

TSI[®] Incorporated

TSI Link[™] Data Analyzer



Setup Guide (US)

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Overview

The TSI Link[™] Data Analyzer add-in provides an easy way to import acquired data from your TSI Link[™] devices into Microsoft[®] Excel[®] spreadsheet software. It provides a suite of reports to help you gain important insight from your data.

Keep in mind that many other data analysis software packages can import Excel[®] spreadsheets. You can use TSI Link[™] Data Analyzer to extract acquired data into Excel[®] software and then export into these packages.

Installing Excel® Software Add-In

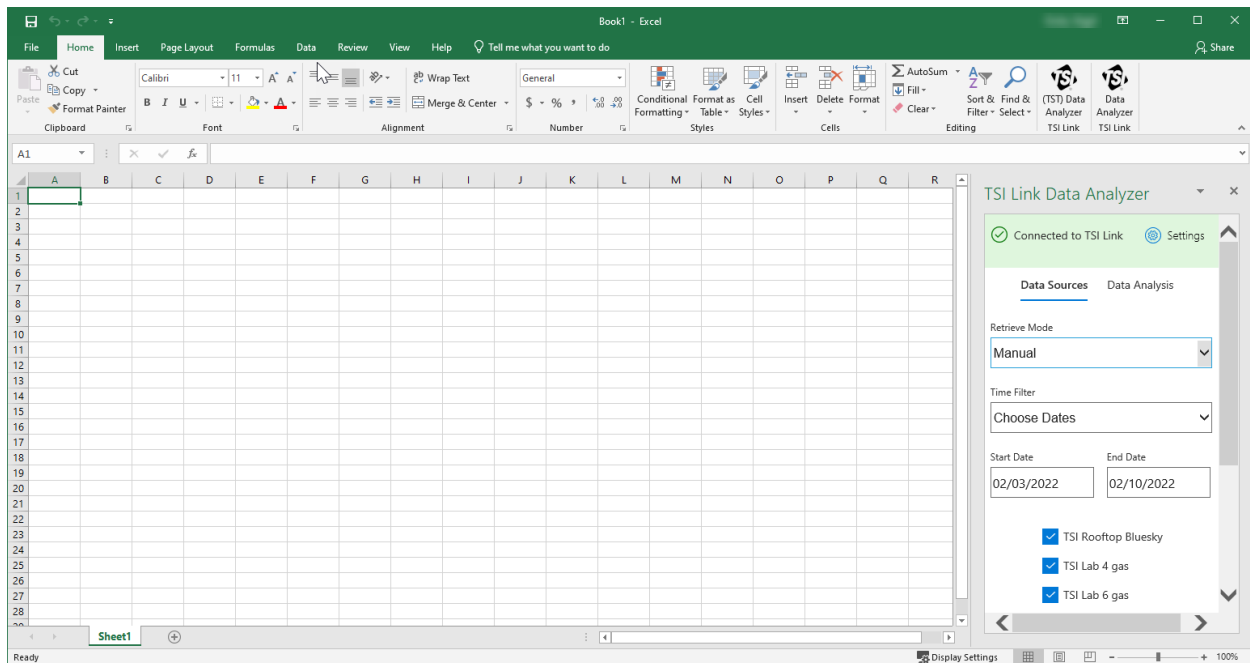
You will need Microsoft® Excel® software running on your computer in any of these configurations:

- Windows® operating system – Excel® 2019 software or newer desktop
- Macintosh® – Excel® 2018 software or newer desktop
- Microsoft® 365 operating system

With the correct version of Excel® software available, you will then need to install the TSI Link™ Data Analyzer from the Microsoft® App store.

1. Open Excel® software and click the **Insert** tab.
2. Click the **Get Add-ins** icon.
3. A dialog box appears. Click the **Store** tab.
4. Enter “TSI Link” into the search box. Locate the *TSI Link Data Analyzer* add-in and click **Add**.

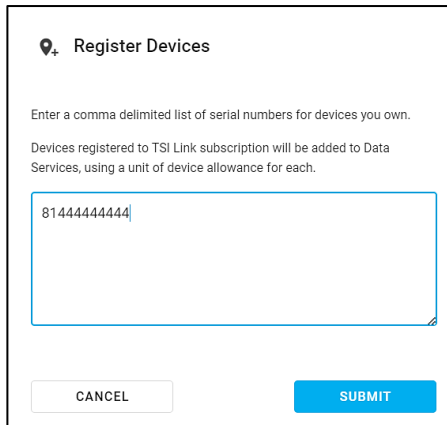
Once the add-in is installed, a **TSI Link Data Analyzer** icon will appear in the Home tab of Excel® software. Click the icon to open the add-in.



Connecting to TSI Link™ Data Analyzer

In order to use the TSI Link™ Data Analyzer, you will need a TSI Link™ account with a API data services paid software subscription ([click here](#)).

1. Login into [TSILINK.com](https://tsilink.com) and go to the <https://tsilink.com/api-services> menu.
2. Go to the API menu and click on  REGISTER DEVICES. Register your devices by entering serial number of your device/s separated by a comma if you have more than one device.



Register Devices

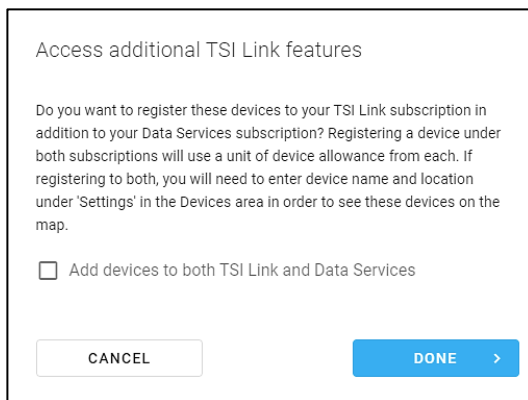
Enter a comma delimited list of serial numbers for devices you own.

Devices registered to TSI Link subscription will be added to Data Services, using a unit of device allowance for each.

8144444444

CANCEL **SUBMIT**

3. Click **DONE** at the next menu. If you also have TSI Link™ Monitoring software subscription you can check the box to register the device for both subscriptions.



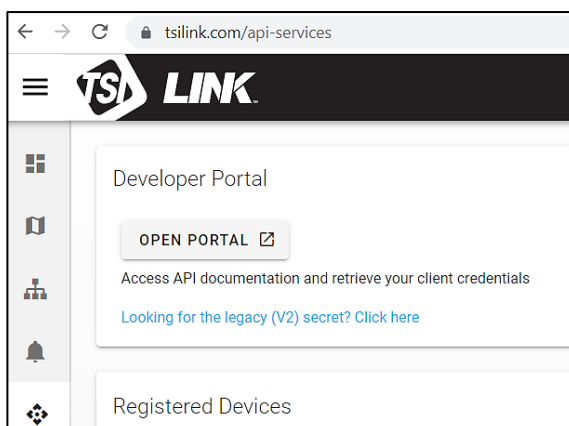
Access additional TSI Link features

Do you want to register these devices to your TSI Link subscription in addition to your Data Services subscription? Registering a device under both subscriptions will use a unit of device allowance from each. If registering to both, you will need to enter device name and location under 'Settings' in the Devices area in order to see these devices on the map.

☐ Add devices to both TSI Link and Data Services

CANCEL **DONE** >

4. Click on the **OPEN PORTAL** button.



tsilink.com/api-services

Developer Portal

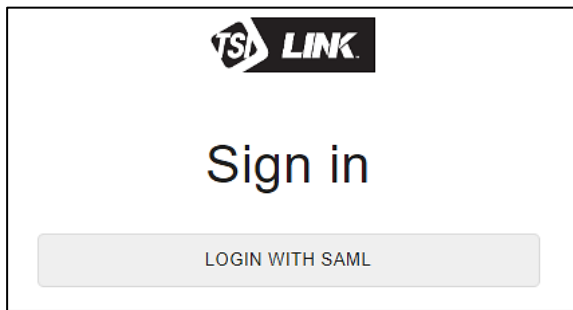
OPEN PORTAL 

Access API documentation and retrieve your client credentials

[Looking for the legacy \(V2\) secret? Click here](#)

Registered Devices

5. Click **Sign In** on top right of window and sign in using your TSI Link™ login.



6. Then click on **My Apps** and then **+ NEW APP**.
7. Enter your App Name, Description. Click **Request** and then **SAVE**. Once the **STATUS** shows Enabled/Active (within 24 hours) you will be able to view/copy your **API Key** and **Secret**.

