

Keithley TSP Toolkit Software

QUICK START GUIDE









Keithley Instruments 28775 Aurora Road Cleveland, Ohio 44139 1-800-833-9200 tek.com/keithley

Quick Start Guide

Introduction

The Keithley TSP[™] Toolkit is a Microsoft[™] Visual Studio Code[™] extension that provides support for Keithley's Test Script Processor (TSP) technology to edit and execute scripts on TSP-enabled Keithley instruments.

The extension includes language features such as syntax error detection, code navigation, and code-completion suggestions, as well as .tsp command set documentation and hover help.

This guide will show you how to:

- Install the TSP Toolkit extension
- Set up your workspace
- Connect to an instrument
- Configure a project
- Run a .tsp script
- Use the Terminal
- Download and use .tsp example scripts

NOTE

You can download Visual Studio Code from code.visualstudio.com/.

Install the TSP Toolkit extension

NOTE

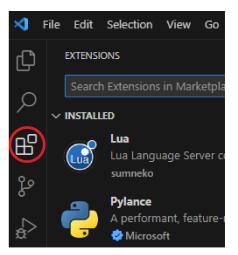
Before installing the extension from the Marketplace, select **Help > Check for Updates** to make sure that you have the most recent version of Visual Studio Code.

If you are using Microsoft Windows, be sure to also have the latest <u>Visual C++ Redistributable</u> library installed.

To install the extension from the Visual Studio Code Marketplace:

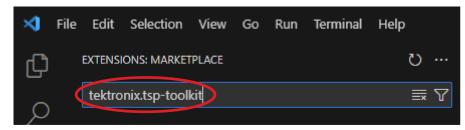
1. Select the extensions icon.

Figure 1: Search field



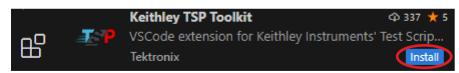
2. Select the search icon, then enter tektronix.tsp-toolkit in the search field.

Figure 2: Searching for the TSP Toolkit



3. Select Install under the Keithley TSP Toolkit.

Figure 3: Installing the TSP Toolkit



4. The extension will install. Reload the window if you are prompted.

Set up your workspace

To set up your workspace in Visual Studio Code:

1. Select the explorer icon.

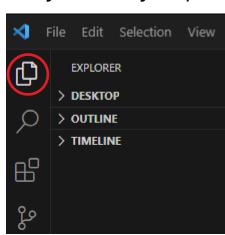


Figure 4: Selecting the Explorer

- 2. Select File.
- 3. Select **Open Folder** to select a folder or create a new folder to use as your workspace.

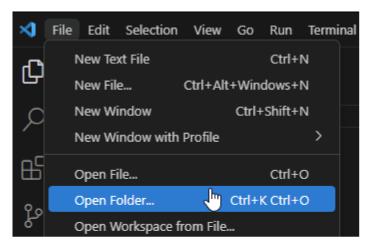


Figure 5: Opening a folder

4. In your workspace, use the **New File** and **New Folder** icons to create new .tsp files and subfolders.

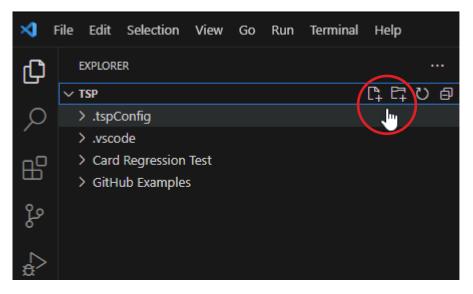


Figure 6: New File and New Folder icons

Connect to an instrument

You can connect your TSP-enabled instrument to your computer with a LAN, GPIB, or USB connection. GPIB and USB connections require a VISA driver.

To connect to a TSP-enabled instrument:

1. Select the TSP icon on the left of the screen to open the instrument pane.

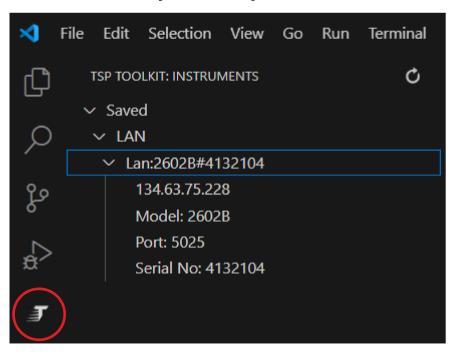


Figure 7: Selecting the TSP icon

2. Right-click your instrument, then select Connect.

If the connection was successful, a terminal window opens, and your instrument's *IDN? string will be displayed.

Configure a project

You can configure your project to have language features enabled for your TSP instruments and TSP-Link node network.

To configure a project:

- 1. Open any workspace folder.
- 2. If your workspace folder is empty, create a .tsp file (for example, mytspfile.tsp).
- 3. Connect to your instrument using the instrument pane or the TSP: Connect command.
- 4. Right-click the .vscode/tspConfig folder.
- 5. Select Fetch TSP-Link Nodes for Connected Instrument.

