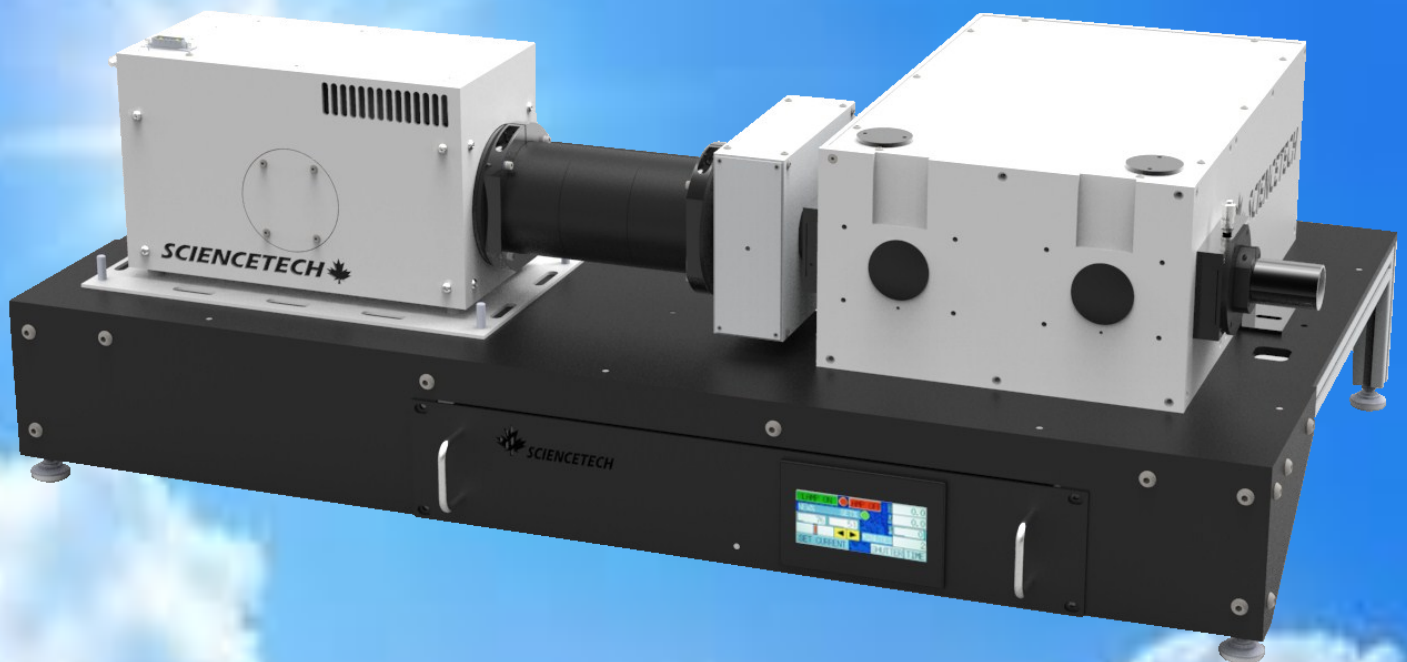# TUNABLE LIGHT SOURCES

TLS-55-X300   TLS-72-X300   TLS-55-X300-SS
TLS-55-Q250   TLS-72-Q250

Features

- Monochromatic light from 300 nm up to 1800 nm
- Collimated, condensed, or coupled output light options. Light can be coupled to any optical system (including fibers and fiber bundles)
- Adjustable optical resolution from 20 nm down to 0.2 nm
- Flexibility of optional features: full automation, various sources and monochromators and more

Applications

- Absorption/transmission/reflection measurement systems
- As an excitation light source in fluorescence measurement systems
- Eye protection products measurement system
- PEC photochemistry measurement systems
- Solar cell quantum efficiency measurement systems