A screenshot of the "New App" form. The "Overview" section has fields for "App Name*" (containing "API V3 Onboarding App") and "Description" (containing "Onboarding"). The "APis *" section has a note: "Indicates approval is required before access to the API is granted." Below this is a table with columns: Name, Description, Status, and Actions. The table contains one entry: "TSI Air Quality" with a description "The TSI Air Quality API provides third-party access to the TSI Link device ecosystem, including all associated devices and telemetry data.", a status of "--", and an "Actions" column with a "Request" button.

NOTICE

You can continue to use API V2 until end of November 2023. After November 2023 you will need to start using API V3. You can download API V2 credential by clicking.

[Looking for the legacy \(V2\) secret? Click here](#)

Then open the downloaded file to copy the "id" and "secret". You will use this later to login into TSI Link™ Data Analyzer.

- Go back to Microsoft® TSI Link™ Data Analyzer and click the **Settings** icon at the top of the add-in.

TSI Link Data Analyzer

TSI LINK

Copy this information from your [TSI Link Data Services page](#).

Client ID

Client Secret

☐ Use Fahrenheit Temperature Scale

Cancel Sign Out

Don't have an account? [Sign Up](#)

Release 1.0.8 [User Manual](#)

- Enter “API KEY” in the **Client ID** field and “API Secret” for the **Client Secret** field from the API application you created in the developer portal. Click **Save**.
- If successful, the top banner of the add-in will return with the message **Connected to TSI Link**. If the banner remains gray, TSI Link™ Data Analyzer did not recognize the account information that had been entered.

User Preferences

The Settings window also contains a user preference setting.

If **Use Fahrenheit Temperature Scale** is checked, all temperature readings will be converted to Fahrenheit in the report.

Manual Data Retrieval

Most of the reporting tools available in TSI Link™ Data Analyzer require you to first specify a time period to analyze.

1. Click the **Data Sources Tab** and ensure that **Retrieve Mode** is set to *Manual*.
2. Set the **Time Filter** to the desired time window, such as *Last 8 Hours*. Or to specify a date window, select *Choose Dates* and enter the desired **Start Date** and **End Date**.
3. All of the devices associated with your TSI Link™ account will be displayed. If you do not want a particular device's data to appear in the report, simply uncheck it.
4. Click **Retrieve Data**.

TSI Link™ Data Analyzer will begin downloading the requested data from the TSI Link™ server. Download status is displayed at the top of the add-in. Large data sets may take a while to download.

When data retrieval has completed, the **Data Analysis** tab will be displayed. The [Data Analysis](#) section discusses the available analysis tools.

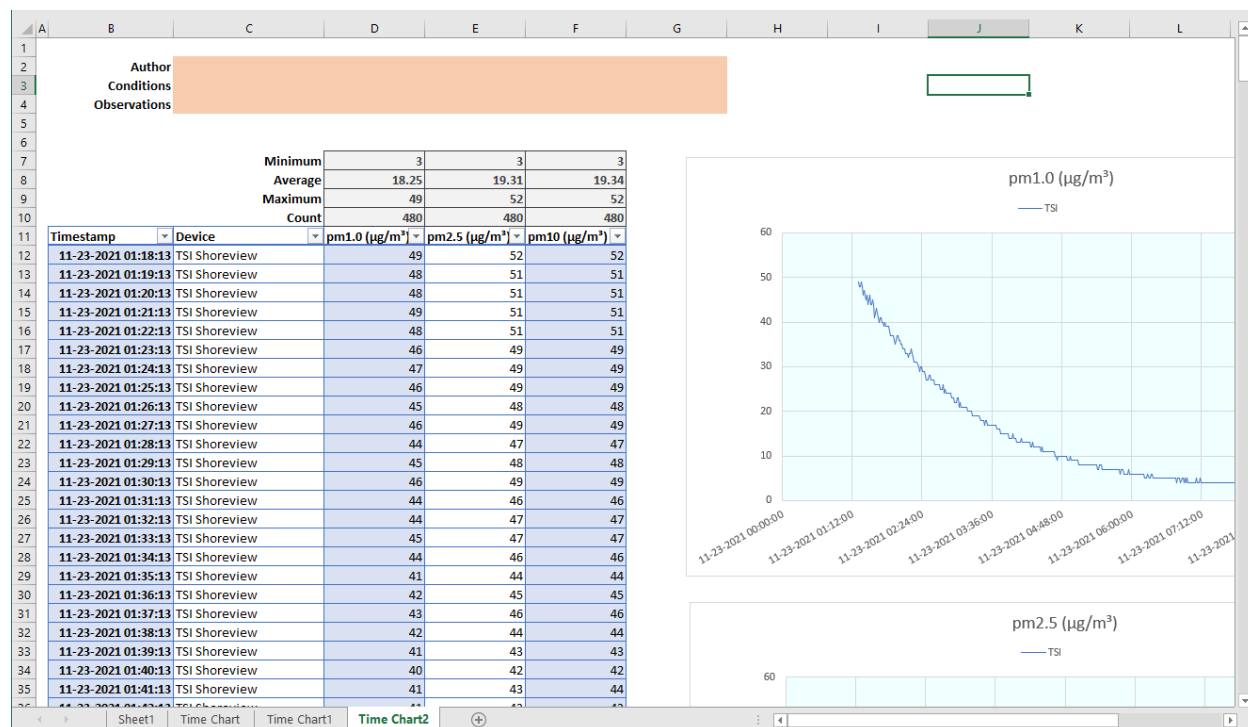
The screenshot shows the TSI Link Data Analyzer application window. At the top, it says "Connected to TSI Link" with a green checkmark and a "Settings" button. Below this is a tabbed interface with "Data Sources" selected and "Data Analysis" as an option. Under "Data Sources", the "Retrieve Mode" is set to "Manual" in a dropdown menu. The "Time Filter" is set to "Choose Dates" in another dropdown menu. Below these, there are two input fields for "Start Date" (11/25/2021) and "End Date" (12/02/2021). At the bottom, there is a list of devices with checkboxes, all of which are checked: "TSI Rooftop", "TSI Lab 4 gas", "TSI Lab 6 gas", "CETA Show/RENNO Nevada", and "TSI Lab AA 2 Gas".

Data Analysis

Once data has been retrieved from TSI Link™ Data Analyzer, you can create a variety of customizable reports.

Time Chart Report

A **Time Chart Report** produces a basic data table of any measurements that you select. The data sample's timestamp and device name are the left-most columns in the table. Selected measurements are shown in subsequent columns.



Customization Option	Description
Add Statistics Table	Basics statistics (minimum, maximum, average) for each selected measurement are displayed above each measurement.
Add Report Header	Several free text fields appear at the top of the report. These are convenient to describe the conditions for the selected data.
Chart Options	If selected, a time chart is displayed for each measurement. Markers can be added to each point if desired. The charts can be moved or resized as desired.

Once the configuration options are selected, click **Create Report** to add a new worksheet hosting the report data.

TIP

To create a data file to export TSI® Link data into another analysis tool, create a Time Chart report with none of the customization options selected. Then use the Excel Export feature in the **File** tab to create a CSV file.

Time Comparison Report

A **Time Comparison Report** is similar to a basic Time Chart Report, but it allows you to overlay data from two separate periods of time onto the same chart.

This report is very useful for cause/effect analysis. For example, you may want to see what effect adding a standalone air purifier has on the PM levels in a room. With this report you can easily compare PM2.5 levels before and after the purifier was added. Another example could be comparing indoor air quality against some external event (wildfire, rush hour traffic, etc.).

Three controls appear when this report option is selected:

First Device	Specifies the reference device.
First Period	Specifies the starting date and time of your baseline data, typically <i>before</i> some action/event occurred.
Second Device	Specifies the device to be compared to the reference device.
Second Period	Specifies the starting date and time of your data that you want to compare against, typically <i>after</i> the action/event occurred.
Duration	Sets the amount of time to do the comparison, in minutes, hours, or days.

