Real-Time SPC™

Getting Started with Real-Time SPC™

Contents

1. Introduction

This guide introduces you to some of the most common features and tasks in Real-Time SPC™. Use this guide to learn how to set up this application to best meet the needs of your organization. Many organization-wide settings can be set once and applied across this platform with the help of the Minitab® Customer Success team. Other settings may depend on department and division preferences and can change more frequently.

Note: This guide explains how to manually set up your manufacturing environment. For more information on how to import multiple new components at the same time, go to Automated component setup overview.

Real-Time SPC™ is organized into three main portals. Your access within the application depends on your role in the application.

Administration portal

The **Administration** portal contains user settings as well as settings for tags, data management, and hierarchy groups to use across the platform. To learn about these settings, go to Set up a Company on page 5.

Engineering portal

The **Engineering** portal gives access to component setups, analysis preferences, and reports and dashboards.

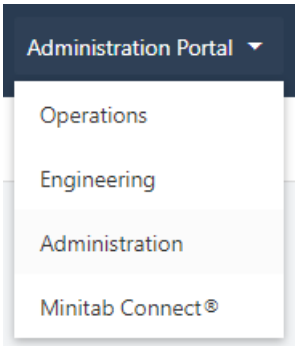
- To set up processes, products, and stations, go to Create Products, Processes, and Stations on page 7.
- To specify analysis preferences, go to Specify control chart and capability analyses settings on page 12.
- To learn about report and dashboard settings, go to Reports and Dashboards on page 24.

Operations portal

The **Operations** portal gives access to the supervisor and operator dashboards and data collection forms. To learn about these features, go to Collect Data on page 16.

Navigation within Real-Time SPC

Use the button at the top right of the window to easily switch between the portals and to access Minitab Connect, depending on your permission settings.



Within a portal, use the button at the top left of the window to show/hide the navigation labels.

These images are from the **Engineering** portal, but other portals are similar.

The story

This guide walks through a variety of common tasks and uses a fictional fruit processing company, the *Flavorful Fruit Company*, to illustrate how to set up products, processes, and stations.

2. Set up a Company

Overview

Before you can add products, processes, and stations, you must commit hierarchy groups. Hierarchy groups organize the system elements for your company. For instance, you can organize dashboards by division, region, or other groups. You can place products, processes, and stations at any level.

You must have at least one group, which is Level 1. Level 2 groups are nested within Level 1. Level 3 groups are nested within Level 2, and so on.

Hierarchy groups are preset for every user in a Real-Time SPC subscription. To view your Hierarchy groups, go to the **Administration** portal and select **Hierarchy Groups**. You can only change the Hierarchy groups with help from the Minitab Customer Success team.

Set up groups for your components

After you know the structure of your Hierarchy groups, you decide where to add your components. Because the *Flavorful Fruit Company* is a large global company, they decide to use five hierarchy groups to track their manufacturing process across the company. Your hierarchy may be different, but you can use the following steps to set up appropriate groups.

1. Go to the **Engineering** portal and select **Components**.
2. Select **New** > **Company**. In **Name**, enter *Flavorful Fruit Company*. This is a Level 1 Group.
3. Select *Flavorful Fruit Company*, then select **Open**.
4. Select **New** > **Region**. In **Name**, enter *North American Region*. This is a Level 2 Group.
5. Select *North American Region*, then select **Open**.
6. Select **New** > **Site**. In **Name**, enter *Marion Site*. This is a Level 3 Group.

Create tags

Use tags to group and organize system elements. Tags allow you to easily filter dashboard data. Tags are available across the platform. You can edit a tag name to update all instances of the tag name in the system. You can also delete a tag from the list and remove it from any object to which it had previously been assigned.

There are four types of tags. You can use **Global Tags** on all elements. You can use **Product Tags**, **Process Tags**, and **Station Tags** only on their specific elements. Because the *Flavorful Fruit Company* has many different types of products that use similar processes, they add product and process tags.

1. Go to the **Administration** portal and select **Tags**.
2. Under **Product Tags**, select **Add Tag**.
3. In **Name**, enter *100% Fruit Spread* and select **OK**.
4. Repeat to add product tags for *Jelly*, *Jam*, and *Preserves*.
5. Under **Process Tags**, select **Add Tag**.
6. In **Name**, enter *Inspection* and select **OK**.

7. Repeat to add process tags for *Cleaning*, *Pasteurizing*, and *Filling*.
8. Save the changes.

3. Create Products, Processes, and Stations

Before you start to collect and monitor data, you must first define the processes and stations where the data are generated and specify the type of data. You must also define the product specifications. While it is easy to add processes, products, and stations that represent your manufacturing flow, keep the following tips in mind.

- All processes should have at least one measure. If you do not define a continuous measure or attribute measures, you cannot collect data to monitor.
- All products should have at least one process step. Again, if you do not have a defined process, you cannot collect data to monitor.
- All stations must have at least one process for each product.
- To collect data from a station, make sure you specify a sampling plan and its data source.
- To save time during setup, select **Duplicate** to duplicate a process, product, or station, if you have already created a similar item to use as a starting point.

