



Application Note TSI-169 (US)

### Background

The Omni Template is a basic reporting tool that accepts data from most of the TSI<sup>®</sup> instruments that are compatible with TSI Link<sup>™</sup> Solutions. It contains a library of worksheet templates that support diverse types of measurements. Each template provides basic charting and statistics for the imported data files.

If you are new to TSI<sup>™</sup> Link Report Creator, please refer to the [setup guide](#) to get started. Also, be sure to periodically check for new versions of the Omni Template. New worksheets will be added to support any new types of instruments introduced into TSI Link<sup>™</sup> Solutions.

### Applications

The Omni Template is a general-purpose analysis tool, especially for:

- Comparison of two temporal events, such as a before and after an engineering control is installed
- Comparison against a baseline measurement, such as noise levels in a factory
- Spatial visualization of two points, such as upstream and downstream of a filter

### Common Functionality

Each worksheet template in the Omni workbook provides a basic set of data visualizations and statistical summaries.

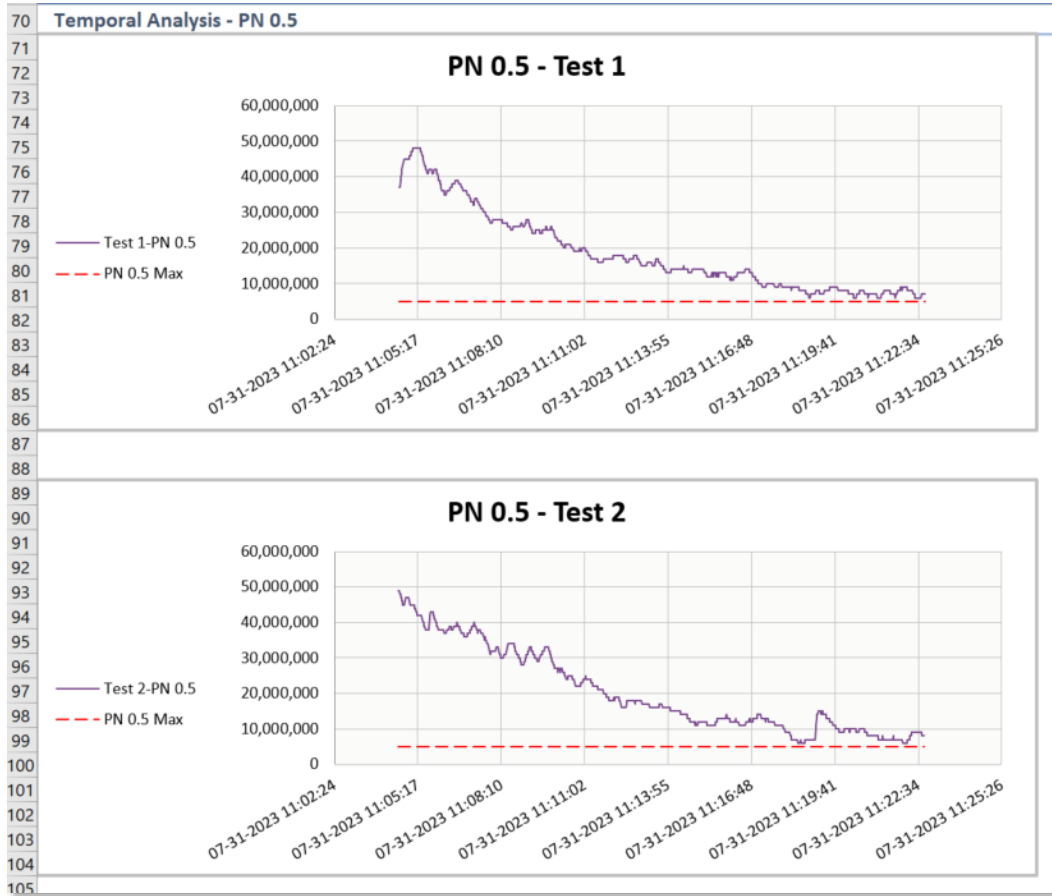
When the data files are loaded – typically via the **Study Manager** – a basic statistical summary table is populated. In the example, the maximum, average, and minimum values for PM number concentration are displayed.

You have **up to two studies** in each worksheet, allowing you to perform comparative “A-B” assessments as needed. The two conditions can be described in the free text fields at the top of the sheet.