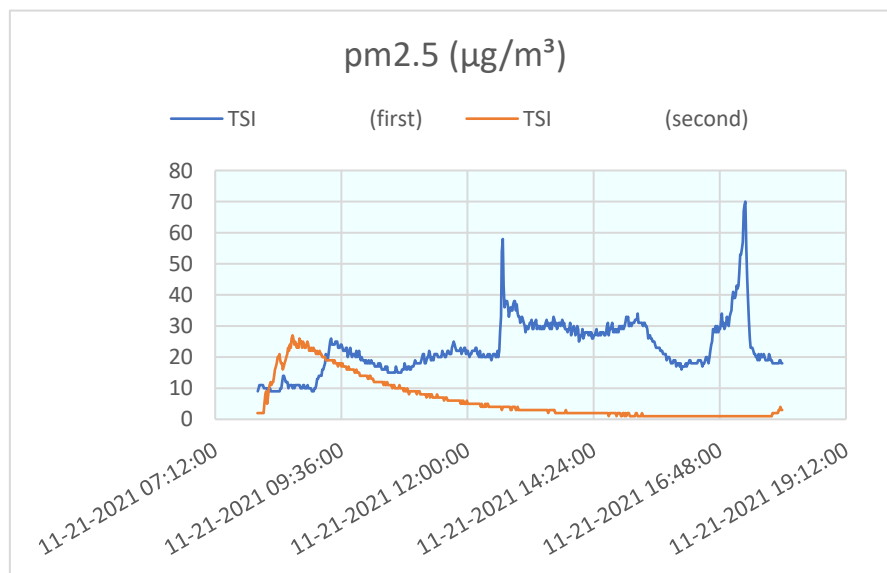
You can only select date/times that fall within the window of data that you have retrieved.

Select the desired measurements and configuration options, then click **Create Report**.

The report structure and configuration options are very similar to the Time Chart Report described above. A “first” and “second” suffix are appended to each device in the table. *The timestamps of the second period are deliberately altered to match the first period so they can be overlaid.*

The screenshot shows the 'TSI Link Data Analyzer' window. At the top, it says 'Connected to TSI Link' with a green checkmark and a 'Settings' icon. Below this are two tabs: 'Data Sources' and 'Data Analysis' (which is selected). Under 'Data Analysis', there are several configuration options:

- Report:** A dropdown menu set to 'Time Comparison'.
- First Device:** A dropdown menu set to 'TSI Rooftop Bluesky'.
- First Period:** A date/time selector set to '02/03/2022' at '08:00'. Below this is a duration selector set to '10' 'Hours'.
- Second Device:** A dropdown menu set to 'TSI Rooftop Bluesky'.
- Second Period:** A date/time selector set to '02/04/2022' at '08:00'. Below this is a duration selector set to '10' 'Hours'.
- Measurements to Show:** A section with checkboxes for 'pm1.0 (ug/m³)' (unchecked) and 'Temperature (°C)' (checked).



Device Comparison: Particle Count Report

A **Device Comparison: Particle Count Report** is similar to a Time Comparison Report, but it allows you to overlay particle count data from two separate devices onto the same chart.

This report is very useful for filtration analysis. For example, you may want to compare an outside reference device to an indoor device to investigate filtration efficiency. With this report you can easily compare:

1. Count of particles below 0.5 μm . Includes soot, smoke, viruses, small bacteria, and atmospheric dust.
2. Count of particles between 0.5 and 1.0 μm . Includes bacteria, many types of dust, and smoke.
3. Count of particles between 1.0 and 2.5 μm . Includes pollen, bacteria, and many types of dust.
4. Count of particles between 2.5 and 4.0 μm . Includes pollen, bacteria, and many types of dust.
5. Count of particles between 4.0 and 10 μm . Includes pollen, bacteria, and many types of dust. These particles are most likely to deposit in the upper area of the lung.

You are allowed to select two or more devices when this report option is selected:

Reference Device	The baseline/control device used to compare a second device against.
Second Device	The device used to investigate the area of interest.

The report will use the same date/times you specified when the data was fetched using the **Data Sources** tab.

Check if you would like a Report Header and choose your desired Chart View option then click **Create Report**.

The report structure and configuration options are very similar to the Time Chart Report described above. Comparison tables and graphs are displayed for each selected device.

Connected to TSI Link

Setting

Data Sources

Data Analysis

Report

Device Comparison: Particle Count

Reference Device

TSI Rooftop Bluesky

Second Device

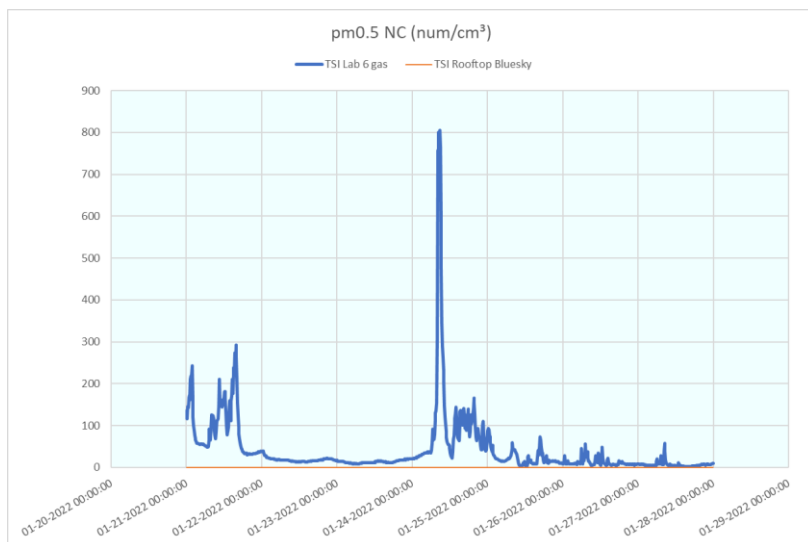
TSI Lab 4 gas

☒ Report Header

Chart View

Add Line Chart without Markers

Create Report



Device Comparison: Selectable Report

A **Device Comparison: Selectable Report** is similar to a Device Comparison: Particle Count Report, but it allows you to overlay any of the Measurements you selected under the **Data Analysis** tab using two separate devices onto the same chart.

This report is very useful for determining if the fresh air intake is correct per ASHRAE®. For example, you may want to compare the CO₂ levels of a supply and return duct to optimize fan speed.

You are allowed to select two or more devices when this report option is selected:

Reference Device	The baseline/control device used to compare a second device against.
Second Device	The device used to investigate the area of interest.

The report will use the same date/times you specified when the data was fetched using the **Data Sources** tab.

Check if you would like a Report header and chose your desired Chart View option, click **Create Report**.

Connected to TSI Link

Settings

Data Sources

Data Analysis

Report

Device Comparison: Selectable

Reference Device

TSI Rooftop Bluesky

Second Device

TSI Lab 4 gas

Measurements to Show

☐ pm1.0 (µg/m³)

☐ pm2.5 (µg/m³)

☒ pm2.5 aqi (aqi)

☐ pm4.0 (µg/m³)

☐ pm10 (µg/m³)

☐ pm10 aqi (aqi)

☐ pm0.5 NC (num/cm³)

☐ pm1.0 NC (num/cm³)

☐ pm2.5 NC (num/cm³)

☒ Temperature (°C)

☒ Relative Humidity (%)

☒ co2 (ppm)

☐ pressure (inHg)

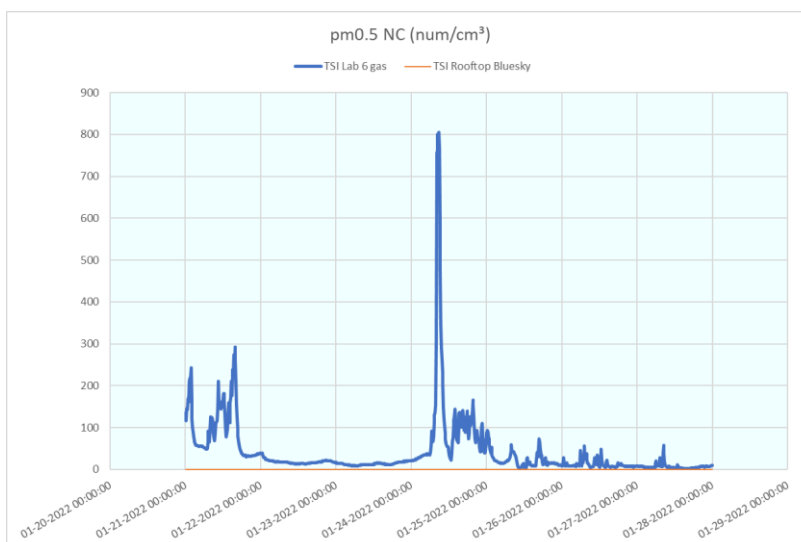
☐ co (ppm)

