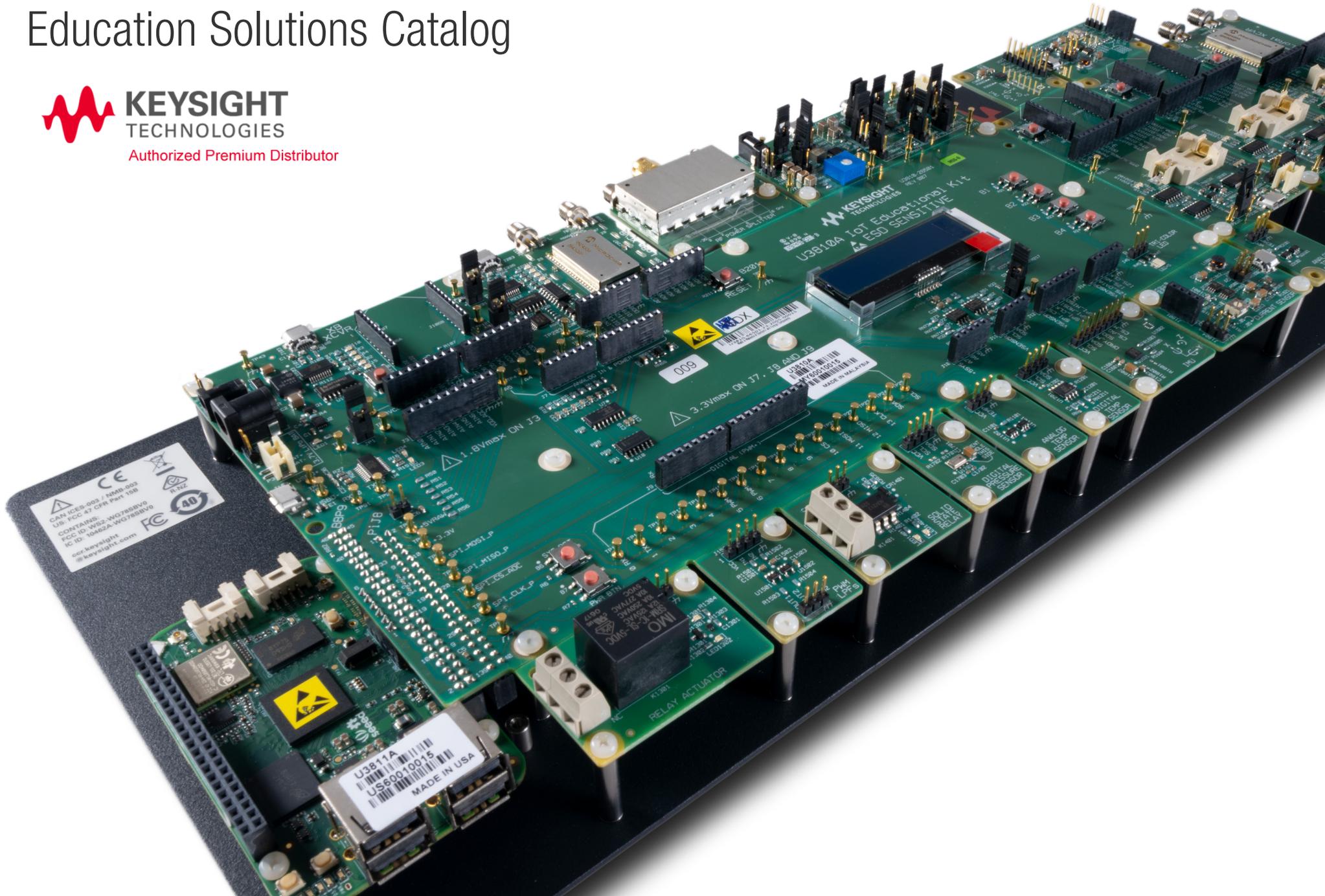


**S J ELECTRONICS**  
POWER • TEST & MEASUREMENT

# Education Solutions Catalog

 **KEYSIGHT**  
TECHNOLOGIES  
Authorized Premium Distributor



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## TABLE OF CONTENTS

A young man with dark hair and glasses, wearing a white lab coat over a dark shirt, is looking intently at a tablet device. The scene is dimly lit, with light reflecting off his glasses and the tablet screen. The background is blurred, suggesting a laboratory or classroom setting.