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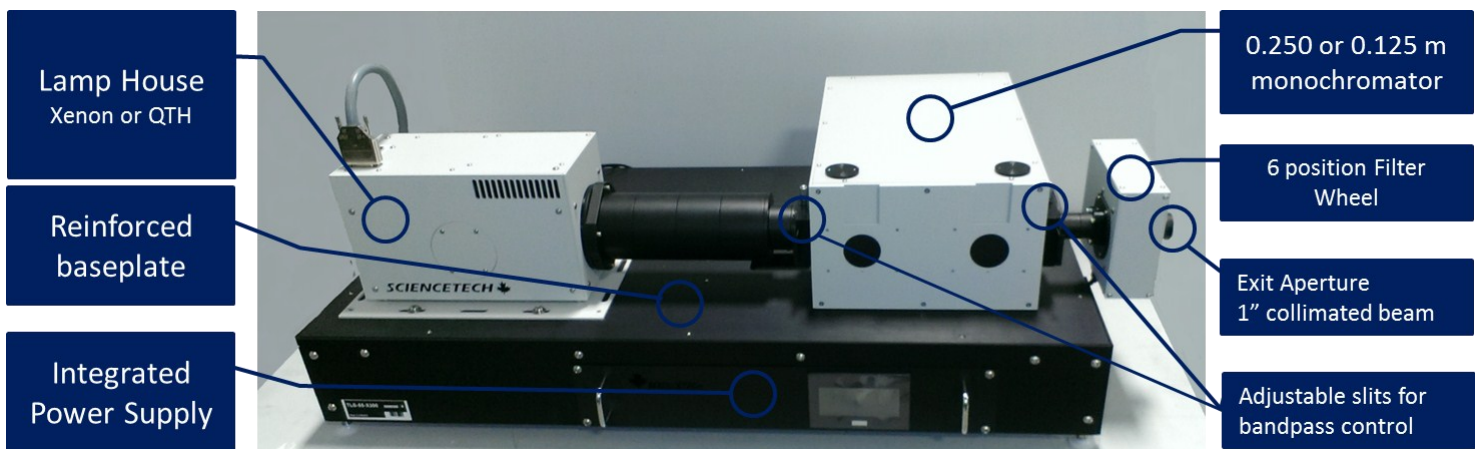
Version 2.3.4 April 2019

TUNABLE LIGHT SOURCES

1. Overview

Sciencetech offers a series of computer-controlled adjustable sources of monochromatic light, our Tunable Light Source (TLS) line.

Each TLS system is pre-aligned at the Sciencetech test lab and packaged with the system's test data and detailed manual. Sciencetech's tunable light sources are motorized instruments controlled by Sciencetech's TLS software. LabView drivers and ActiveX and DotNet modules are also available making the TLS a flexible system for integration with your experiment or

Each base model comes with standard features:
* 1" collimated light output
* Monochromator with two gratings
* Motorized filter wheel with 4 long pass filters installed
* Adjustable slits for optical bandpass control.
* Adjustable computer controlled power supply (Xenon lamps only)
* SciSpec software for controlling the monochromator and filter wheel.
* Reinforced optical base plate

Lamp House
Xenon or QTH

Reinforced baseplate

Integrated Power Supply

0.250 or 0.125 m monochromator

6 position Filter Wheel

Exit Aperture
1" collimated beam

Adjustable slits for bandpass control

instrument.

Sciencetech TLS systems are built with modular components making them flexible and adaptable well beyond the standard models offered.

There are several available output options: different focusing and collimating beams, different coupling with fibers/bundles, or coupling with different optical devices.
Available optional upgrades include: Motorized or manual Iris, motorized slits (manual slit is standard), Fixed slits, optical light feedback for additional source stabilization**

Product Line	Monochromator	Lamp Type	Model
TLS	-72 (1/8 m)	-300X	TLS-72-300X
		-250Q	TLS-72-250Q
	-55 (1/4m)	-300X	TLS-55-300X
		-250Q	LH-55-250Q

Choose –X light source for Xenon—best for UV/VIS
Choose—Q light source for QTH—best for VIS/NIR

Customized Solutions

All components of the system, including the light source and monochromator, can be changed. Available light sources include continuous