☐ so2 (ppb)

☐ o3 (ppb)

☐ no2 (ppb)

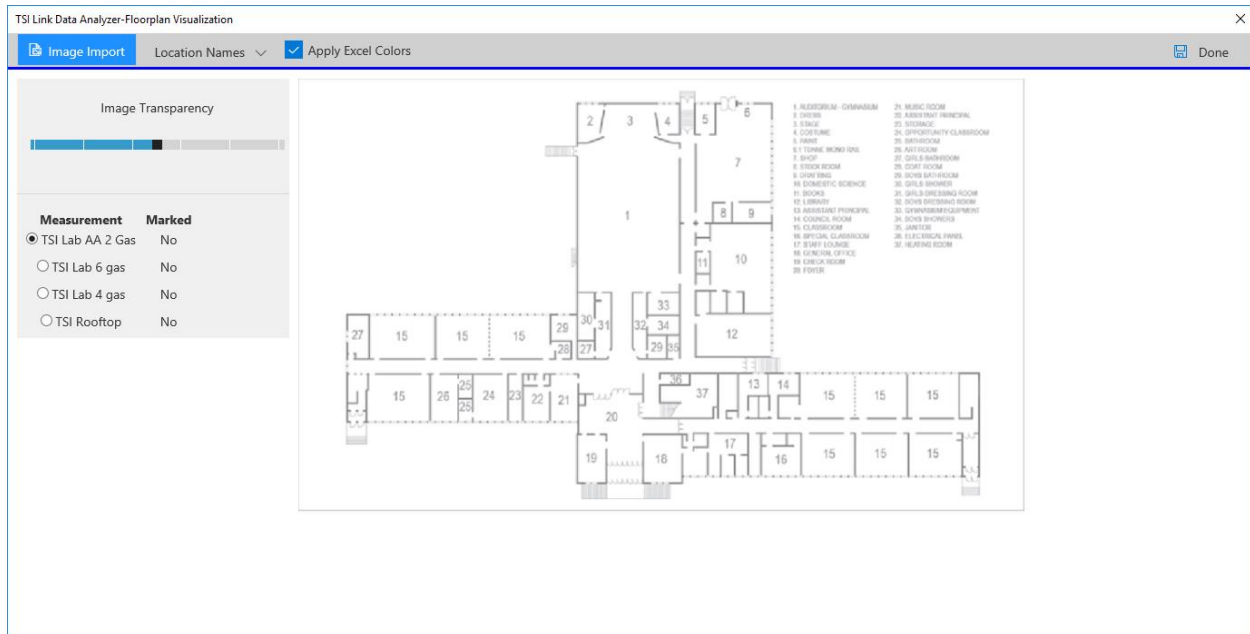
The report structure and configuration options are very similar to the Time Chart Report described above. Comparison tables and graphs are displayed for each selected device.



Floorplan: Statistics Report

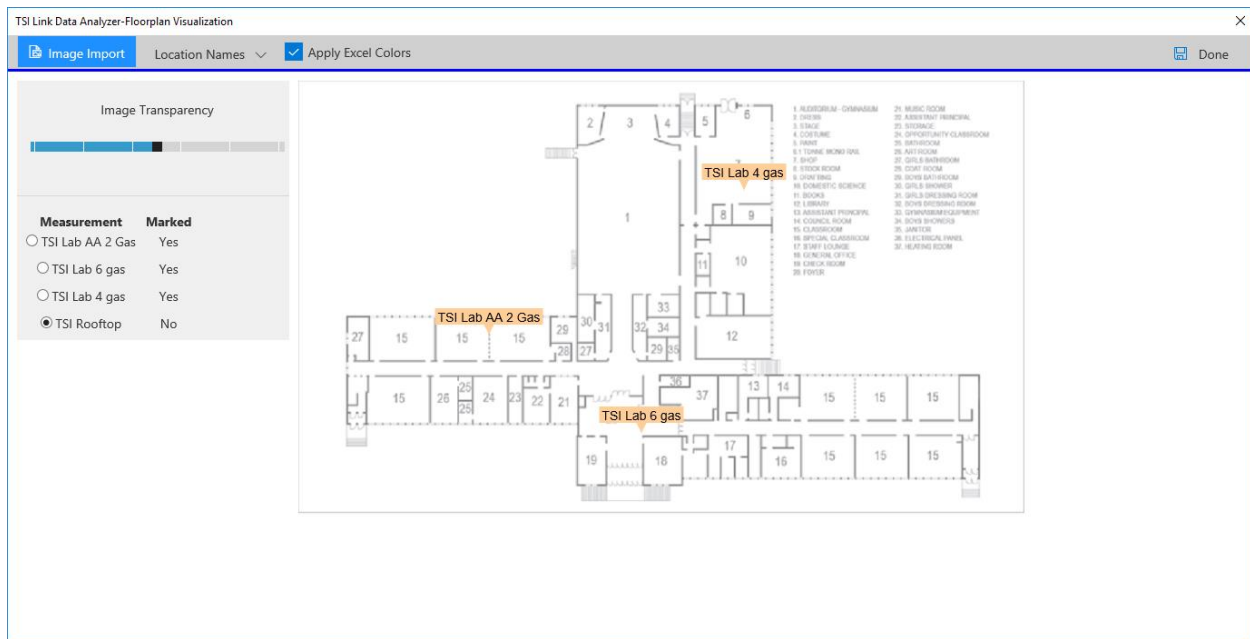
The **Floorplan: Statistics Report** provides a convenient way to visualize your acquired data in a spatial context. While floorplans are the most commonly used visualization, you can use any image including photos and maps.

1. Make sure the **Data Analysis** tab is selected in the TSI Link™ Data Analyzer.
2. Select *Floorplan: Statistics* in the **Report** drop-down list.
3. Select the measurements of interest and click **Create Report**.
4. A new dialog will appear on top of the Excel® application. Click **Image Import**.
5. A file selector will appear. Navigate to your floorplan image and click **Open**. The floorplan will be rendered as shown below.

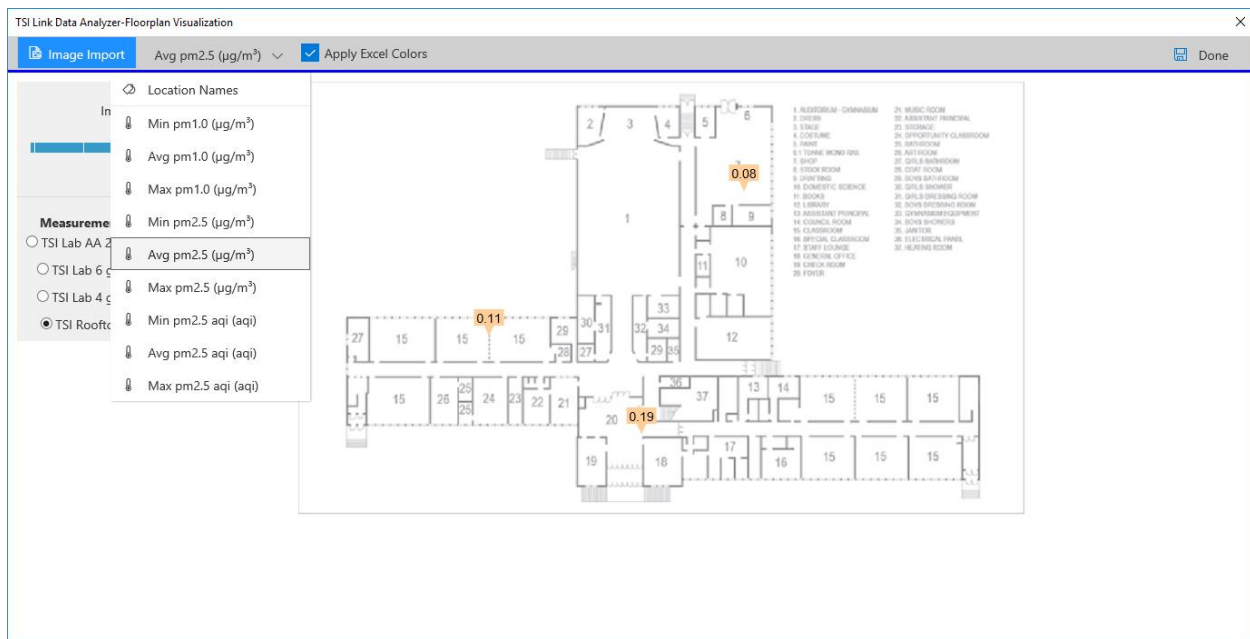


The slide bar allows you to control the **Image Transparency** as desired so that the annotations are legible against the floorplan background.

