com
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Machine and sensor data sent from Interstack's stacks can be **viewed in any web browser on any device** (phone, tablet, or laptop) using the Interstacks MyStacks cloud dashboard. You can also optionally enable over-the-air (OTA) software updates to the programming (blueprints) inside of your stacks.

- All data sent to the MyStacks cloud dashboard is timestamped and saved in a database for viewing immediately and for later reporting.
- Users can create as many customized dashboards as they need.
- Select from the menu of visualization widgets (e.g. single value, line charts, tables) then add them to your dashboard.
- Assign a tag (data stream), or multiple tags, to a visualization widget.
- Re-arrange and re-size the widgets. Layouts that you do on a tablet, phone, or laptop will be remembered for that device screen size.
- Set red/green/yellow visualization colors based on data thresholds you enter.
- Text and email notifications (alerts) can be sent based on criteria you select, for example a sensor reading exceeding some threshold value.
- Data can be exported to CSV files for use in spreadsheets.
- Note: **We recommend the Chrome web browser** as it always supports the most up to date web standards, but other modern, current version web browsers also will work. Microsoft is deprecating its Internet Explorer web browser and replacing it with its Edge web browser as it is more compliant with web standards. We do not recommend or support Mozilla's Firefox web browser.
- Note: Internet network access to the MyStacks web site must be allowed via your local network. Stack hardware sending data to the internet must also be allowed. Email us at info@interstacks.com for any network firewall issues.
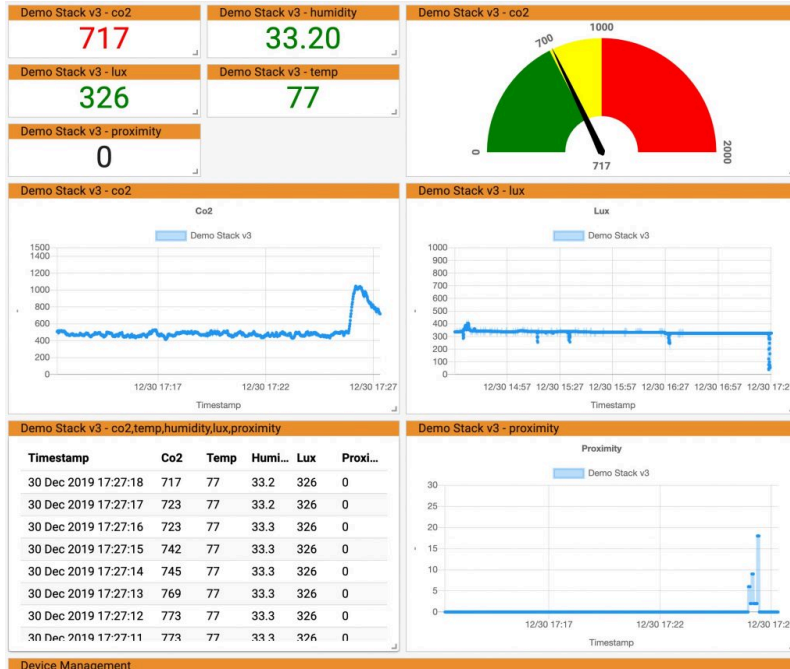
Login

Get a username and password to login to your MyStacks dashboard account for use at **mystacks.interstacks.com** Contact Interstacks at info@interstacks.com, your Interstacks support engineer, or your administrator. Stacks that you own and that send data will be provisioned for your account.
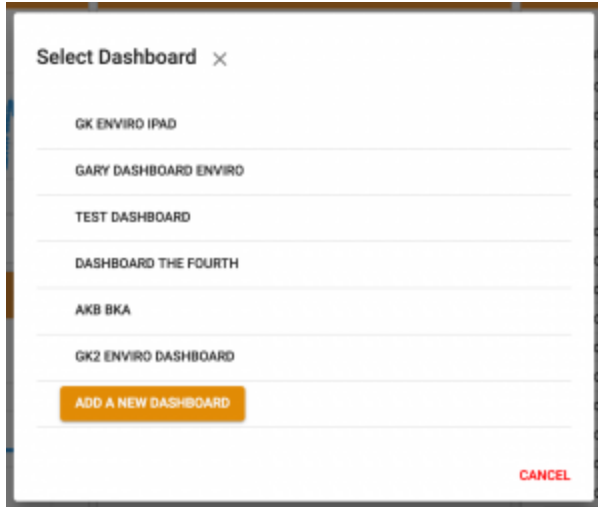

When you first login, you may see a blank page, or a starter dashboard that your administrator set up.