Add a new process

A process represents a single step or a series of steps used to produce a product or provide a service. A product or service may have several required processes. You can add processes at any level of your hierarchy groups within a company.

Processes may be used for one product or may be used across many different products. Each process has associated product and output measures and can have visual inspection measures.

The *Flavorful Fruit Company* adds new processes to the company.

1. Go to the **Engineering** portal and select the **Components** page .
2. Select *Flavorful Fruit Company*, then select **Open** .
3. Select **New** > **Process**. In **Name**, enter *Filling* and select **OK**.
4. Repeat to add the processes for *Inspection*, *Cleaning*, *Pasteurizing*, *Cooking*, *Cooling*, and *Labeling and packaging*.
5. Select the *Filling* process, then select **Open** .
6. In the **Description** section of the template, select **Edit** and enter *Filling the container with the product*. Then select **OK**.
7. Select **Add Tag** and select *Filling*. Then select **OK**.

Add a measure to the process

Determine the process and output measures to monitor this process. The *Filling* process has one measure to monitor.

1. In the **Measures** section of the template, select **Add Process Measures**.
2. In **Name**, enter *Full Container Weight*. In **Description**, enter *The weight after filling*. Select **OK**.
3. Save your changes.

Add defect and defective types

Your process may also have visual inspections. You can define the defects and defectives that you want to track. You can count one or the other, both, or none. The *Flavorful Fruit Company* inspects the container for defectives.

1. In the **Measures** section of the template, select **Grouped Defectives**.
2. Select **Edit List of Grouped Defectives**. Then select **Add Defective Type**.
3. In **Defective Type**, enter *Cracked jar*. Then select **OK**.
4. Repeat to add *Crooked lid*.
5. Save the changes.

Note: If you have a particular defective type that you want to monitor separately, you must set it up as a defective measure. If you have multiple defective types that you want to monitor together, you must set it up as a grouped defective. For more information, go to Quality attributes.

Add assignable causes and corrective actions

If you can identify standard assignable causes, add them too. Assignable causes explain an out-of-control process and list the corresponding corrective actions. Control chart points with assignable causes are not used in the control limit calculations.

The quality team identifies several assignable causes and corrective actions for out-of-specification measures and rates of defects and defectives.

1. In the **Assignable Causes** section of the template, select **Add Assignable Cause**.
2. In **Name**, enter *Residue buildup*. Select **OK**.
3. Save your changes.
4. To add a description of the assignable cause or add corrective actions for an assignable cause, select **Edit**.
5. Select **Add Corrective Action**. In **Name**, enter *Clean filling machine*. Select **OK**.
6. Save your changes.

Add a new product

A product is the tangible item that is delivered to a customer. A product or service may have several required processes. You can add products at any level of your hierarchy groups within a company. Process measures are collected on the process that creates the product and output measures are collected on the product.

When you add a new product, you must first decide the hierarchy level of the product. You can add products at any level of your hierarchy groups within a company. Then you can add a helpful description and image to describe the product.

Next, determine which processes are used to make the product. You can only add processes that have already been defined. You can arrange the process steps in a process flow or list view.

Once you have assigned processes to products, you can specify process targets, specification limits, data collection plans, and appropriate control charts and their settings. For more information, go to Specify Product, Process, and Station Details on page 12.

The *Flavorful Fruit Company* adds a new product.

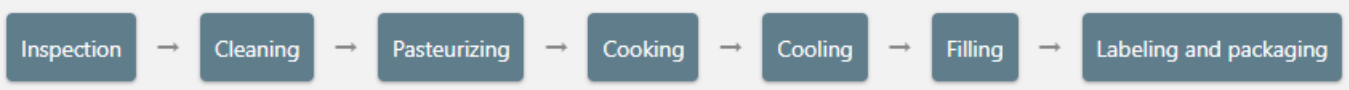
1. Go to the **Engineering** portal and select the **Components** page.
2. Select *Flavorful Fruit Company*, then select **Open**.
3. Select **New** > **Product**. In **Name**, enter *Strawberry Fruit Spread* and select **OK**.
4. Select *Strawberry Fruit Spread*, then select **Open**.

5. Select **Add Tag** and select *Jam*, *Jelly*, and *Preserves*. Then select **OK**.
6. Save your changes.

Add process steps to the product

The production of the *Strawberry Fruit Spread* product involves 7 process steps.

1. Select **Add** . Select **Process**.
2. From **Add Process**, select *Inspection*. From **Position** select **First**.
3. Select **OK**.
4. Continue for all process steps until your order matches the image below. You can add process steps to the beginning or end of the flow. Once added, you can use the **Previous** and **Next** buttons to rearrange the process steps.



   Select the **View** button and select **Flow** to arrange the process steps in a process flow view. Alternatively, you can select **List** to arrange the process steps in a process list view.

5. Save your changes.

Add a new station

A station is the location where process step or process is completed. More than one sequential step may be performed at the station. Stations are associated with particular processes of specific product. You can add stations at any level of your hierarchy groups within a company.

When you add a new station, you must first decide the hierarchy level of the station. You can add stations at any level of your hierarchy groups within a company. Then you can add a helpful description and image to describe the station.