- Xe, Xe-Hg and Hg lamps from 75W-1.6 kW
- QTH lamps 50 W-500 W
- Dual deuterium/QTH source
- Mid-IR sources up to 1700Kelvin
- Available spectral range 180 nm – 10 um *
- Double subtractive and double additive monochromators
- Monochromators up to 2.0 meter focal length

* Light source, Optics and Grating dependent
** Only available with Xe and Xe-Hg Lamps

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2. Specifications

Sciencetech's software, Sci-Spec, controls all components of the system. In the standard configuration, it controls the power supply of the light source, shutter, filter wheel, and monochromator. As an option, the user can add computer control on the input and output slits, and/or control of the iris.

In the standard configuration, the output beam can be collimated or focused. Coupling with different devices is available as an option, such as coupling with a sample chamber, fiber, or fiber bundle.

	TLS-72-X300	TLS-72-Q250	TLS-55-X300	TLS-55-Q250
Lamp Type	Xe 300 W	QTH 250 W	Xe 300 W	QTH 250 W
Monochromator Type	9072S (1/8 meter)		9055 (1/4 meter)	
Functional Spectral range	300-1800 nm			
Optical resolution	0.5 nm @ 300-700 nm 0.7 nm @ 700-1800 nm		0.2 nm @ 300-700 nm 0.4 nm @ 700-1800 nm	
Filter wheel with filter set	Computer-controlled 6-position filter wheel			
Shutter	Optional computer-controlled shutter and exposure control			
Beam output	1" diameter collimated			
Wavelength Repeatability	0.1 nm		0.03 nm	
Wavelength Accuracy	0.2 nm			
Intensity Control	Source intensity adjustable Optional manual iris			
Gratings	2 plane ruled gratings 30x30 mm 1200 gr/mm@300nm 600 gr/mm@1000nm		2 plane ruled gratings 50x50 mm 1200 gr/mm@300nm 600 gr/mm@1000nm	
Bandpass	Two manual bilaterally-adjustable slits with vertical curtain attenuators			
Optical Height	216 mm (adjustable +/- 5 mm)			
Power supply	Touchscreen, Constant Current	Manual, Constant Current	Touchscreen, Constant Current	Manual, Constant Current
Software	Sci-Spec (Labview examples, DotNet, Active X also available)			
Computer Interface	USB—monochromator and filter wheel , RS232 Power Supply (xenon lamp only)			
CE Certification	IEC 61010-1:2010 Safety Requirements for electrical equipment for measurement, control and laboratory use—Part 1 IEC 61326-1:2012 Electrical equipment for measurement, control and laboratory use—EMC requirements—Part 1			

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3. Tunable Light Source—Solar Simulator

Sciencetech also offers a tunable light source solar simulator combination instrument. This combination system allows a selectable output at the target plane of spatially uniform sun light or monochromatic light.

The tunable light source—solar simulator combination system adds a homogenization unit to the exit port of the monochromator that includes and electronic shutter and 2 position filter tray.
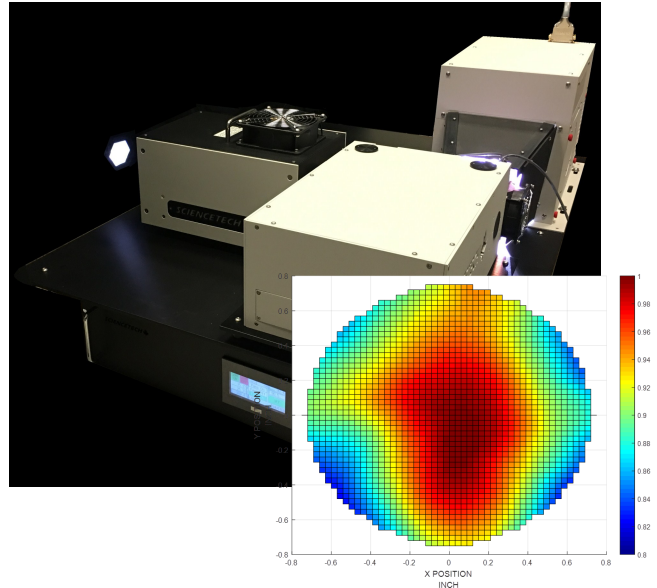
The tunable light source functions the same as the other models in Sciencetech's tunable light source line but adds the extra functionality of a solar simulator with broadband spatially uniform white light.