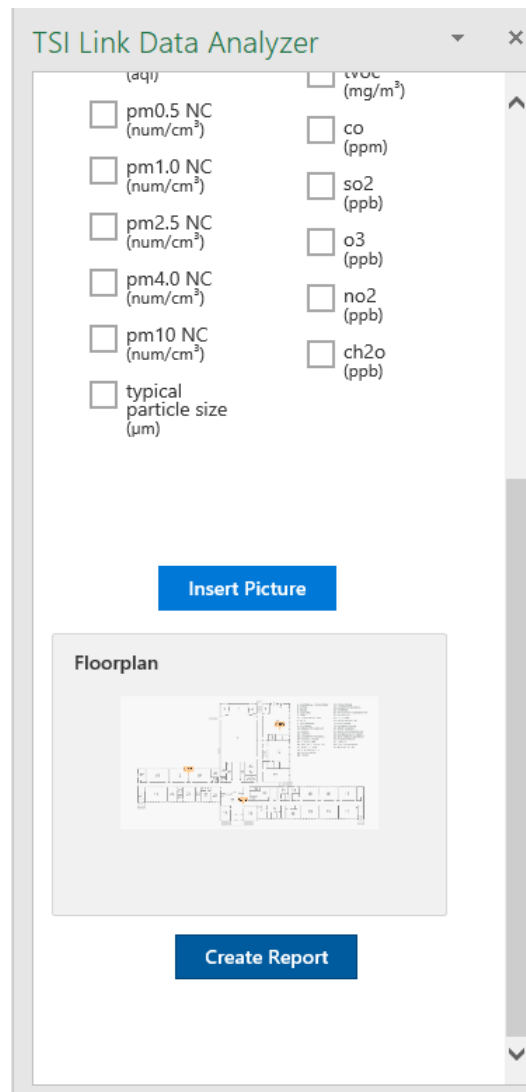
You will next need to manually mark the locations of each device on the uploaded floorplan. The devices are listed on the left side of the dialog. Simply click the location of the highlighted device on the image. If you want to reposition any device you have already marked, click the device in the list and click the new location on the floorplan. As each device is marked, the device name appears as displayed at the selected location.



You can now display any available measurement by clicking **Location Names** and selecting the desired parameter. The minimum, maximum, and average values over the selected time range are all available. These parameters are also stored in table form in the Excel® worksheet.



1. Click **Done** to close the dialog box and make it available for Excel® software to use. The image will be displayed as a thumbnail in the Data Analyzer add-in.
2. To add the image to your report, click on the cell that you want to place the image. Then click **Insert Picture**. The picture can be moved or resized as desired.
3. To show additional measurements in the report, click the thumbnail image and repeat the process. You will have to upload the floorplan image again, but the measurement locations have all been saved.



You may want to add background colors to your floorplan measurements to highlight an area of concern. To do this, add a background color to whichever cells you want to highlight in the Excel® table. The example below shows that Max PM1.0 is a concern for the device TSI Shoreview. A yellow highlight was added.

Book1 [Read-Only] - Excel						
File	Home	Insert	Draw	Page Layout	Formulas	Data
Clipboard Font Alignment Number Styles Cells						
G6 125						
Device	Min pm1.0 (µg/m³)	Avg pm1.0 (µg/m³)	Max pm1.0 (µg/m³)	Min pm2.5 (µg/m³)	Avg pm2.5 (µg/m³)	Max pm
TSI Shoreview	1	21.93	125	1	23.27	

When that measurement is selected on the floorplan, the yellow highlight will also appear.

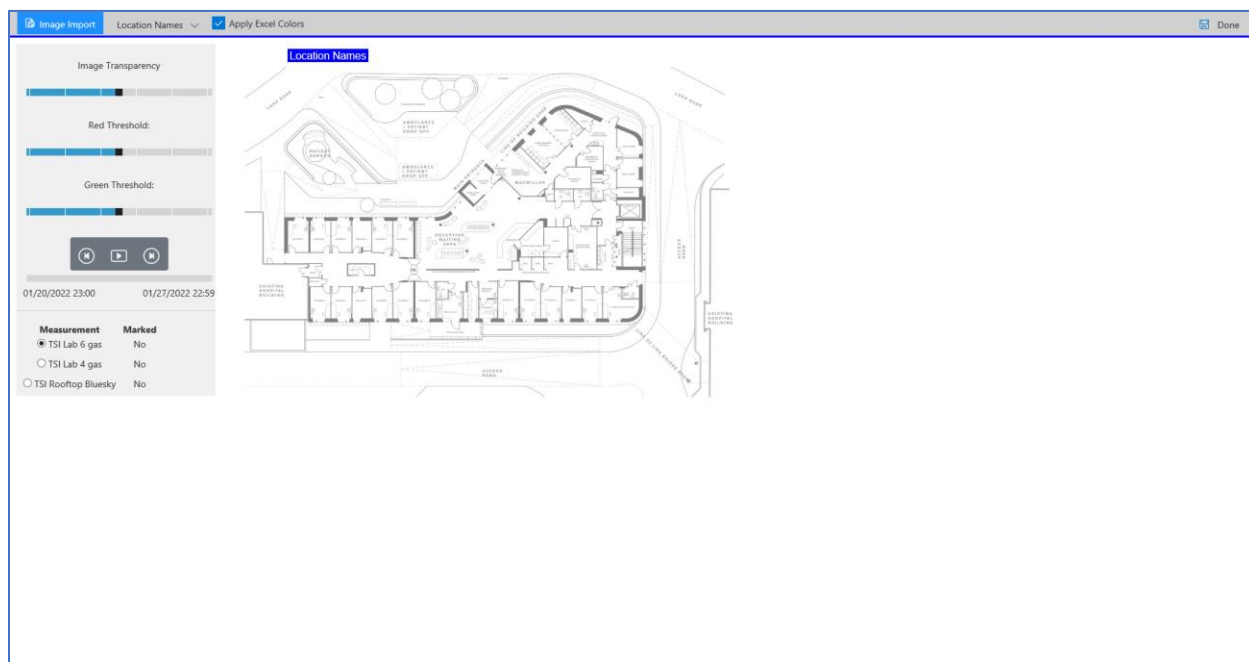
TIP

Common image formats like .gif, .jpg and .png are able to be imported. PDF images are not able to be directly imported. There are many online PDF to image converters available, such as <https://pdf2png.com/>.

Floorplan: Playback Report

The **Floorplan: Playback Report** provides a convenient way to visualize your acquired data in a both a time and spatial context. While floorplans are the most commonly used visualization, you can use any image including photos and maps.

1. Make sure the **Data Analysis** tab is selected in the TSI® Link Data Analyzer.
2. Select *Floorplan: Playback* in the **Report** drop-down list.
3. Select the measurements of interest and click **Create Report**.
4. A new dialog will appear on top of the Excel® application. Click **Image Import**.
5. A file selector will appear. Navigate to your floorplan image and click **Open**. The floorplan will be rendered as shown below.