Make a New Dashboard

Select the icon in the top left of the page that looks like 3 horizontal lines to view the dashboard selector. To create a new dashboard, select "Add New Dashboard" button. To switch between dashboards, simply select from the list.

Dashboard Rename, Delete, Set as Default, Share, and Duplicate

After you have multiple dashboards, you may want to rename, delete, or make one your default. To do this, select the **three vertical dots icon** in the top right of the scrollable page area. You will then see a pulldown list with those choices. You can duplicate the current dashboard by selecting "Duplicate this Dashboard". You can send an invitation to another user in your organization so that they can make a copy of the current dashboard by selecting "Share as Template". When the invited user logs in to their account, they can accept the invitation and copy the dashboard by selecting the person icon in the top right of their dashboard and selecting the invite message. The person icon will have a small red alert circle on it if there are messages for them.
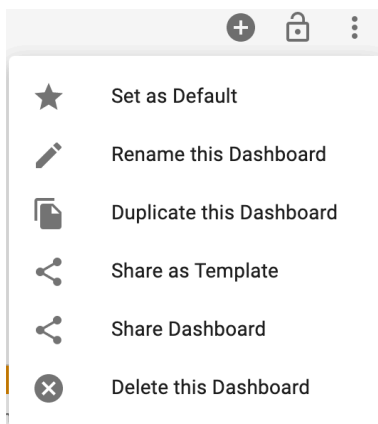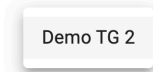

Share Dashboard

If you want to share your dashboard with all the users in your group, select "Share Dashboard" from the dashboard options pull down. From the pop up, select the group to share this

dashboard. Click on "Share". Now this dashboard can be accessed by anyone in that group based on the privileges (read only, write) they have been assigned for that group.
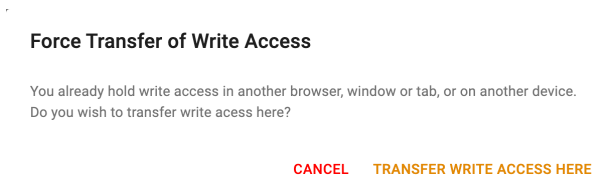
Share Dashboard with Group

Demo TG 2

CANCEL   SHARE

The shared dashboard will automatically show up in the dashboard list of all of the users in the group when they next log in.

Multi user sharing is achieved through locking and unlocking a shared dashboard. Shared dashboards always come up in locked state. If a user chooses to modify the dashboard (and they have write access), they can click on the lock icon in the top right to unlock it.

Click to unlock and gain write access
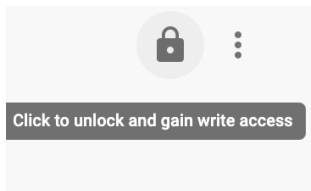
The unlock will be successful if no one else has exclusive access to the dashboard already. When unlocked, the current user has exclusive access to modify the dashboard until they lock the icon once again. If a user attempts to unlock a dashboard that has been locked by someone else, they will be prompted with a notification asking if they would like to forcefully get access from the other user.

Force Transfer of Write Access

You already hold write access in another browser, window or tab, or on another device. Do you wish to transfer write acess here?

CANCEL   TRANSFER WRITE ACCESS HERE

Dashboards Hierarchy

If you have a large number of dashboards, you may want to manage them by creating groups of dashboards. To create a dashboard group, simply name (or rename) dashboards using a prefix name for the group followed by a period character, then the specific name of that dashboard. For example, if you name dashboards "MyGroup1.machine1", "MyGroup1.machine2", "MyGroup1.machine3", when you go to the dashboard selector, you will see a single entry called "MyGroup1". If you select the up/down arrow for that group, you will expand (or contract) the list of dashboards in that group. To go to a specific dashboard in the group, simply select it.

Add Visualization Widgets

To add a visualization widget to your dashboard, select the **"+" icon in the top right** of the page. You may have to scroll the view in your browser window to the top of the dashboard.

Select the type of visualization widget you want. Then select the "Finish" button. It will be placed on your dashboard. Visualization widgets include single value, time series line charts, a table view, various analytics, and administrative functions.

Re-arrange and Re-size

Widgets can be re-arranged by simply dragging and dropping using the widget header area. Widgets can be re-sized by simply dragging and dropping using the bottom right corner of the widget.

Layouts that you do on a tablet, phone, or laptop will be remembered for that device screen size.

Configure Widget

To enter configuration options for a widget, select the icon in the header of the widget that looks like a gear. The **gear icon** will only appear when you mouse over the visualization area. The configuration options you see will depend on the specifics of each widget.

In addition, you will see blue Info icons that directly link to centralized tag property settings. You can choose to use the centralized settings or override them within individual widget configurations.