Sciencetech currently offers one model of tunable light source-solar simulator:

TLS-55-X300-SS

The standard configuration of a TLS-SS includes a lamp housing with a elliptical reflector and xenon lamp, power supply with touchscreen, 1/4 meter monochromator, automated filter wheel (with order sorting filters) and electronic shutter mounted to a metal breadboard to create a compact, fully assembled illuminator, controlled by original software. Each system is pre-aligned during production and packaged with the system's test data and detailed manual.
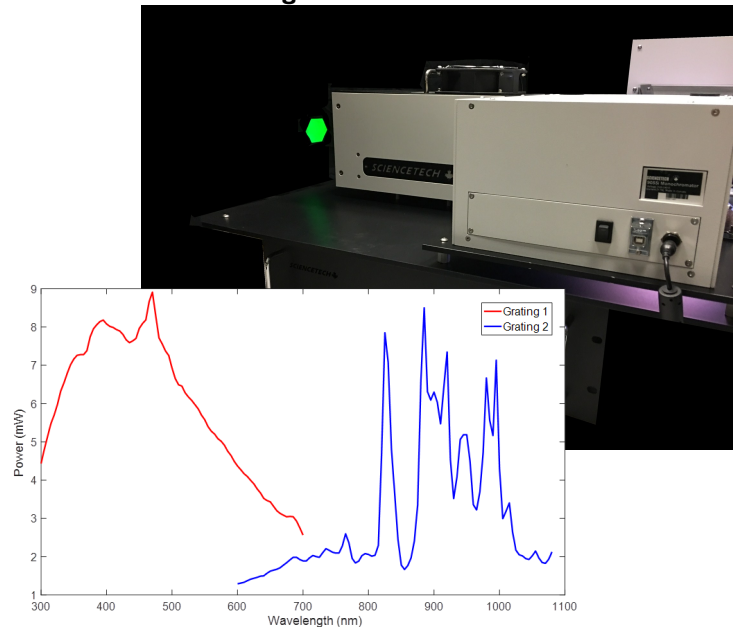
Solar Simulator Mode
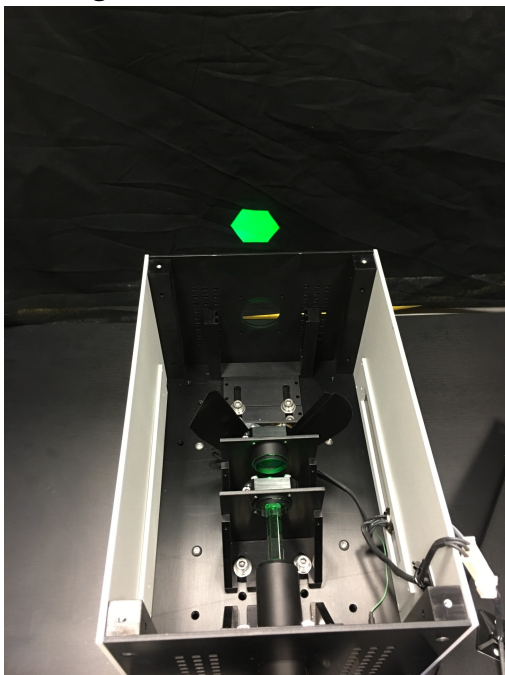
Tunable Light Source Mode