Next, determine which processes and products use this station. Processes used by multiple products must be added for each product.

Finally, specify the data collection method and data source for each measure or inspection of this station. Sampling plans are defined in the data collection area within the product template. For more information, go to Define a new sampling plan on page 14.

The *Flavorful Fruit Company* adds new stations.

1. Go to the **Engineering** portal and select the **Components** page .
2. Select *Flavorful Fruit Company*, then select **Open** .
3. Select **New** > **Station**. In **Name**, enter *Chamber 1* and select **OK**.
4. Repeat to add a second station called *Chamber 2*.
5. Select the *Chamber 1* station, then select **Open** .
6. By default, the time zone is set to the location of the server, but you must change it to the location of the station to represent the time zone where the data are collected. The *Chamber 1* is in Chicago, so in **Time Zone**, select **America/Chicago**.
7. Save your changes.

Add processes and products to a station

The *Strawberry Fruit Spread* product has 2 stations for the filling process of the strawberry fruit spread.

1. In the **Processes by Product** section of the template, select **Add Process**.
2. Under **Product**, select *Strawberry Fruit Spread*.
3. Under **Process**, select *Filling*.
4. Select **OK**.
5. Save your changes.
6. Repeat the steps to add the *Filling* process to *Chamber 2*.

Add descriptors to the Descriptor Library

Descriptors are categorical variables that identify individual observations or subgroups. For example, your company may collect supplier lot numbers, shift identifiers, and measuring device identifiers. These data are collected to enable traceability of product and improve quality analysis through data reporting, root cause analysis, and predictive analytics analysis.

Once defined, Engineers will be able to associate descriptors with specific product-processes and include them in sampling plans much like how they currently set up continuous process variables. Operators will be able to collect descriptor information using the same manual, gage-assisted, and automatic methods used for collecting continuous process variable data.

Finally, descriptor information will be exportable alongside other process variables for analysis in external applications like Minitab.

Add a new descriptor

The *Flavorful Fruit Company* creates a unique lot number for each batch and tracks the shift that creates the lot. They add a descriptor to identify the lot and the shift.

1. Go to the **Engineering** portal and select the **Descriptors** page .
2. Select **New** .
3. In **Name**, enter *Lot Number*.
   Each name must be unique. You can edit a descriptor name to update all instances of the descriptor in the system. You can also delete a descriptor from the library which make the descriptor unavailable for future data collections. However, information from previous collections remain for tracing and reporting purposes.
4. From **Type**, select **Products**.
5. From **Scope**, select **Product**.
6. Under **Use**, select **Individual Observations**.
7. Under **Collection Method**, select **Enter values**. This allows the operator to enter the lot number during data collection.
   If you want the operator to select a descriptor from a preset list, choose **Select from a list**.

8. Repeat steps 3 to 7 for a second descriptor called *Shift Identifier*. In step 7, select **Select from a list**. Under **Values**, select **Add** and add the following values:
   - Day
   - Evening
   - Night
9. Select **OK** to save your changes.

4. Specify Product, Process, and Station Details

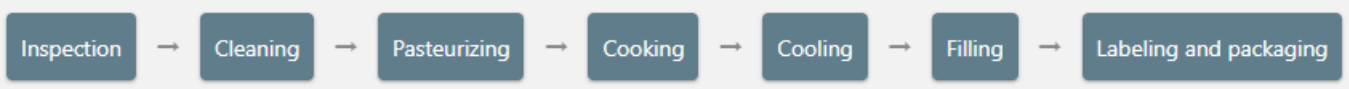
After you have created products, processes, and stations, you can specify process targets, specification limits, data collection plans, and appropriate control charts and their settings.

Define process targets and process limits for each measure

You can specify the target values and specification limits for each measure of a particular process for a particular product.

Note: To add measures to your process template, go to Add a measure to the process on page 7. To add the process to a process flow for a product, go to Add process steps to the product on page 9.

1. Go to the **Engineering** portal and select the **Components** page.
2. Select *Flavorful Fruit Company*, then select **Open**.
3. Select *Strawberry Fruit Spread*, then select **Open**.
4. Select the *Filling* process flow step of your product.



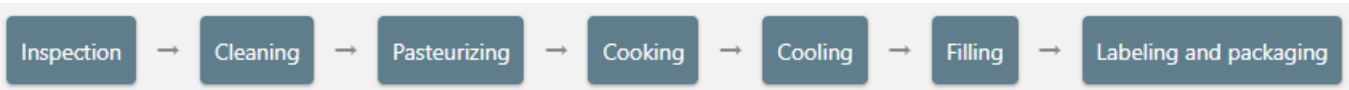
5. Go to the **Process Summary** section to access the target and specification limits.
6. In **Target**, enter *12*. The target indicates the setpoint of the process or product measurement. Often, the target is centered between the control limits (for an in-control process) or specification limits.
7. In **Lower specification limit (LSL)**, enter *11.8*. In **Upper specification limit (USL)**, enter *12.2*. These values indicate the minimum acceptable value or the maximum acceptable value for the product or service. To perform a capability analysis, you must enter a lower specification limit, an upper specification limit, or both.
8. Save your changes.