Tag Properties

PROPERTIES   ALERTS   TAGS   CONFIGURE

☐ *Placeholder for future tag actions*

☐ Tag ID: **lux**

STANDARD PROPERTIES

Name
Light Level

Units
Lumens

⌄ NUMERIC MEASUREMENT PROPERTIES

⌄ THRESHOLD PROPERTIES

⌄ ASSET PROPERTIES

⌄ STATES PROPERTIES

Various configuration settings for tags default to being centralized in the tags tab section of the Stack/Device Management info popup. You can get to the centralized tag properties popup via direct links from visualization widget configuration panels or from the blue Info icon in the Stack/Device Management widget. The centralized tag properties will be reflected in all visualization widgets that have the "Use tag settings" checkbox checked.

The tag name can be changed as well as the units label used in visualizations. Each section of the tag properties can be expanded or collapsed using the up/down icon.

Numeric measurement properties define min and max range, and can optionally include a scaling factor and a fixed offset. Threshold properties configure the Gauge, Line chart, and Tank level dividing lines (to represent nominal, above nominal zone1, zone2, zone3).

Asset properties allow you to assign internal asset identifiers to a tag.

State properties define the mapping from raw data to "states". For example, below 80 could be the state "cold" and above 80 could be the state "hot". These states are used in various visualization and reporting widgets like the State table and State history widgets.

Line Chart Widget

Configure Timeseries Line Chart Widget ✕

①————————②

Select tags   Options

Stack	Attribute			
Demo Stack v3 ▾	Light Level ▾	🔲	⊗	⊕

CANCEL   NEXT   **FINISH**

Select the device that will send data to this widget from the "Stack" pull down menu. Then select the "Attribute" (tag name) from its pull down menu. You may also see an option to select the tag as a calculated moving average. If the selected widget can view multiple attributes, you can add them with the "+" icon. Line chart and table widgets can display as many attributes as you want. (Note that Attributes (tag names) are automatically assigned based on the data that is sent from the hardware device (stack)). Then select the "Next" button.

Depending on the widget, you will see various configuration options.

For time series widgets, the time frame length is set in the Length field. Whether the data is displayed in real time (Moving) or just a fixed time window is determined via the buttons Fixed/Moving. (Note that the longer the time length, the more data that must be downloaded from the database to the browser for viewing). The Y-axis has buttons for setting a fixed range (min/max) or for automatically setting the range based on the min/max of the current data. If "use tag settings" is selected, values from the centralized Tag - Numeric properties will be used. Note that if Auto is selected, the Y-axis will continually adjust its settings. Select "Finish" when you are done configuring your widget.

Threshold properties define dividing line zones in visualizations (e.g. nominal, above nominal, danger).

Datapoint, Gauge, and Level Widgets

To configure single value widgets, select the gear icon, then choose the "Stack" pull down to choose the stack that is sending the data, then the "Attribute" pull down to choose the tag (data stream).

To set red/green/yellow display indicators in single value widgets select the **bell icon** in the widget header.

You can enter criteria for when the data should be displayed in various colors, for example display in red if a temperature exceeds a particular value or set red/yellow/green levels. If you select "Use tag settings" the levels will be set by the centralized "Threshold properties". You can get to those by selecting the blue info icon in the main widget configuration settings or via the "Stack/Device Management" widget and selecting the blue info icon.

If you want the datapoint widget to display a colored icon like a circle, or to display text, use the bell icon, select custom, then choose the Display icon pulldown or enter text in the Display text field.
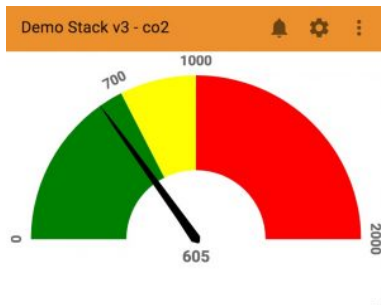
Table Widget

You can add as many tags as you like to the Table widget. As data is received, values for each tag for that update cycle are displayed in a single row.

Demo Stack v3 - co2,temp,humidity,lux|ma-10sm-lc,proximity					
Timestamp	CO2(ppm)	Temperature(°C)	humidity(RH%)	Light Level(Lumen) …	Num Boxes(Number…
26 Jan 2022 18:28:43	467	69	16.6	2	
26 Jan 2022 18:28:42	480	69	16.6	2	
26 Jan 2022 18:28:42					0
26 Jan 2022 18:28:41	494	69	16.6	2	
26 Jan 2022 18:28:40	486	69	16.6	2	
26 Jan 2022 18:28:39	496	69	16.6	2	
26 Jan 2022 18:28:38	507	69	16.6	2	
26 Jan 2022 18:28:37	502	69	16.6	2	
26 Jan 2022 18:28:37					0
26 Jan 2022 18:28:36	507	69	16.6	2	
26 Jan 2022 18:28:35	496	69	16.6	2	
26 Jan 2022 18:28:34	478	69	16.6	2	
26 Jan 2022 18:28:33	472	69	16.6	2	

Widget Text Label

You can change the text that labels a widget by selecting the 3 vertical dots icon in the widget header, and then select "Name this Widget".