Homogenization Unit
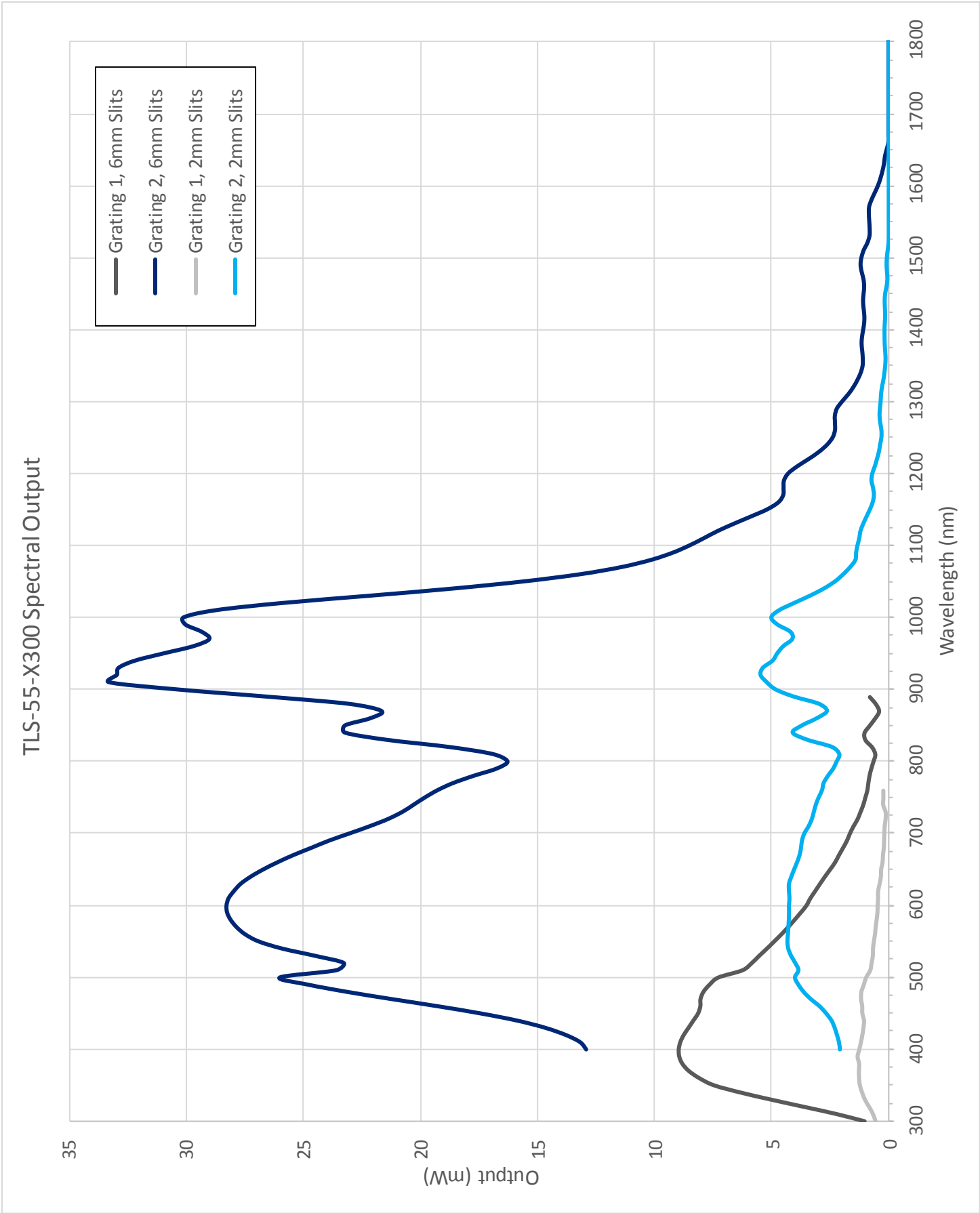
TUNABLE LIGHT SOURCES

4. Specifications

Sciencetech's software, Sci-Spec, controls all components of the system. In the standard configuration, it controls the power supply of the light source, shutter, filter wheel, and monochromator. As an option, the user can add computer control on the input and output slits, and/or control of the iris.

In the standard configuration, the output beam can be collimated or focused. Coupling with different devices is available as an option, such as coupling with a sample chamber, fiber, or fiber bundle.