In addition to specification limits, you can select **Additional Settings** to set reasonable and absolute limits. Reasonable limits indicate values that identify unlikely measurements. Absolute limits indicate values that identify impossible or extremely unlikely measurements. Use both limits to prevent data entry errors.

Specify control chart and capability analyses settings

You can specify the control chart and capability analysis settings for each measure of a particular process for a particular product.

1. Go to the **Engineering** portal and select the **Components** page.
2. Select *Flavorful Fruit Company*, then select **Open**.
3. Select *Strawberry Fruit Spread*, then select **Open**.
4. Select the *Filling* process flow step of your product.



5. Go to the **Process Summary** section. In the *Full Container Weight* row, select **Additional Settings**.
6. Go to the **Control Charts** section. In **Subgroup size**, enter *1*. From **Control Chart**, select **I-MR Chart**. The default options for **Tests** and **Capability Analysis Options** are sufficient.
7. Save your changes.

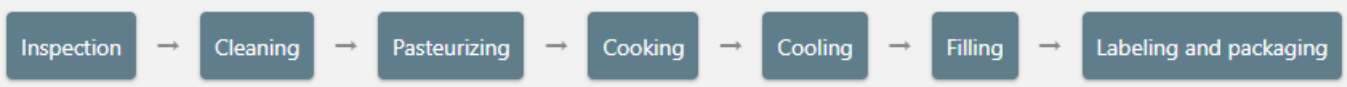
Use an **I-MR Chart** to monitor the mean and variation of your process when you have continuous data that are individual observations not in subgroups. But there are a variety of other control charts if your situation is different. You can also select either a capability analysis with or without a Box-Cox transformation.

For more information on the default settings for control charts and capability analyses, go to Control chart preferences and Capability analysis preferences. For more information on more control chart settings, go to Control chart settings for each measure.

Specify the method for calculating control limits

You can specify the method to calculate control limits and the number of observations for each control chart that has been added to each station.

1. Go to the **Engineering** portal and select the **Components** page .
2. Select *Flavorful Fruit Company*, then select **Open** .
3. Select *Strawberry Fruit Spread*, then select **Open** .
4. Select the *Filling* process flow step of your product.

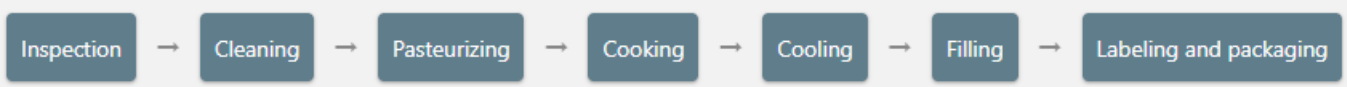


5. In the **Process Summary** section of the template, select **Additional Settings** to access the control chart settings.
6. Save your changes.

Hide control charts on the station dashboard

To focus the scope of the station dashboard, Engineers can hide or display control charts for each measure. For each control chart, use **Display on station dashboard** to display all the charts, only the first chart, or no charts.

1. Go to the **Engineering** portal and select the **Components** page .
2. Select *Flavorful Fruit Company*, then select **Open** .
3. Select *Strawberry Fruit Spread*, then select **Open** .
4. Select the *Filling* process flow step of your product.

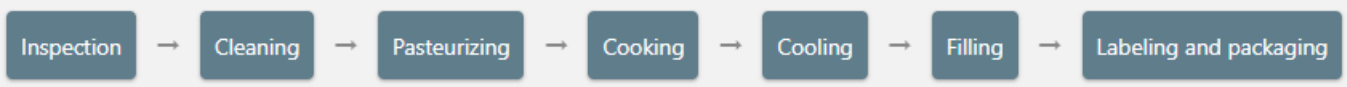


5. In the **Process Summary** section of the template, select **Additional Settings** to access the control chart settings.
6. From **Display on station dashboard**, select which charts to display. For example, the engineer wants to display only the Individuals chart and not the Moving Range chart at the station for the container weights.
7. Save your changes.

Add descriptors to the product and process

You can add categorical descriptor variables, such as lot numbers or other identifiers to a particular process for a particular product.

1. Go to the **Engineering** portal and select the **Components** page.
2. Select *Flavorful Fruit Company*, then select **Open**.
3. Select *Strawberry Fruit Spread*, then select **Open**.
4. Select the *Filling* process flow step of your product.



5. Go to the **Descriptors** section and begin typing *Lot Number* to add the descriptor variable to the process. Repeat for *Shift Identifier*.
6. Save your changes.

Define a new sampling plan

Create a sampling plan to define which measurements to collect and how often to collect them.

Sampling plan requirements

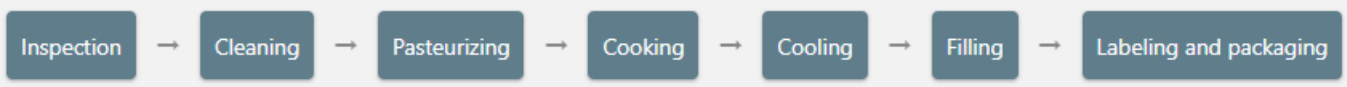
To create a new sampling plan, your process must have at least one measure. You cannot create a new sampling plan with only descriptor variables. After you add measures to a process and add that process to the process flow for a product, you can specify sampling plans for all the measures.