Delete a visualization widget

You can delete a widget from a dashboard by selecting the 3 vertical dots icon in the widget header, and then select "Delete this Widget".
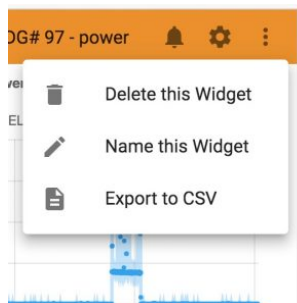
Export to CSV file

You can export the data in a widget to a CSV file by selecting the 3 vertical dots icon in the widget header, and then select "Export to CSV". The data viewable in that widget will be immediately downloaded to a CSV file which you can then import into a spreadsheet or business intelligence tool.

View data from earlier time frame

To view data from an earlier time frame in a widget currently displaying real time data, you can use the **"Previous"** and **"Next"** buttons to move the viewing window. To get back to the real-time view, select "Reset". To view data from arbitrary dates: Select the Gear icon in the widget header; Select Next; in the Time Frame area select the Fixed button; Click on the date/time in the Start field; You will then see a calendar popup to select a date and a time; Select OK when done; Then set the time length in the Length field; Select Finish.
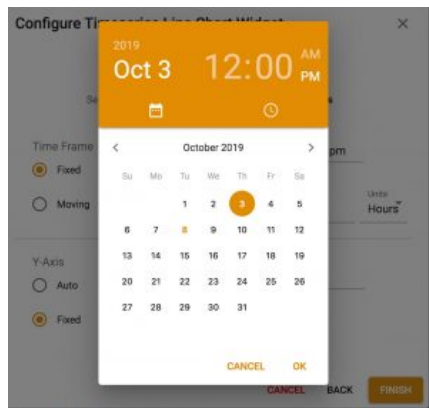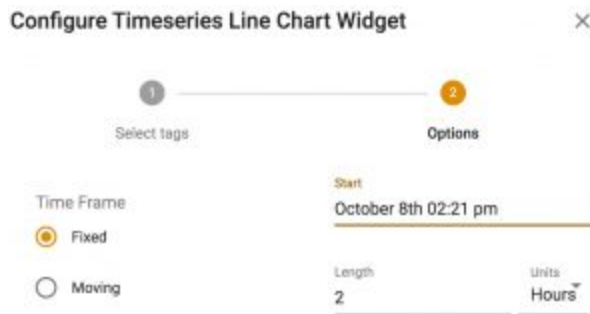
Stack/Device Management Widget

To view a list of the connection status of all of your stacks and their properties, alerts, and other information, place the "Stack/Device Management" widget on one of your dashboards. It will show a list of the stacks assigned to your account, their red/yellow/green connection status, owner account, and other information.

If you select the blue "More Info" icon to the far left of any row, you will see a popup that contains more information about your stack.

The popup has three areas selectable via the top row: Properties, Alerts, and Tags.

The **PROPERTIES** tab lists information about your stack. If you click "Edit" in the "Properties" tab, you can edit the Stack name and location.

The **ALERTS** tab is where you can set, view, and edit text/email alerts based on conditions you set.

The **TAGS** tab is a centralized area to edit many configuration settings for each tag.

For example:

Tag name and measurement units (Celsius, Fahrenheit, ppm, lumens)

Numeric measurement properties like min/max range, scaling multiplier and offset

Threshold properties to define green, blue, yellow, red indicator colors

States properties - defining states from raw data (e.g. greater than 80 is "hot")

Alerts

To set text or email Alerts, select the ALERTS tab in the Stack/Device Management popup by clicking on the word ALERTS.

Select "Create New" to set a new alert. Enter your criteria for the notification using the pull down menus in each field. Alerts can be sent continuously when a condition is met or only once (the "becoming…" alert conditions). Enter the destination email address(es) and/or text message phone number(s) for the alert. The description field text will be sent in the email and used in the Alerts History widget informational pop up.

Text messages can be sent by entering the phone number with a "+" and country code with no spaces or dashes. For example **+14123339876** will send a text message in the United States.

The MyStacks cloud will send Alerts whenever the criteria is satisfied.