Model	TLS-55-X300-SS
Lamp Type	Xe 300 W
Monochromator Type	9055 (1/4 meter)
Functional Spectral range	300-1800 nm
Optical resolution	Up to 0.2 nm @ 200-700 nm
	Up to 0.4 nm @ 700-2500 nm
Filter wheel with filter set	Computer-controlled 6-position filter wheel
Shutter	Computer-controlled shutter and exposure control
Beam output	Spatially uniform output over 1" diameter
Solar Simulator, Spectral Match	Class A, AM1.5G
	Class B, AM0
Solar Simulator, Non-Uniformity	Class B
Solar Simulator, Temporal Instability	Class A
Working Distance	80 to 140 mm
Wavelength Repeatability	0.03 nm
Wavelength Accuracy	0.2 nm
Gratings	2 plane ruled gratings 50x50 mm
	1200 gr/mm@300nm
	600 gr/mm@1000nm
Slits	Two manual bilaterally-adjustable slits
Optical Height	216mm (adjustable +/- 5mm)
Power supply	Touchscreen,
	Constant Current
Software	Sci-Spec
Computer Interface	USB
CE Certification	IEC 61010-1:2010 Safety Requirements for electrical equipment for measurement, control and laboratory use—Part 1
	IEC 61326-1:2012 Electrical equipment for measurement, control and laboratory use—EMC requirements—Part 1

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4. Specifications

TLS-55-X300 Spectral Output

Legend:
- Grating 1, 6mm Slits
- Grating 2, 6mm Slits
- Grating 1, 2mm Slits
- Grating 2, 2mm Slits

Y-axis: Output (mW)
X-axis: Wavelength (nm)

5. Accessories

Host Computer

A host computer is required to operate Sciencetech's line of Tunable Light Sources. Software can be provided for installation on a customer's own host computer, or a preconfigured host computer system can be purchased at the time order, which comes with all software preinstalled and tested for easiest setup.

SKU	Product
490-0128	Preconfigured Host Desktop Computer System
490-0127	Preconfigured Host Tablet Computer System

Optional Accessories

A number of accessories are available to upgrade the mechanical components of the system or add additional features.

| SKU	Product
810-0010	(TLS-CAL-PACKAGE) This service provides light source characterization * power from 300-1800nm * beam divergence * light source stability)
120-9053	(SS-80-M) Motorized slit(s)
Please inquire	Manual or Motorized Iris
115-9027	(FS-02-N) Light Intensity Stabilizer
585-0002 With 585-0176	Broadband Thermopile Detector, (BBT-03) with (UNO-1) Handheld Monitor for Thermopile Detectors

Output Accessories

Different output accessories can be fitted to the monochromator output to customize the system for different applications—either as a stand-alone unit or to be used in conjunction with other components.

| SKU	Product
Please inquire	Focused Light Output (F/ ...)
Please inquire	Coupling to Fiber Cable/Bundle
Please inquire	Optical Fiber (2m standard, custom lengths available); Optical bundle (custom length)
Please inquire	Custom requirements