Note: To add measures to your process template, go to Add a measure to the process on page 7. To add the process to a process flow for a product, go to Add process steps to the product on page 9.

Add a new sampling plan

The *Flavorful Fruit Company* adds a new sampling plan for the filling process.

1. Go to the **Engineering** portal and select the **Components** page.
2. Select *Flavorful Fruit Company*, then select **Open**.
3. Select *Strawberry Fruit Spread*, then select **Open**.
4. Select the *Filling* process flow step of your product.



5. Go to the **Data Collection** section and select **Add Sampling Plan**.
6. In **Name**, enter *Jar Weight* then select **OK**.
7. Save your changes.
8. Select **Edit** to open the sampling plan settings.

9. In the **Sampling Plan Settings** section, select **On-demand sampling** to collect data on demand and not according to a schedule.
10. In the **Collection Details** section, select *Full Container Weight*.
    You can add or edit relevant instructions. Subgroup size changes can be made on the control chart settings page.
11. Save your changes.

Set data collection order

For each sampling plan, you can set the data collection order for the descriptors and the measures.

1. From an existing sampling plan, select **Edit** to open the sampling plan settings.
2. In the **Collection Details** section, select **Set Data Collection Order** to rearrange the order of the descriptors and measures.
3. You can arrange the subgroup descriptors within their section. Subgroup descriptors appear first on the data collection form.
4. You can arrange the individual descriptors within their section. Individual descriptors appear after subgroup descriptors on the data collection form.
5. You can arrange the individual measures within their section. Individual measures appear after all descriptors on the data collection form.
6. Save your changes.

Specify data sources for a sampling plan

If you have sampling plans for your process data collections, specify the data collection methods and sources.

1. Go to the **Engineering** portal and select the **Components** page .
2. Select *Flavorful Fruit Company*, then select **Open** .
3. Select *Chamber 1*, then select **Open** .
4. In the **Processes by Product** section of the template, select **Configure** to specify the collection methods for the sampling plans.
5. From **Data Collection**, select **Data Collection Form**. With a data collection form, you can enter data manually into the form, or you can import data from a gage or file using a template. By default, the collection is manual.
   Select **Automatic** when all your data are in a single Minitab Connect data table. Then specify the data table. For more information, go to Automatically enter data observations on page 19.
6. Select **OK**.

5. Collect Data

Now that the *Flavorful Fruit Company* is set up, we can collect and analyze data for our products.

Note: In addition to the following data collection methods, you can also use an API station endpoint to stream observation data for process and output measures directly into station data tables. For more information, go to Station endpoint for data streaming.

Manually enter data observations

Data collection forms for each sampling plan are accessible via the operator dashboard. Before you can collect data, you must have a defined sampling plan with specified measures, collection methods, and data sources.

Add a station to the operator dashboard

Go to the **Operator Dashboard** and select **Manage Stations** at the top of the dashboard. Select *Flavorful Fruit Company* and *Chamber 1*.

Note: The station must be **Online** and **Running** to start a data collection.

Each sampling plan must be defined within the product/process template. For more information, go to Define a new sampling plan on page 14. Specify the data collection methods and data sources at the appropriate station.

Enter data

The sampling plan that you specify creates a data collection form with the appropriate measures, descriptors, defects, defectives, and subgroup sizes for each collection event. For this example, the sampling plan collects the machine number and full container weight for each sample. Complete the following steps to enter the data for 10 data collections.

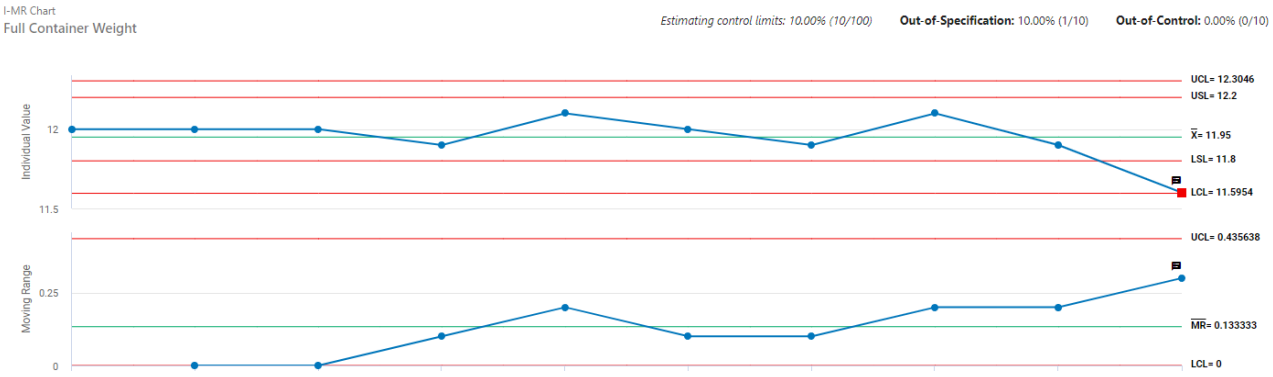
1. Go to the **Operator Dashboard** and at the end of the row for *Chamber 1* select **Go To Dashboard**.
2. Ensure the station is online and from **Status**, select **Running**.
3. For the *Jar Inspection* sampling plan, select **Start**.
4. For the lot number descriptor, enter *Lot 32*. For the shift descriptor, select *Day*. Descriptors are collected first. If you have subgroup descriptors, you enter one value that applies to the entire subgroup. Individual descriptors are collected for each measurement in the subgroup.
5. Enter *12* for the continuous measurement. Select **Next** and then select **Save and exit**.