Alerts (History) Widget

The Alerts (history) widget displays a historical list of alerts that have been triggered. It must first be configured by using the gear icon in the top right of the widget to select the stacks you would like to view. You can view details on an individual alert by selecting the "i" icon in the far left of the alert's row.

Analytics - Signal Statistics Widget

The "Signal Statistics" widget calculates statistics, typically for time series values data. When you configure the widget, you would often use a fixed time frame (instead of moving), typically the past one hour, or past eight hours. The visualization shows the first order statistics for the data in that time frame as well as a histogram of the values in that time frame. This analysis often helps with setting trigger levels for determining machine or sensor states that are used in the "State Table" widget. For example, if a power consumption sensor (CT or current transducer) is connected to a power line going to a machine, you might want to set trigger levels for machine states such as Off, On, and On-Load. By letting a machine operate normally for some period of time, then using this "Signal Statistics" widget, you can easily set those levels for the "State Table" widget. Please contact your Interstacks support engineer or email info@interstacks.com for more information.

Metric	Value		Peak Range	Count	%
Count	6546		19.00-19.50	2505	38.27%
Minimum	14.00		18.00-18.50	2366	36.14%
Maximum	25.00		20.00-20.50	1121	17.12%
Mean	18.70		17.00-17.50	368	5.622%
Median	19.00		21.00-21.50	78	1.192%
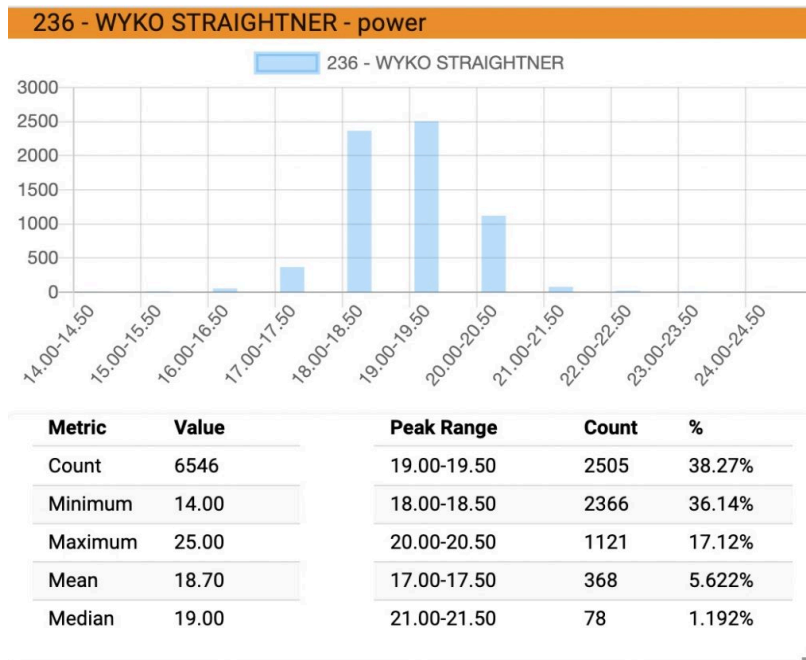
Analytics - State Table Widget

State properties define the mapping from raw data to "states". For example, below 80 could be the state "cold" and above 80 could be the state "hot". Or below 20 Amps could be "Machine Off" and above 20 Amps "Machine On". You may define as many states as you need. You can also set a minimum time period required to enter a defined state. These states are used in the State history, State table, and Multi-tag report widgets.

The "State Table" widget will show a timestamped list of all defined states for a single data stream (tag). When you configure the widget, you define state trigger levels for the data stream and each state's name. The blue square icon goes to a popup to edit these values. The list shows start, end, and duration times. If you select the time frame as "moving", it will continuously update the duration time of the current state. By setting the time frame to fixed, and specifying any date in the past, you can view historical state data. The "Previous", "Next", and "Reset" buttons also move the viewed time window.