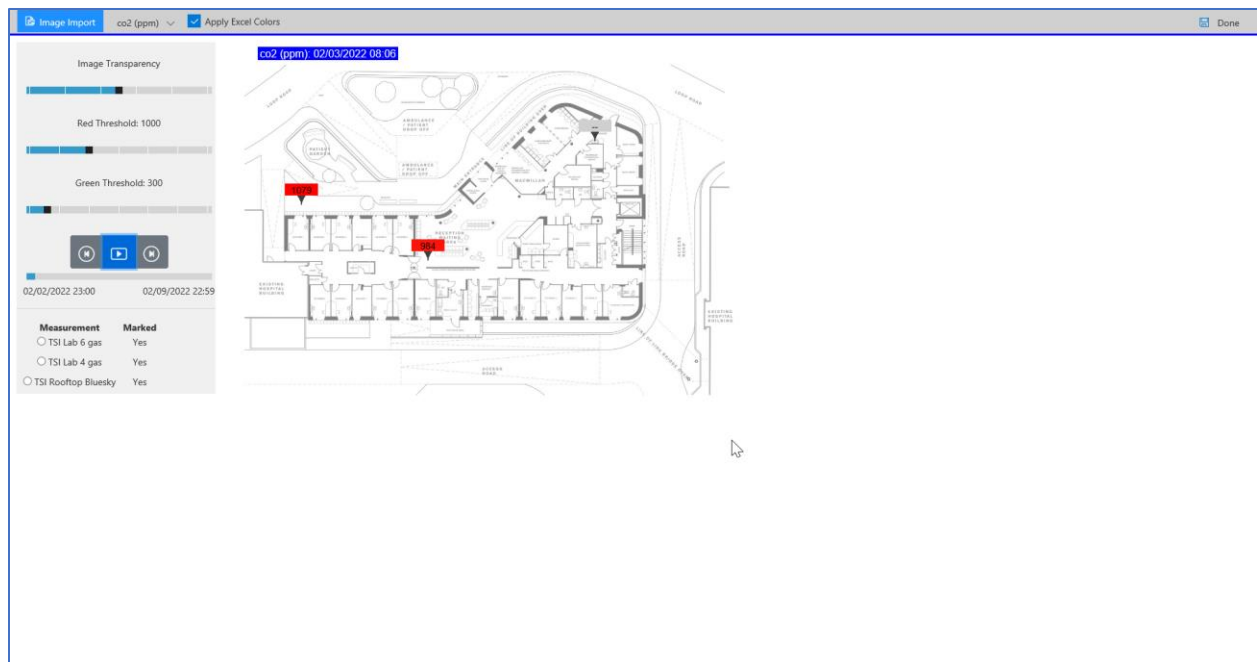


The slide bar allows you to control the Image Transparency as desired so that the annotations are legible against the floorplan background.

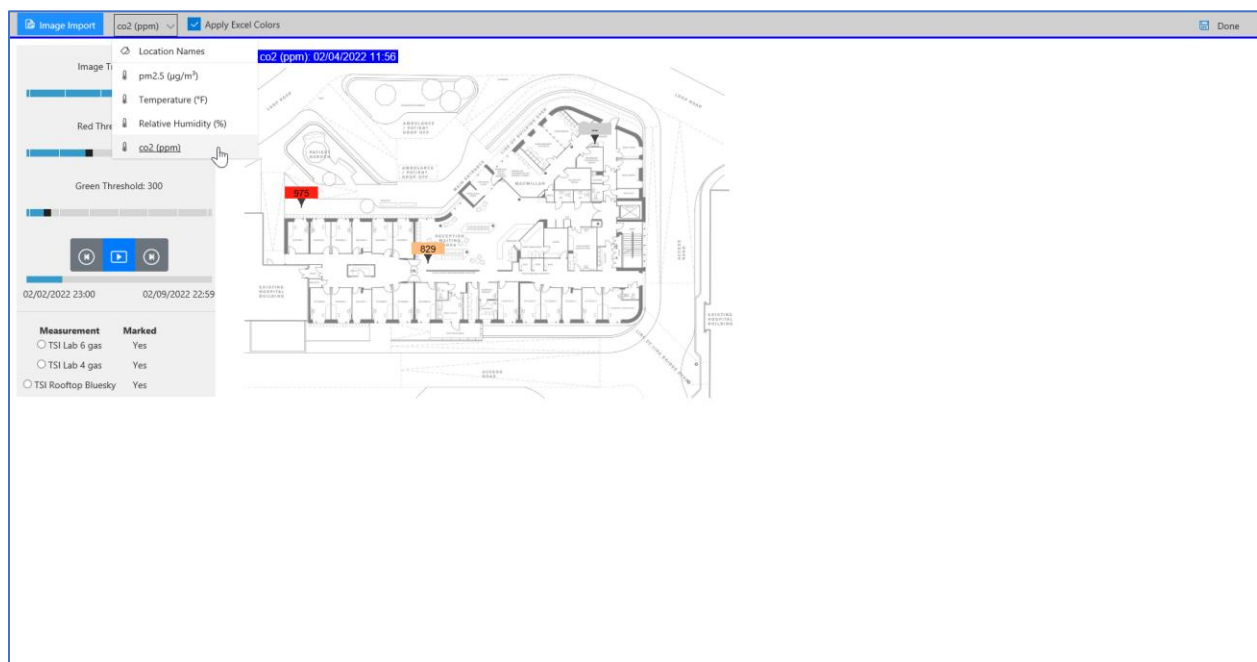
In addition to the ability to adjust the Image Transparency, a Red and Green Threshold is available. The Red and Green Thresholds allow you to adjust Red and Green highlights. If the measurement parameter exceeds the Red Threshold, a red highlight will be displayed. If the measurement parameter exceeds the Green Threshold, a green highlight will be displayed.

A back-step, play, and forward-step icon allows you to adjust and play throughout the time period. By clicking on the time-bar you can quickly advance to the time-frame of interest and then use the back-step and forward-steps for fine adjustment.

You will next need to manually mark the locations of each device on the uploaded floorplan. The devices are listed on the left side of the dialog. Simply click the location of the highlighted device on the image. If you want to reposition any device you have already marked, click the device in the list and click the new location on the floorplan. As each device is marked, the device name appears as displayed at the selected location.



You can now display any available measurement by clicking **Location Names** and selecting the desired parameter.



Click **Done** to close the dialog box and make it available for Excel® software to use. The image will be displayed as a thumbnail in the Data Analyzer add-in.

To add the image to your report, click on the cell that you want to place the image. Then click **Insert Picture**. The picture can be moved or resized as desired.

If you want to show additional measurements in the report, click the thumbnail image and repeat the process. You will have to upload the floorplan image again, but the measurement locations have all been saved.

TIP

Common image formats like .gif, .jpg and .png are able to be imported. PDF images are not able to be directly imported. There are many online PDF to image converters available, such as <https://pdf2png.com/>.

Thermal Comfort Report

The perception of thermal comfort by building occupants is dependent on temperature and humidity. But four other environmental and personal parameters are also essential to understanding thermal comfort:

Mean Radiant Temperature	The amount heat exchanged between building occupants and other surfaces and objects in the building. Sunlight, in particular, imparts radiant heat on people positioned near windows. Radiators have a similar effect.
Air Speed	Air drafts from doors, windows, HVAC systems, fans, and other building equipment impact perceived thermal comfort.
Metabolic Rate	Higher activity levels generate more internal heating within building occupants.
Clothing Level	Clothing acts as a thermal insulator.

This report displays temperature and humidity against a thermal comfort window established by these four other important parameters. The report is based on key elements of the ***ANSI/ASHRAE Standard 55 -2017 Thermal Environmental Conditions for Human Occupancy***.