When your project is configured, you are shown relevant code-completion suggestions, signature help, and command documentation for your connected instruments.

Run a .tsp script

To run a .tsp script:

- 1. Open a .tsp script in the editor by clicking on it in the workspace or by selecting File > Open File.
- 2. Right-click anywhere within the script editor to display the context menu.
- 3. Select Send Script to Terminal to run the script.

Figure 8: Running a .tsp script

 ✓ Demo.tsp × ✓ Demo.tsp > [∞] lim 1 						
Immotion of the second sec						
		reset()				
		<pre>local volts = smu.FUNG</pre>	UNC_DC_VOLTAGE			
		local fun				
•	5	local lim				
		local lev	Send Script to All Terminals			
			Cond Codet to Toronical			
		<pre>function setSMU(fun,</pre>	Send Script to Terminal			
		<pre>smu.source.func =</pre>	Go to Definition	F12		
	10	smu source ilimit				

NOTE

When scripts or commands are run from the Terminal, errors are only fetched after the requested action completes. No new errors are printed while the operation is in progress.

Using the Terminal

Once you have established a connection with your instrument, the Terminal can be used to send .tsp commands and run .tsp scripts.

To close the Terminal and disconnect from the instrument, send the . $\tt exit$ command.

Figure 9: TSP Terminal window

```
PROBLEMS 2K+
               OUTPUT
                        DEBUG CONSOLE
                                      TERMINAL
Keithley TSP Shell
Type .help for more commands.
Keithley Instruments, MODEL 2450, 04484447, 1.7.14h
TSP> .script "c:\Users\stenagli\OneDrive - Fortive\Documents\Scripts\TSP\Demo.tsp"
2460 Source Function is smu.FUNC_DC_VOLTAGE
2460 Current Limit is
                       0.001
2460 Source Level is
2460 Output is smu.ON
2460 Source Function is smu.FUNC_DC_VOLTAGE
2460 Current Limit is 0.001
2460 Source Level is
                       0
2460 Output is smu.OFF
done
TSP> .exit
```

Downloading and using TSP example scripts

Example TSP Scripts are available for download on the Keithley TSP GitHub Repository.

To download and use a script:

1. Select either the Application_Specific or Instrument_Examples folder to find .tsp scripts.

tektronix / keithley Public Code Issues 12 Pull requests Pull requests	딨 Discussions ⓒ Actions ① Security 🗠 Ins	sights	
	🐉 main 👻 🐉 1 Branch 🚫 0 Tags	Q Go to file	<> Code
	🛞 Little-LIZard Fix Broken Link 🚥 🗸	909d829 · 2 weeks ago	571 Commit
	🖿 .github	Update Repo Code of Conduct	10 months ag
	🖿 .idea	Test Templates and their Data	2 years ag
	Application_Specific	Move LIV scripts	2 months ag
	Drivers	Fix erros in DM6500 Sockets Driver	10 months ag
	Instrument_Examples	Fix Broken Link	2 weeks ag
	KickStart_Template_Projects	Improve wording and capitalization	2 years ag
	TTI_Apps	Update README.md	last yea
	🗋 .gitattributes	Update .gitattributes	5 years ag
	🗋 .gitignore	Add gitignore	2 months ag
	CONTRIBUTING.md	Update Repo Code of Conduct	10 months ag
	LICENSE	Updated README for license	5 years ag
	README.md	Add Link to new TSP Toolkit extension	6 months ag

Figure 10: GitHub .tsp script site

- 2. Navigate the folders to find example scripts organized by instrument and application.
- 3. You can click on a script to view the code within GitHub. Select the download icon to copy the script to your computer.

Figure 11: Downloading a script



4. When the download is finished, copy the script to your TSP Toolkit Workspace file location.

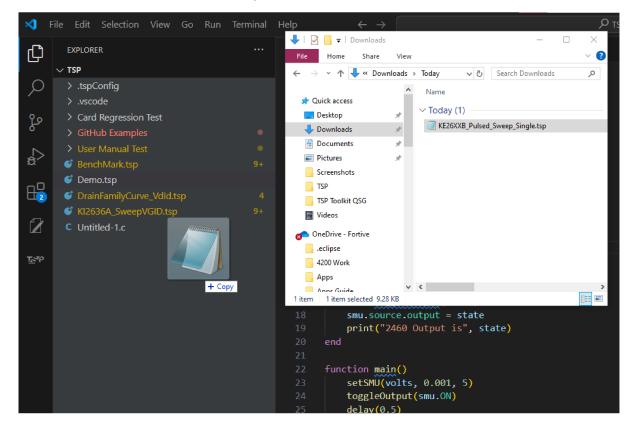


Figure 12: Script in Workspace

Additional resources and tutorials

Application note: How to write scripts for TSP

Tektronix/Keithley TSP GitHub script example repository

TSP page on Tek.com

TSP Toolkit feature walkthrough video

TSP Toolkit product page

TSP video series

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