For example, you could see a list of On, Off, and On-Load states for a machine if the data stream was from a power consumption sensor. In this way, machine utilization **(OEE) productivity** can be monitored and maintenance can be scheduled based on actual usage data. Your Interstacks support engineer will assist in setting up and configuring dashboards to achieve your goals.
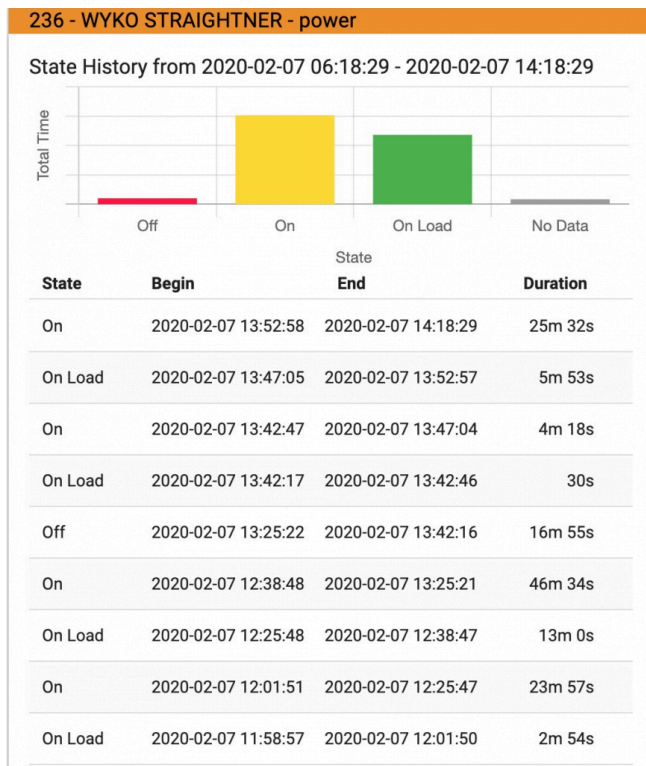
Analytics - State History Widget

The "State History" widget shows a bar chart indicating the percentage of time or total time the time series data (tag) spent in each state during each hour and a text table summary below the chart. During configuration, you can assign colors to each state, the state name, and specify the time frame, often the trailing 8 or 24 hours. In addition to whether the time frame is fixed or moving and hence updated continuously. By setting the time frame to fixed, and specifying any date in the past, you can view historical state history data. The "Previous", "Next", and "Reset" buttons also move the viewed time window. This widget is often used to give a broader view of machine utilization (OEE) or other sensor and productivity data.
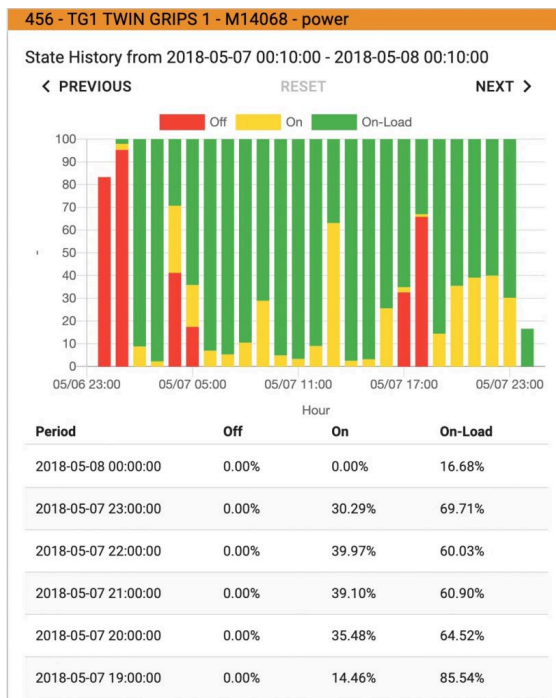
Analytics - Counts Widget

The "Counts" visualization widget is used to view machine or sensor data that represents a numeric count. It is often used to count machine cycles (open/close, cut, drill), number of pieces entering or exiting a machine, flow meter counts, or product items on a packaging line. The raw data usually comes from dry contact switches, proximity sensors, digital input signals, flow meters, or dry contacts from relays connected to a machine or PLC. The visualization shows counts by hour in a bar chart and a text table.
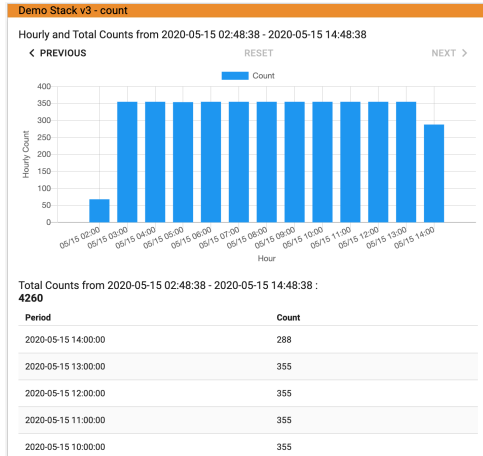
Configure the Counts widget by selecting the gear icon in the title bar of the widget. Select the Device (stacks) and tag. Select "Next" to see the other configuration settings. If you select the time frame as "moving", it will continuously update the current count. By setting the time frame to fixed, and specifying any date in the past, you can view historical data. The "Previous", "Next", and "Reset" buttons also move the viewed time window. The "Count Type" options are set depending on the type of count data in the tag's data stream. Use "Sample Count" if the data is 0 or 1 indicating a particular digital state. Use "Cumulative Sum" if the data is a monotonically increasing number for each sample. Use "Sum" if the data is a numeric value over the sample time window (often used with flow meters).
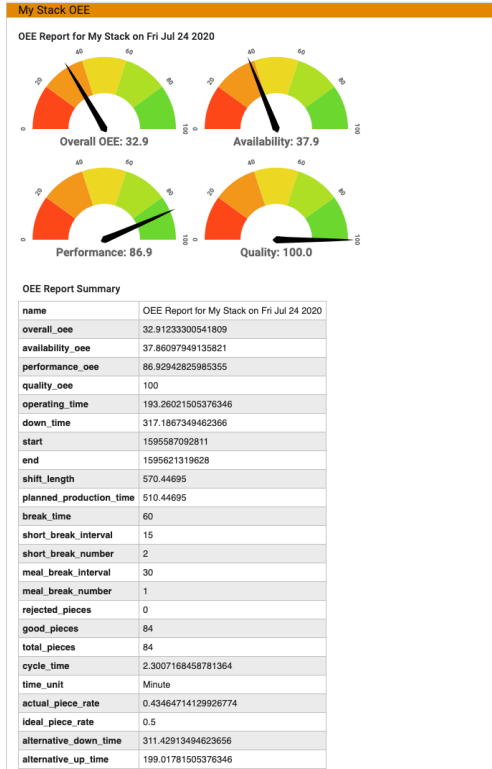
Analytics - Multi-tag report