6. For the remaining observations, continue to use *Lot 32* and *Day* for the descriptors. Then, use the following table to enter 9 more weight observations.

Weight
12
12
11.9
12.1
12
11.9
12.1
11.9
11.6

7. The final measurement is out-of-spec, so you can assign a cause. In **Assignable Causes**, select *Residue buildup*. From **Corrective Action**, select *Clean filling machine*.

The Individuals chart shows that the 10th weight is out of specification. You can select the point on the chart to open the details pane.



Note: For more information on data collection forms, go to Enter data observations in a data collection form.

Edit individual observations

You may need to update individual data observations to fix data entry errors or update assignable causes and corrective actions. Both the **Station Dashboard** and the **Process Quality Snapshot** provide access to the individual observations via the control charts.

The editing of an individual observation follows the same workflow as entering a new observation, and the calculations and flagged points are updated with the new data. When you update an individual observation, the following items are also updated.

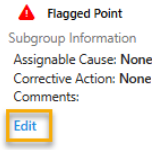
- The plotted points of a control chart are updated, including the updated point and any associated subgroups.
- The tests for special causes of a control chart are rerun.
- The summary and performance statistics are updated.
- If the original data point was flagged and had assignable causes and/or corrective actions, these will remain if the point still exceeds the limits. If the point no longer exceeds the limits, the flag is removed; however, the assignable causes and corrective actions remain.

Note: Control chart points with assignable causes are not used in the control limit calculations.

Complete the following steps to update an observation.

1. Open the control chart that contains the observation that you want to edit. You can access the control charts from the **Station Dashboard** or the **Process Quality Snapshot**.
2. Select the plotted point to edit, then open the details pane.
3. Under **Individual Observations**, select **Edit** to open a dialog to edit the data observation or descriptor value. You can also update the assignable causes and corrective actions and add any additional comments.

4. If you want to edit only the assignable causes, corrective actions, or comments for the entire plotted point, select **Edit** under the **Subgroup Information** heading.



Import data from a file with an existing template

Follow these steps to import continuous data from a file using an existing template. If you do not have an existing template, then follow the steps in the next section to create a new template.

1. Select **Import**.
2. Select **Use an existing template**, then select the template that you want to use. Select **Next** to continue.
3. Select **Choose Files**, then browse to the file (CSV or TXT) that contains your data. Select **Open**.
4. Select whether to enter data down each column or across each row.
   - Select **One sample per file** to import a single observations.
   - Select **Multiple samples per file** to import a single subgroup. If your subgroup size is 1, Real-Time SPC imports only the first row and discards the remaining rows.
5. Select **Next**.

   Select **Previous** to go back to the previous screen, if necessary. Select **Cancel** to cancel this import event.
6. Verify that the measures and the data are correct.
   - Select **Previous** to edit the measure, if necessary.
   - Select **Finish** to import the data.

Import data from a file with a new template

Follow these steps to create a new template and then import descriptors and continuous data.

1. Select **Import**.
2. Select **Create a new template**, then select **Next** to continue.
3. Select **Choose Files**, then browse to the file (CSV or TXT) that contains your data. Select **Open**.
4. Select whether to enter data down each column or across each row.
   - Select **One sample per file** to import a single observations.
   - Select **Multiple samples per file** to import a single subgroup. If your subgroup size is 1, Real-Time SPC imports only the first row and discards the remaining rows.

5. Select **Next**.
6. Select **Edit Variable** to specify which column contains the data for each measure or descriptor. Complete for all descriptors and continuous measures.
7. Select **Next**.
8. Select whether to save this template.
   - Select **Add to templates** to name and save this new template for future use.
   - Select **Import without saving** to import the data without saving the template.
9. Verify that the measures and the data are correct.
   - Select **Previous** to edit the measure, if necessary.
   - Select **Finish** to import the data.

Automatically enter data observations

You can import data from a Minitab Connect table into your data collection sampling plans. Each Minitab Connect table includes data fields and data records. Each column in the table is a data field that has name, type, and format attributes. Each row in the table is a data observation.

Setup for numeric data

To link a data table to a data collection form, your data table must have at least three columns.

1. Data column — must be a numeric column. See the sections below to set up data columns that contain defects and/or defectives.
2. Time column — must be a date/time column. The acceptable date and time format is yyyy-mm-dd hh:mm:ss.
3. Subgroup column — must be a numeric column or a text column.