PM - Number Concentration						
Test Results						
Target Names =>	PN 0.3 Max	PN 0.5 Max	PN 1.0 Max	PN 2.5 Max		
Target Limits (ug/m3) =>	10,000,000	5,000,000	1,000,000	100,000		
Event	Duration (min)	Max PN 0.3	Max PN 0.5	Max PN 1.0	Max PN 2.5	
Workbench Left	18.1	0	47,999,940	8,000,010	1,000,010	
Workbench Right	18.1	0	48,999,950	8,000,010	0	
Comparison (%)			2.08%	0.00%	-100.00%	
Event	Duration (min)	Avg PN 0.3	Avg PN 0.5	Avg PN 1.0	Avg PN 2.5	
Workbench Left	18.1	0	18,454,189	2,824,301	40,187	
Workbench Right	18.1	0	20,224,752	2,886,241	0	
Comparison (%)			9.59%	2.19%	-100.00%	
Event	Duration (min)	Min PN 0.3	Min PN 0.5	Min PN 1.0	Min PN 2.5	
Workbench Left	18.1	0	6,000,000	1,000,010	0	
Workbench Right	18.1	0	6,000,000	0	0	
Comparison (%)			0.00%	-100.00%		

**Target limits** for the maximum values, as highlighted above, may be changed. These limits will be displayed on the chart to provide context.

Each measure and the target limit is displayed in a chart, along with the target limits defined in the data summary table.



The **Layout View** provides the ability to compare both studies spatially. In the example below, the Maximum PM2.5 measurements are displayed on a building floorplan. A photo, diagram, map, or any image can be used as the background.

Target Names =>	PM 1.0 Avg	PM 2.5 Avg	PM 4.0 Avg	PM 10 Avg	PM 1.0 Max	PM 2.5 Max	PM 4.0 Max	PM 10 Max	
Target Limits (ug/m3) =>	20	30	40	50	35	45	55	65	
Event	Duration (min)	Avg PM1.0	Avg PM2.5	Avg PM4.0	Avg PM10	Max PM1.0	Max PM2.5	Max PM4.0	Max PM10
Test 1	61.3	4.56	4.89	4.95	4.99	31.00	33.00	34.00	34.00
Test 2	61.3	1.71	1.85	1.86	1.87	6.00	6.00	6.00	6.00
Comparison (%)		-62.58%	-62.05%	-62.39%	-62.51%	-80.65%	-81.82%	-82.35%	-82.35%

## Worksheet Templates

The library of worksheet templates is organized by measurement types.

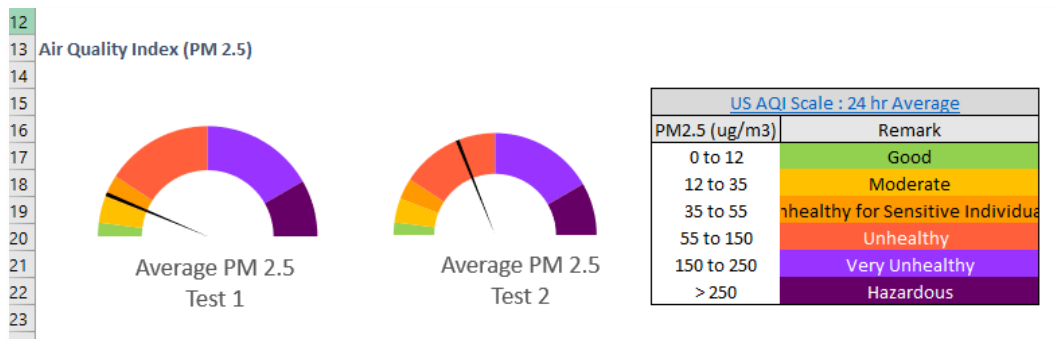
### PM – Mass Concentration

This worksheet is compatible with TSI® instruments capable of measuring Particulate Matter (PM) in mass concentration. All units are in  $\mu\text{g}/\text{m}^3$ .

“PM x.x” measurements report the mass of particles below a size cut-point. For example, PM 4.0 is the mass of all particles less than 4.0  $\mu\text{m}$  in size.

Instrument	Study Mgr	PM 1.0	PM 2.5	PM 4.0	PM 10
Q-Trak™ XP monitor (7580)	N	Y	Y	Y	Y
OmniTrak™ module PM/VOC	Y	Y	Y	Y	Y
OmniTrak™ module PM	Y	Y	Y	Y	Y
AM520	Y	Y	Y	Y	Y
DustTrak™ monitor	Y	Y	Y	Y	Y

This worksheet includes a pair of gauge or “speedometer” visualizations for average PM 2.5. The color coding follows the US AQI scale. Click on the link to learn more about this coding standard.



### PM – Number Concentration

This worksheet is compatible with TSI® instruments capable of measuring Particulate Matter (PM) in number concentration. All units are in  $\text{count}/\text{m}^3$ .

“PN x.x” measurements report the number of particles per cubic meter that are below a size cut-point. For example, PN 4.0 is the particle count per cubic meter less than 4.0  $\mu\text{m}$  in size.

The CP refers to a variable cut-point that is dependent on the instrument configuration. An impactor, for example, may be added to inlet to serve as a size-selective filter.