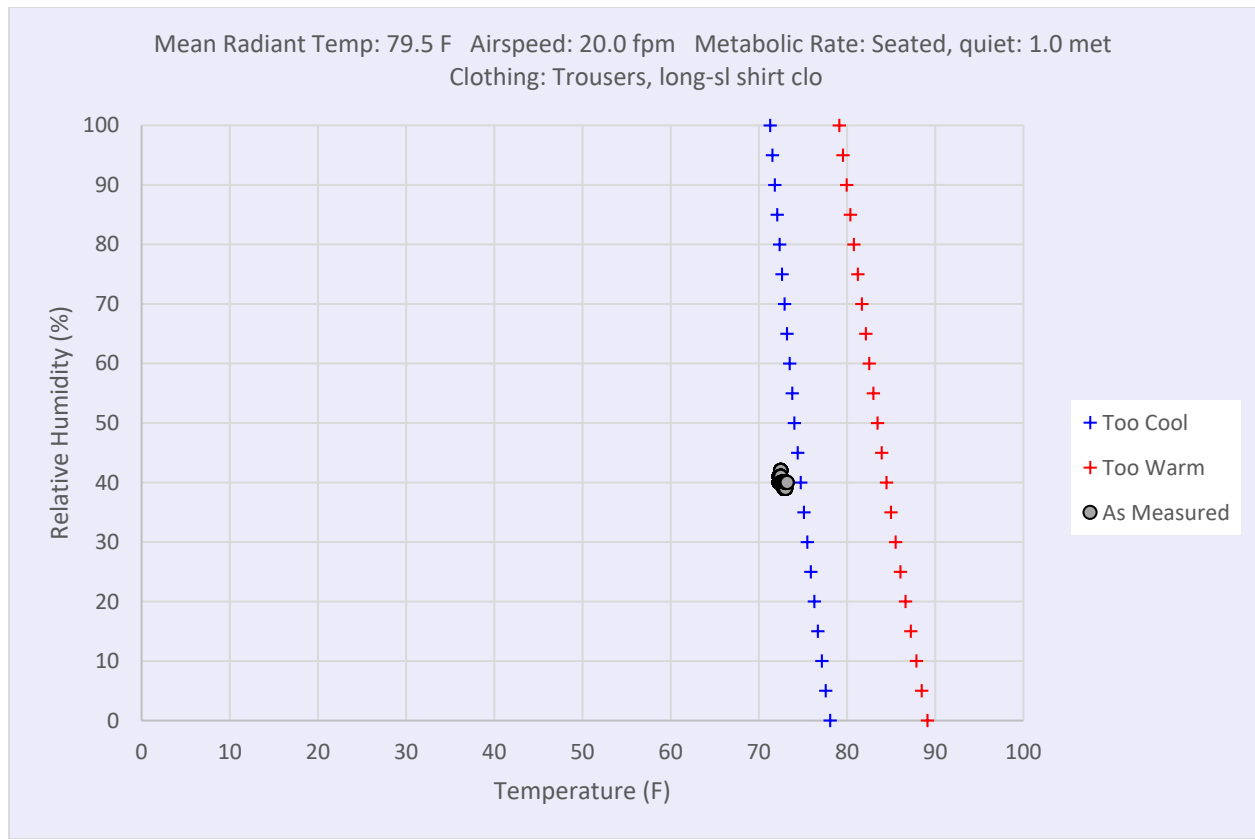
To create a Thermal Comfort report:

1. Make sure the Data Analysis tab is selected in the TSI® Link Data Analyzer.
2. Select *Thermal Comfort* in the Report drop-down list.
3. Select the options described in the table below and click **Create Report**.

Customization Option	Description
Add Statistics Table	Basics statistics (minimum, maximum, average) for each selected measurement are displayed above each measurement.
Add Report Header	Several free text fields appear at the top of the report. These are convenient to describe the conditions for the selected data.
Chart Options	If selected, a time chart is displayed for each measurement. Markers can be added to each point if desired. The charts can be moved or resized as desired.

The Thermal Comfort report will display a table of all temperature and humidity readings for the selected devices. It also creates several charts.

Temperature and humidity are displayed in an x-y chart as shown below. Each measurement is plotted as a gray circle. If you hover your mouse over any of these measurements, you can see the exact temperature and humidity values.



The thermal comfort window considered acceptable by the ASHRAE® 55 standard is also plotted as blue (too cool) and red (too warm) crosses. According to the thermal model, 90% of a typical population would consider this to be an acceptable window of comfort. If the temperature and humidity measurements fall within this boundary, as shown above, thermal comfort is acceptable.

The thermal comfort window is established by four environmental and personal factors.

Mean Radiant Temperature	MRT can be estimated or modeled. TSI® QUESTTemp° 34 and 36 heat stress monitors are able to make this measurement.
Air Speed	Air speed can also be estimated or modeled. TSI® QUESTTemp° 36 with an Air Probe accessory is also capable of measuring omnidirectional air speed. Air velocity below 25 fpm is generally considered “still air” while velocities over 50 fpm are “noticeably drafty”.
Metabolic Rate	Select the metabolic rate of building occupants from the drop-down list. These values are provided in the ASHRAE® 55 standard.
Clothing Level	Select the typical clothing ensemble of building occupants from the drop-down list. These values are provided in the ASHRAE® 55 standard.

Consider a simple change to our example. If you alter air speed from 20 to 40 fpm, the thermal comfort window moves to the right. Now the readings are below the acceptable limit established by the ASHRAE® standard.

TSI Link Data Analyzer

Report

Thermal Comfort

☒ Statistics Table
 ☒ Report Header

☒ Device Stats

Chart View

Add Line Chart without Markers

Thermal Comfort Parameters

Mean Radiant Temp (F)

79.5

Air Speed (FPM)

20.0

Metabolic Rate:

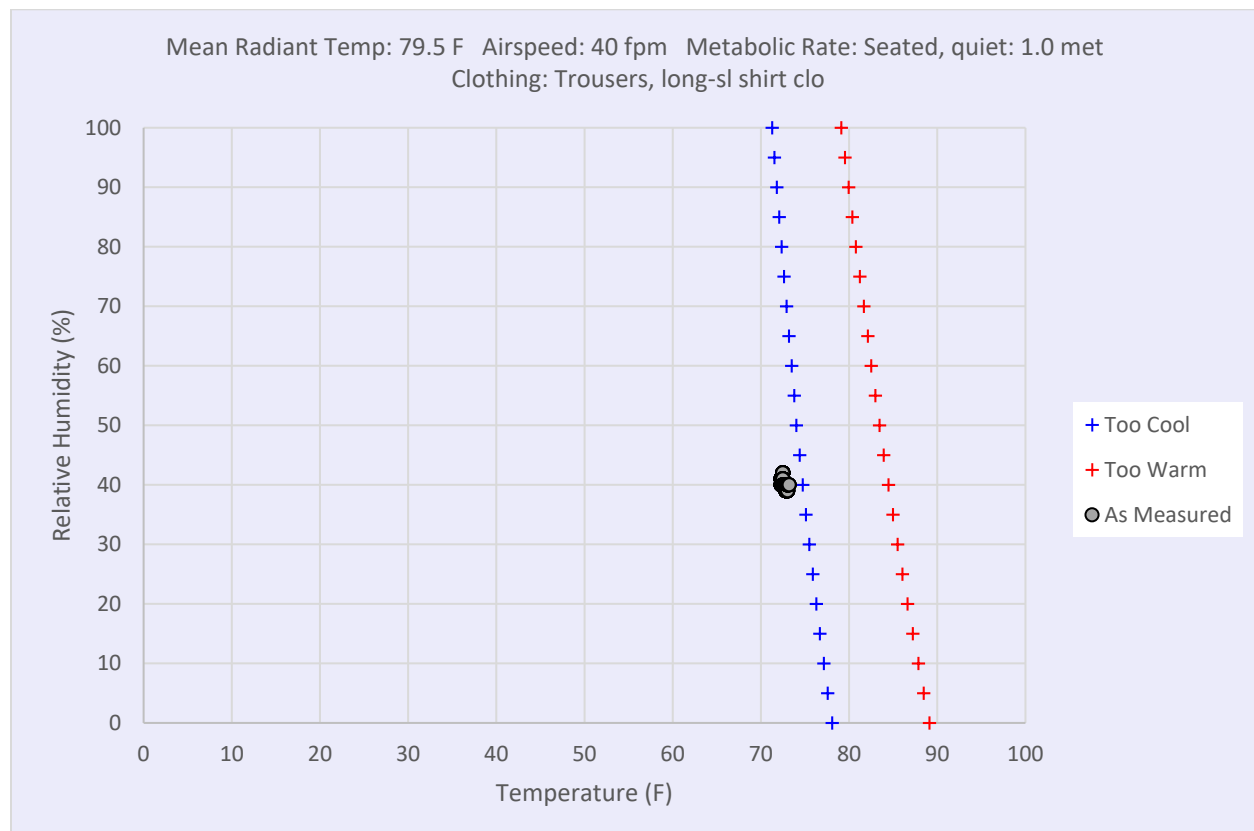
Seated, quiet: 1.0

Clothing Level:

Trousers, long-sl shirt

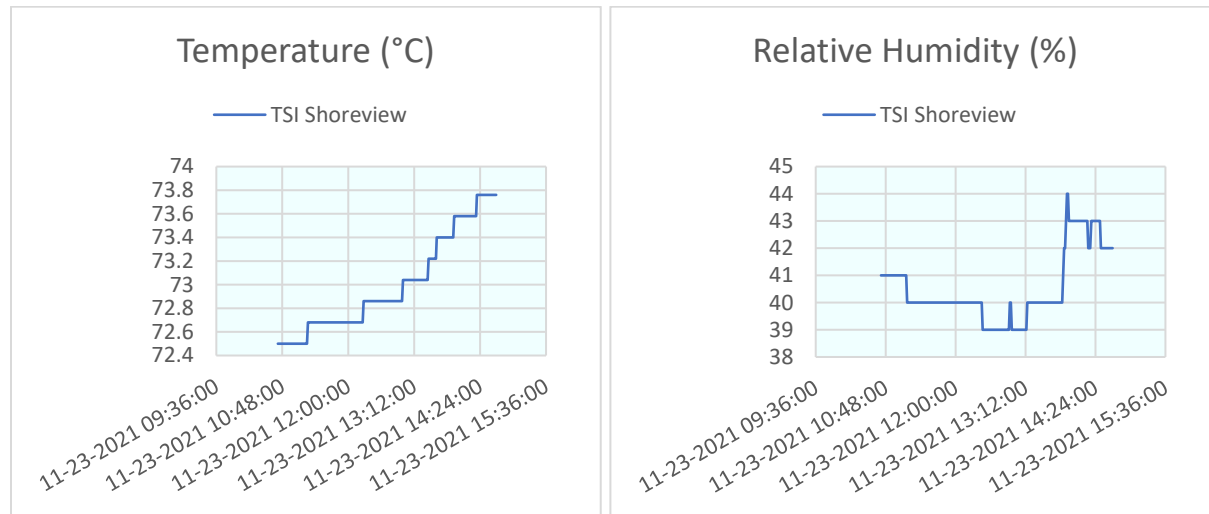
Update Chart

Create Report



This contextualization provides new insight into the perceived thermal comfort of your building occupants. You can now factor in the conditions that your customers and employees experience. You can also begin to run “what-if” analyses to estimate energy efficiency retrofits like ceiling fans or shaded windows.

Time charts of temperature and humidity are also included in the report.



Cumulative Data Retrieval

The Cumulative AQI mode is a specialized reporting tool. Rather than creating a new report from a defined period of time, this mode appends data values that meet specified criteria every time you click **Retrieve Data**.

When you set the **Retrieve Mode** to *Cumulative AQI*, a set of configurable parameters appear as shown here.

Start/End Time A	This is the first-time window that will be retrieved each day. The example shows a work shift from 8 AM to noon. Hours are in 24-hour format.
Start/End Time B	A second work shift can be specified if desired. The example shows a second work shift from noon to 4 PM.
Data Threshold	Data will only be appended into the table if the Measurement Filter is above the stated threshold level. In this example, data will only be saved if the total <i>average</i> value over Period A or Period B of “pm2.5 aqi” is above 120. You can change the measurement filter to any parameter, but the spelling must exactly match the device measurement name and units must be included in parentheses.

TSI Link Data Analyzer

Connected to TSI Link

Settings

Data Sources | **Data Analysis**

Retrieve Mode

Cumulative AQI

Start Time A: 08 : 00 | **End Time A**: 12 : 00

Start Time B: 12 : 00 | **End Time B**: 16 : 00

Threshold: 120 | **Measurement Filter**: pm2.5 aqi (aqi)

Retrieve Data

To continue appending data to the report, make sure it is the active worksheet. Click **Retrieve Data** to append and new data since the last query.

This report displays all available measurements from all devices registered to the account.

DO NOT alter any of the information in the top three rows. The Data Analyzer add-in needs to maintain this status information to append new data.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	TSI Link Cumulative AQI Report														
2	Start Date	11-20-2021 08:00:00													
3	End Date	11-23-2021 12:00:01													
4															
5	Timestamp	Device	pm1.0	pm2.5	pm2.5	pm4.0	pm10	pm10 a	pm0.5	pm1.0	pm2.5	pm4.0	pm10 N	typical	Temp
6	11-23-2021 08:00:39	TSI Shoreview	36	38	107	38	38	35	341	401	403	403	403	0.59	
7	11-23-2021 08:01:39	TSI Shoreview	32	34	97	35	35	32	308	362	365	365	365	0.61	
8	11-23-2021 08:02:39	TSI Shoreview	28	29	87	29	29	27	265	311	312	312	312	0.58	
9	11-23-2021 08:03:39	TSI Shoreview	29	31	91	31	31	29	277	325	327	327	327	0.59	
10	11-23-2021 08:04:39	TSI Shoreview	32	34	97	34	34	31	304	358	360	360	360	0.62	
11	11-23-2021 08:05:38	TSI Shoreview	34	36	102	36	36	33	326	383	385	385	385	0.57	
12	11-23-2021 08:06:38	TSI Shoreview	32	34	97	34	34	31	307	361	362	363	363	0.58	
13	11-23-2021 08:07:38	TSI Shoreview	33	35	99	35	35	32	313	368	370	370	370	0.58	
14	11-23-2021 08:08:38	TSI Shoreview	32	33	95	33	33	31	303	356	358	358	358	0.57	
15	11-23-2021 08:09:38	TSI Shoreview	34	36	102	36	36	33	323	380	382	382	382	0.58	
16	11-23-2021 08:10:38	TSI Shoreview	36	38	107	38	38	35	342	402	404	404	404	0.6	
17	11-23-2021 08:11:38	TSI Shoreview	38	41	115	41	41	38	367	431	434	434	434	0.61	
18	11-23-2021 08:12:38	TSI Shoreview	41	43	119	43	43	40	390	458	460	461	461	0.6	
19	11-23-2021 08:13:38	TSI Shoreview	39	41	115	41	41	38	370	435	438	438	438	0.6	
20	11-23-2021 08:14:38	TSI Shoreview	38	40	112	40	40	37	362	425	428	428	428	0.6	
21	11-23-2021 08:15:38	TSI Shoreview	38	40	112	41	41	38	365	429	432	432	432	0.61	
22	11-23-2021 08:16:38	TSI Shoreview	37	39	110	39	39	36	351	412	414	414	414	0.58	
23	11-23-2021 08:17:38	TSI Shoreview	36	38	107	38	38	35	347	408	410	410	410	0.57	
24	11-23-2021 08:18:38	TSI Shoreview	36	38	107	38	38	35	344	404	406	406	407	0.62	
25	11-23-2021 08:19:38	TSI Shoreview	36	38	107	38	38	35	342	402	404	404	404	0.6	
26	11-23-2021 08:20:38	TSI Shoreview	36	38	107	38	38	35	349	410	412	412	412	0.59	
27	11-23-2021 08:21:38	TSI Shoreview	36	38	107	38	38	35	348	408	410	411	411	0.59	
28	11-23-2021 08:22:38	TSI Shoreview	37	39	110	39	39	36	353	415	417	417	417	0.61	
29	11-23-2021 08:23:38	TSI Shoreview	37	39	110	39	39	36	352	413	415	415	415	0.57	
30	11-23-2021 08:24:38	TSI Shoreview	37	39	110	39	39	36	354	416	419	419	419	0.61	
31	11-23-2021 08:25:38	TSI Shoreview	35	38	107	38	38	35	341	400	402	402	402	0.6	
32	11-23-2021 08:26:38	TSI Shoreview	36	38	107	38	38	35	342	401	403	404	404	0.6	
33	11-23-2021 08:27:38	TSI Shoreview	36	38	107	39	39	36	349	410	412	412	412	0.59	
34	11-23-2021 08:28:38	TSI Shoreview	36	38	107	38	38	35	349	410	412	412	412	0.58	
35	11-23-2021 08:29:38	TSI Shoreview	36	38	107	38	38	35	342	401	403	404	404	0.58	
36	11-23-2021 08:30:38	TSI Shoreview	36	38	107	38	38	35	342	401	403	404	404	0.58	
Thermal Comfort1 Thermal Comfort2 Cumulative AQI															

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