Note: By default, **Real-Time SPC** uses the first numeric column as the data column, the first date/time column as the time column, and then the next numeric or first text column as the subgroup column unless you specify other columns.

Setup for grouped defect data

When you collect grouped defect data, the Minitab Connect data table must have the following columns.

1. Time column — must be a date/time column. The acceptable date and time format is yyyy-mm-dd hh:mm:ss.
2. Subgroup column — must be a numeric column or a text column.
3. Data columns
   a. Defects — must be a text column.
   b. Defect tally — must be a numeric column.
   c. Unit ID — must be a numeric or text column.

Setup for separate defectives data

When you collect defectives data, the Minitab Connect data table must have the following columns.

1. Time column — must be a date/time column. The acceptable date and time format is yyyy-mm-dd hh:mm:ss.
2. Subgroup column — must be a numeric column or a text column.
3. Pass/fail column — must be a text column and contain the values of "Pass" and "Fail" (case insensitive).

Setup for grouped defectives data

When you collect grouped defectives data, the Minitab Connect data table must have the following columns.

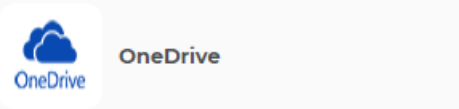
1. Time column — must be a date/time column. The acceptable date and time format is yyyy-mm-dd hh:mm:ss.
2. Subgroup column — must be a numeric column or a text column.
3. Data columns
   a. Defective type — must be a text column.
   b. Pass/fail column — must be a text column and contain the values of "Pass" and "Fail" (case insensitive).

Create a new table from a connection to Microsoft OneDrive®

There are several ways to create a data table. You can manually enter data, import a file, mahup two existing tables, and create a connection to a third party application. The following steps walk through how to set up a connection to Microsoft OneDrive®. For more information on specific Minitab Connect connectors, go to Connections.

For more information on ways to create a data table, go to Common tasks using the Base Tool.

1. From the **Home** screen, select the **Minitab Connect** button to open the **Navigation** pane. Under **Tables**, select **Add New Table**.
   Or, from the **Home** screen, select the **Add** button under **Tables**.
2. Add a **Name** for the table and select a **Folder** description.
3. In the list of galleries that begins with **Tables** and **Analytics and Optimization**, scroll to the **Documents, Collaboration, File Sharing & Email** gallery and select **OneDrive**.



4. Under **Connection**, choose **New Connection**.
5. Enter a **Name**.
6. Select **Authorize Microsoft Account** and enter the credentials for your account. Then select **Save**.
7. From **Update Frequency**, choose **Daily**.
8. Under **Drive**, select the OneDrive connection that you just authorized. Select **Next**.
9. Under **Files**, select the folder you saved the file in. Select **Next**. If your file is nested in multiple folders, you will have to do this step for each folder.
10. Select the file, then select **Next**.
11. Select **Save**. If you go to the **Prep Tool** and select **Run**, Minitab Connect displays the table from the file. Every day Connect will update the data table based on the file in the OneDrive® folder.

Link a sampling plan to a Connect data table

To link a Connect data table to a sampling plan, you must have a data table that contains data from at least one measure, date/time information, and subgroup information, if applicable.

1. Open the station setup page for the product and process you want to configure.
2. Under the **Processes by Product** section, select **Configure**.

3. In **Data Collection**, select **Automatic**.
4. Select **Set Data Source**.
5. In **Source**, browse to the appropriate folder and table. You can select the table or a particular data view within the table.
6. Link the date/time column and the subgroup identifier column.
   a. In **Time column**, select a date/time column that contains the time stamp. The acceptable date and time format is yyyy-mm-dd hh:mm:ss.

   Note: If timestamps are different within the same subgroup, **Real-Time SPC** uses the first valid timestamp for the entire subgroup.

   b. In **Subgroup ID**, select a numeric or text column.
   c. Select **OK**.
7. Link each measure and descriptor with a data column. Each field must use a unique table column.
8. Select **OK**.

If you need to change the data table or data view, date column, or subgroup column, select **Set Data Source**.

View data for each measure

The Data View is a spreadsheet view of data for each measure, organized by station, product, and process.

Data view tables are accessible from the station dashboard in the **Data** tab. Each row of data contains information on each observation and each subgroup. Key columns are sortable in ascending or descending order. Red rows indicate data that are out-of-specification.

You can edit information for individual observations or the entire subgroup.

Individual observations

Select the row and then select **Edit Observation**.
For individual observations, you can edit the data value, assignable causes, corrective actions, comments, and individual descriptors.

Subgroups

Select the row and then select **Edit Subgroup**.
For subgroups, you can edit assignable causes, corrective actions, comments, and subgroup descriptors.

You can also edit the data from the control chart view. For more information, go to Edit individual observations on page 17.

Continuous data measures

Each data view displays the data for process and output measures. Each row displays the timestamp, subgroup id, operator, observation, as well as other descriptive information.