Instrument	Study Mgr	PN 0.3	PN 0.5	PN 1.0	PN 4.0	PN 10	CP
OmniTrak™ module PM/VOC	Y		Y	Y	Y	Y	
OmniTrak™ module PM	Y		Y	Y	Y	Y	
P-Trak™ counter (8525)	N						Y
CPC (37XX)	N						Y

The number concentration channels are slightly different in some instruments instrument. The devices below have a 5.0 um cut point rather than a 4.0 um cut point. The “QTrak™ XP PM – Number Concentration” worksheet should be used to pick up data from the 5.0 um channel.

Instrument	Study Mgr	PN 0.3	PN 0.5	PN 1.0	PN 5.0	PN 10
Q-Trak™ XP monitor (7580)	N	Y	Y	Y		Y
AeroTrak™+ A100 portable particle counter	N	Y	Y	Y	Y	Y

### IAQ Gas – Number Concentration

This worksheet is compatible with TSI® instruments capable of measuring gas in number concentration. The concentration units vary by gas type as shown in the table.

Instrument	CO <sup>2</sup> ppm	CH <sub>2</sub> O ppb	CO ppm	SO <sup>2</sup> ppb	O <sup>3</sup> ppb	NO <sup>2</sup> ppb	VOC ppb
Q-Trak™ XP monitor (7580)	Y	Y	Y	Y	Y	Y	Y
Q-Trak™ monitor	Y		Y				
OmniTrak™ module PM/VOC							Y
OmniTrak™ VOC							Y

### Sound – Broadband

This worksheet is compatible with TSI® instruments capable of measuring broadband sound levels. All measurements are in units of dB. The supported weightings are shown beside the instrument model.

Instrument	Study Mgr	Fast Max	Fast Min	Slow Max	Slow Min	Impulse Max	Impulse Min	Eq	Peak
Casella™ 620 – A,C,Z	N	Y	Y	Y	Y	Y	Y	Y	Y

In addition to tabular data, all of the broadband measurements are also displayed on a set of column charts. The maximum values include target limits that are set in the blue headers above the tables.



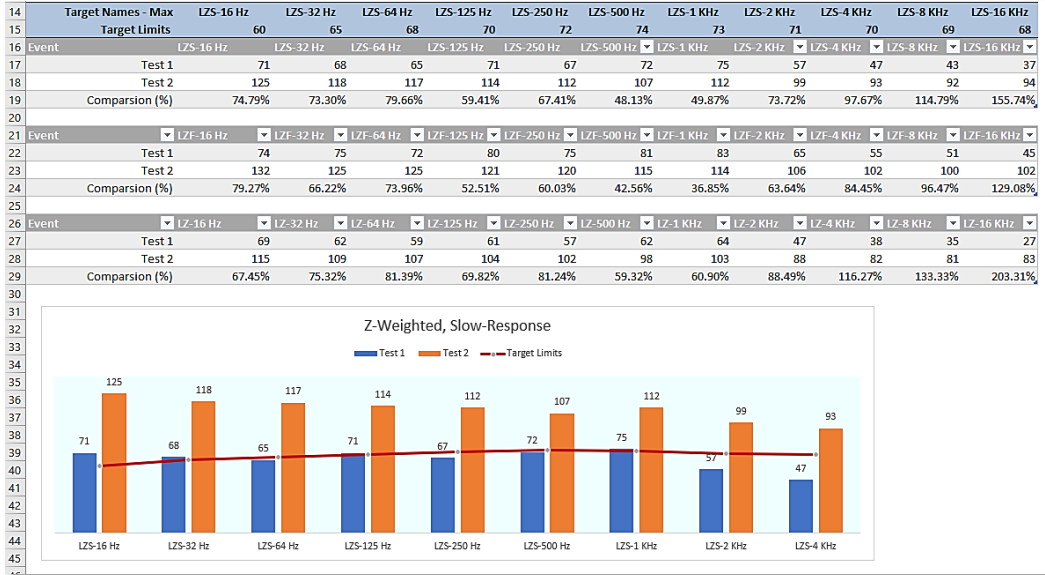
# Sound – Octave Band

This worksheet is compatible with TSI® instruments capable of measuring octave band sound levels. All measurements are in units of dB. The supported weightings are shown beside the instrument model.

Octave band center-point frequencies are: 16Hz, 32 Hz, 64 Hz, 125 Hz, 250 Hz, 500 Hz, 1 KHz, 2 KHz, 4 KHz, 8 KHz, and 16 KHz.

Instrument	Slow	Avg	Fast
Casella™ 620 – Z	Y	Y	Y

Octave band measurements are displayed in both tables and column charts. The Z-weighted values include target limits that are set in the blue headers above the tables.



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<b>USA</b>	<b>Tel:</b> +1 800 680 1220	<b>India</b>	<b>Tel:</b> +91 80 67877200
<b>UK</b>	<b>Tel:</b> +44 149 4 459200	<b>China</b>	<b>Tel:</b> +86 10 8219 7688
<b>France</b>	<b>Tel:</b> +33 1 41 19 21 99	<b>Singapore</b>	<b>Tel:</b> +65 6595 6388
<b>Germany</b>	<b>Tel:</b> +49 241 523030		

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