When you have multiple sensor or data feeds from one or many stacks, you can use this widget to view count or state information from all of them. A table/spreadsheet view has a list of tags and user defined time periods. These time periods could be hours, days, or user defined shift periods. Each cell in the grid is an aggregate of time in each state, percent of time in each state, or an aggregate of counts (open/close digital count). Of course the most recent column is updated in real-time as data is received.

If you wanted to monitor the productivity of many machines in your factory, you could use the Multi-tag report to see counts of units for each machine by shift.

Multi Tag Report Demo Stack v3					
	DAY SHIFT **Thu Dec 2** 09:00 - 17:00	NIGHT SHIFT **Wed Dec 1** 17:00 - Thu Dec 2 01:00	DAY SHIFT **Wed Dec 1** 09:00 - 17:00	NIGHT SHIFT **Tue Nov 30** 17:00 - Wed Dec 1 01:00	DAY SHIFT **Tue Nov 30** 09:00 - 17:00
Demo Stack v3:NumWidgets(Number)	18,082,428	4,861,335	20,091,603	4,144,581	20,437,857
Demo Stack v3:Light Level(Lumens)	Dark: 01:43:18 Bright: 05:42:52	Dark: 07:58:42 Bright: 00:01:17	Dark: 03:24:11 Bright: 04:35:48	Dark: 07:37:54 Bright: 00:22:05	Dark: 02:47:02 Bright: 05:12:56
Demo Stack v3:Temperature(°C)	Cold: 91.54% Hot: 8.46%	Cold: 59.62% Hot: 40.38%	Cold: 73.76% Hot: 26.24%	Cold: 0% Hot: 100%	Cold: 59.69% Hot: 40.31%
Demo Stack v3:CO2(ppm)	Low: 05:51:11 High: 01:34:55	Low: 03:29:01 High: 04:30:41 No Data: 00:00:11	Low: 01:06:02 High: 06:53:55	Low: 04:53:59 High: 03:05:55	Low: 02:46:45 High: 05:12:57 No Data: 00:00:11
Demo Stack v3:Num Boxes(Numbers)	68	0	57	0	25

‹ PREVIOUS   RESET   NEXT ›

Analytics - OEE Widget

OEE, overall equipment effectiveness, can be derived in many ways depending on specific machines or operational flows or an organization's definition of uptime and downtime. The other Analytics widgets can be used as part of OEE metrics. This OEE widget is an advanced widget for a specific approach to OEE. It generates a report based on the time period specified and its configuration options. You can enter break times, number of scrap parts, and other information to be used in the report.