Length

Edit Subgroup Edit Observation

Timestamp	Subgroup ID	Operator	Observation	LSL	USL	OOS
04/23/2025 10:02:20 am	3b8625198d2b...		15.3260848507	13	17	No
04/23/2025 10:02:20 am	3b8625198d2b...		12.9486885771	13	17	Yes
04/23/2025 10:02:20 am	3b8625198d2b...		15.9445058381	13	17	No
04/23/2025 10:02:20 am	3b8625198d2b...		13.9432042861	13	17	No
04/23/2025 09:31:20 am	a9461025b6aa1...		15.6108883666	13	17	No
04/23/2025 09:31:20 am	a9461025b6aa1...		14.6536978134	13	17	No
04/23/2025 09:31:20 am	a9461025b6aa1...		15.4747018927	13	17	No

In this example, the data table displays the data for a process measure. The highlighted row indicates the observation is out-of-specification.

Defects

Each data view displays the data for one severity level. Each row displays the timestamp, subgroup id, unit id, operator, the count of defects of each defect type, as well as other descriptive information.

Minor

Edit Subgroup Edit Observation

Timestamp	Subgroup ID	Unit ID	Operator	Count	Defect Type	USL
04/23/2025 01:56:07 pm	aa04168ee2cb2...	6bf1c85ab5a2a...		0	Scratches	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	6bf1c85ab5a2a...		0	Stains	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	ee646f859899e...		0	Burns	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	ee646f859899e...		0	Rings	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	ee646f859899e...		1	Scratches	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	ee646f859899e...		1	Stains	25
04/23/2025 01:56:07 pm	aa04168ee2cb2...	7675bde5ae1d...		0	Burns	25

In this example, the data table displays the data for the Minor severity level. The highlighted rows are the same unit and are evaluated for Burns, Rings, Scratches, and Stains. This sampled item has 2 defects: 1 Scratch and 1 Stain, and no Burns and Rings.

Note: USL is defined as defects per unit for a U Chart and defect counts for a C Chart.

Defectives

Each data view displays the data for grouped defectives. Each row displays the timestamp, subgroup id, operator, the event, pass or fail, the number and cause of defective types.

Defective

Edit Subgroup Edit Observation

Timestamp	Subgroup ID	Operator	Event	Defective Types	USL
04/16/2025 06:56:03 pm	d14e789f8a773...		Pass	--	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Pass	--	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Pass	--	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Fail (1)	Termites	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Pass	--	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Pass	--	25
04/16/2025 06:56:03 pm	d14e789f8a773...		Fail (2)	Beetles, Termites	25

In this example, the data table displays the data for the grouped defectives. The highlighted rows indicate the number and type of defectives. The first highlighted item has one type of defective, Termites. The second highlighted item has two types of defectives, Beetles and Termites.

Note: USL is defined as proportion defective for a P Chart and defective counts for an NP Chart.

Export data to MWX and CSV files

Export data to a Minitab worksheet (MWX) or a CSV file from the **Process Quality Snapshot** or **Station Dashboard**.

The filename is defined by the *Product Name_Process Name*. The file contains the following columns.

- Date/time of the data collection
- Subgroup ID
- Columns for continuous and attribute process data
- Columns for hierarchical group identification
- Product ID
- Process ID
- Station ID
- Operator ID

1. Open the **Process Quality Snapshot** or **Station Dashboard**.
2. Select the time frame, products, processes, and stations.
3. Select to download an MWX.
   If you would like to download a CSV, then select .

The data file is added to your Downloads folder.

6. Reports and Dashboards

Real-Time SPC has several reports and dashboards to monitor your processes and communicate process performance. Your access to various reports and dashboards depends on your role in the organization.

Current Performance Summary

Provides a performance summary for all the measures from the stations that you specify. At a glance, you can see which stations are running and the percentages that are out-of-specification, out-of-action, and out-of-control. For more information, go to Current Performance Summary.

Process Quality Snapshot

Provides the process control details associated with a measure. Includes control charts, capability analyses, and Pareto charts. You can also specify historical parameters to set control limits for the control charts. For more information, go to Process Quality Snapshot.

Supervisor Dashboard

Provides a performance summary for all the measures from the stations that you supervise. At a glance, you can see which stations are running and the percentages that are out-of-specification, out-of-action, and out-of-control. For more information, go to Supervisor dashboard.

Operator Dashboard

Provides a list of the data sampling plans by station. From this dashboard, an operator can start a data collection. For more information, go to Operator dashboard.

Station Dashboard

Provides the station status and the upcoming data sampling schedule, as well as the ability to start or skip a data collection. Also displays the control charts, data tables, and Pareto charts for a selected station. For more information, go to Station dashboard.

Index

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Minitab helps companies and institutions to spot trends, solve problems and discover valuable insights in data by delivering a comprehensive and best-in-class suite of data analysis and process improvement tools. Combined with unparalleled ease-of-use, Minitab makes it simpler than ever to get deep insights from data. Plus, a team of highly trained data analytic experts ensure that users get the most out of their analysis, enabling them to make better, faster and more accurate decisions.

For nearly 50 years, Minitab has helped organizations drive cost containment, enhance quality, boost customer satisfaction and increase effectiveness. Thousands of businesses and institutions worldwide use our products to uncover flaws in their processes and improve them. Unlock the value of your data with Minitab.

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