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TUNABLE LIGHT SOURCES

6. Dimensions (mm)
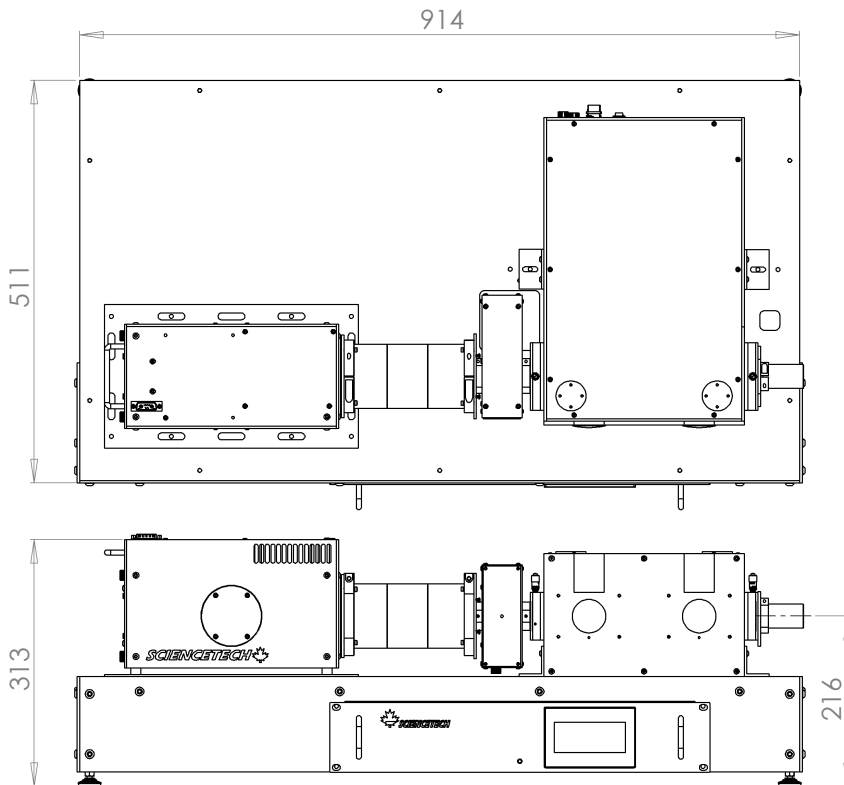
9055 Monochromator-Based:

Left: The dimensions of the Sciencetech Tunable Light Sources are different for different models, but the 9055 monochromator-based model has the following dimensions in millimeters.
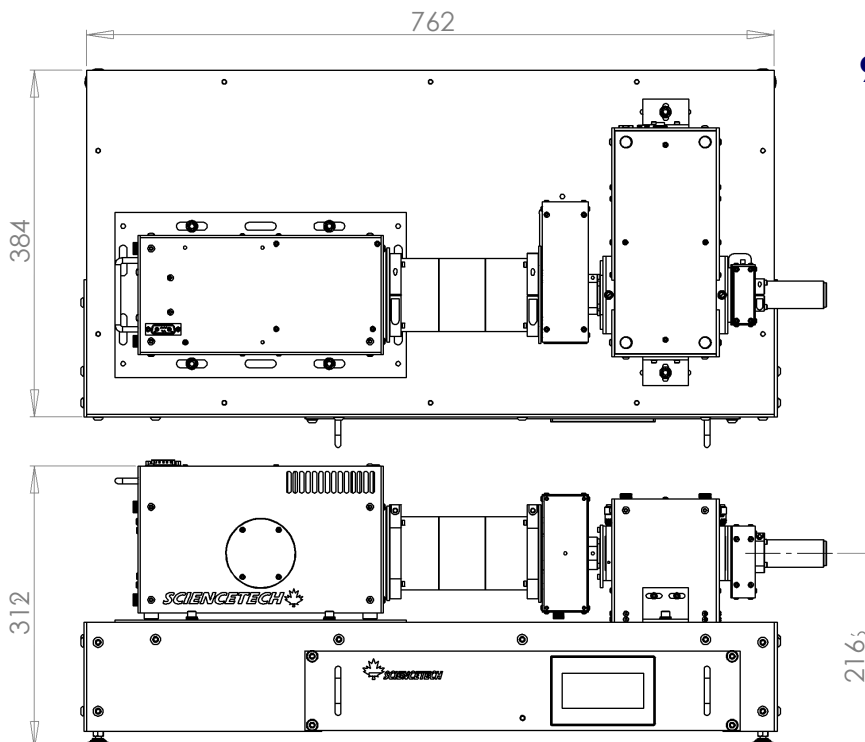
9072 Monochromator-Based:

Left: The dimensions of the Sciencetech Tunable Light Sources are different for different models, but the 9072 monochromator-based model has the following dimensions in millimeters.

For TLS-55-X300-SS dimensions please contact a Sciencetech Application Scientist.

1450 Global Drive, London, Ontario Canada, N6N 1R3
Phone: 519 644 0135 **Fax:** 519 644 0136
Email: sales@sciencetech-inc.com
www.sciencetech-inc.com

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