My Stack OEE	

OEE Report for My Stack on Fri Jul 24 2020

Overall OEE: 32.9   Availability: 37.9

Performance: 86.9   Quality: 100.0

OEE Report Summary

name	OEE Report for My Stack on Fri Jul 24 2020
overall_oee	32.91233300541809
availability_oee	37.86097949135821
performance_oee	86.92942825985355
quality_oee	100
operating_time	193.26021505376346
down_time	317.1867349462366
start	1595587092811
end	1595621319628
shift_length	570.44695
planned_production_time	510.44695
break_time	60
short_break_interval	15
short_break_number	2
meal_break_interval	30
meal_break_number	1
rejected_pieces	0
good_pieces	84
total_pieces	84
cycle_time	2.3007168458781364
time_unit	Minute
actual_piece_rate	0.43464714129926774
ideal_piece_rate	0.5
alternative_down_time	311.42913494623656
alternative_up_time	199.01781505376346

Stack Messaging Widget

The stack messaging widget allows messages to be sent from the MyStacks IoT cloud platform to a specific stack. The widget creates a single button that when selected, sends message(s) to the stack on its next update cycle. It is configured by selecting the stack and the attribute(s) used to receive the message(s).
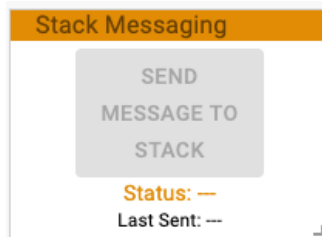
Configure Stack Messaging Widget

① Select tag ── ② Options

Stack	Attribute
Demo Stack v3 ▾	switch ▾

CANCEL NEXT

Usage on Phones and Tablets

When viewing dashboards on a phone or tablet mobile device, you can rotate the device to view the dashboard in portrait or landscape mode. To scroll the dashboard view on a mobile device, you may have to select the area on the far right of the dashboard, outside the border of any visualization widgets. If you re-arrange and re-size the widgets, the layouts will be remembered for that device screen size.

Organization Management Widget - Adding User Accounts

Your administrator or Interstacks support engineer can add individual user accounts by using the "Organization Management" widget on a dashboard. A new user can be added directly by using the "Create/Update Users" button. The new user's email is entered and the user permissions (Admin, Read/write, Read only) are selected. Sub-groups can be added underneath your main organization to represent different locations, departments or work cells. Users and devices (stacks with their data stream tags) can then be associated with each sub-group. User accounts can be Admin, read only, or read-write. Read only users cannot edit dashboards, just view them. Only Admin users can add users to accounts. To expand or contract sections in this widget, click on the arrows. If you want to enable Multi-Factor Authentication (MFA) for enhanced login security, please contact your Interstacks support engineer or email info@interstacks.com and it can be enabled for your account. For every login, a unique code can be sent to the email address for the user.

Some Widget Examples

My Stack - co2

Co2

My Stack

ppm

Timestamp	Co2(ppm)
11 Dec 2018 14:18:06	658
11 Dec 2018 14:18:05	664
11 Dec 2018 14:18:04	677
11 Dec 2018 14:18:03	686
11 Dec 2018 14:18:02	667
11 Dec 2018 14:18:01	673
11 Dec 2018 14:18:00	673
11 Dec 2018 14:17:59	661
11 Dec 2018 14:17:58	639
11 Dec 2018 14:17:57	680
11 Dec 2018 14:17:56	683
11 Dec 2018 14:17:55	683

Demo Stack v3 - co2,temp,humidity,lux,proximity

Timestamp	Co2	Temp	Humidity	Lux	Proximi...
15 Oct 2019 16:35:08	539	74	41.6	141	0
15 Oct 2019 16:35:07	542	74	41.6	141	0
15 Oct 2019 16:35:06	549	74	41.6	141	0
15 Oct 2019 16:35:04	549	74	41.6	141	0
15 Oct 2019 16:35:03	555	74	41.6	141	0
15 Oct 2019 16:35:02	560	74	41.6	141	0
15 Oct 2019 16:35:01	566	74	41.6	141	0
15 Oct 2019 16:35:00	549	74	41.6	141	0
15 Oct 2019 16:34:59	539	74	41.6	141	0
15 Oct 2019 16:34:58	526	74	41.6	141	0
15 Oct 2019 16:34:57	536	74	41.6	141	0

My Stack - co2

674

My Stack - co2

1561

Demo Stack v3 - co2

Demo Power - power

11.1
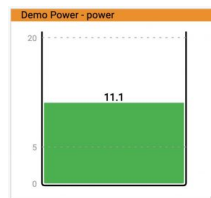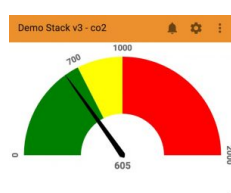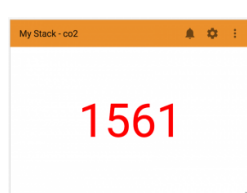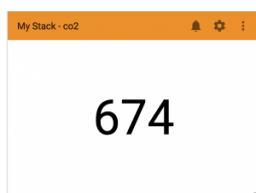
Refer to documentation on many other topics at interstacks.com/knowledge-base/. Please email **info@interstacks.com** with any questions.

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