# Introduction

## GET SMARTER WITH KEYSIGHT

Keysight provides engineering equipment, software, and resources to turn ideas like yours into a successful venture, whether it's for a final year project or extensive research to remediate global climate issues.

That's our legacy, and it drives our vision to empower academic researchers, educators, and students with the cutting-edge tools, knowledge, and skills necessary to stand out above the rest — in the lab or in the classroom.

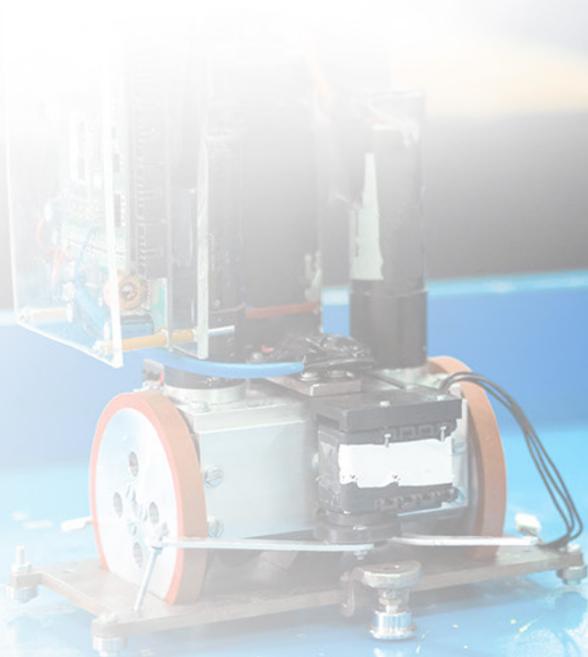
Nurturing future engineers  
and enabling research breakthroughs

# Education Courseware

## TEACHING SOLUTIONS

Keysight offers university-level, industry-based teaching solutions that complement your engineering courses. Engage students with lectures that combine your engineering expertise with Keysight's rich product knowledge. Then offer students a hands-on lab experience using industry-standard tools and techniques.

Each teaching solution comes with editable slides or lab sheets for classroom instruction and a training kit filled with detailed lab procedures that university educators can customize for each engineering student.



## IoT ECOSYSTEM AND DESIGN

Keysight's ready-to-teach IoT courseware focuses on practical design and validation techniques. It gives students industry-experience with leading-edge tools and software.

Products	Use	Product kit provides the following	Get complete solutions:
U3810 Series	Prepare IoT-ready students for advanced tests	<ul style="list-style-type: none"> <li>Each module comprises an IoT training kit, lab sheets, and teaching slides.</li> <li>Each module covers 75+ hours of classroom sessions and 50+ hours of lab sessions.</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced end-to-end IoT system teaching: Accelerate new IoT-focused course setup and free up time for research activities.</li> <li>Real-world critical design considerations: Prepare industry-ready students.</li> <li>Advanced topics: Learn about cybersecurity, compliance, and battery life analysis.</li> </ul>
U3800 Series	Prepare IoT-ready students for employability	<ul style="list-style-type: none"> <li>Each module comprises an IoT training kit, lab sheets, and teaching slides.</li> <li>Each module covers 36 hours of classroom sessions and 18 hours of lab sessions.</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive end-to-end IoT system teaching: Accelerate new IoT-focused course setup and free up time for research activities.</li> <li>Real-world / industry-oriented applications: Prepare industry-ready students.</li> <li>Up to date: Stay up to date with evolving IoT trends and technologies with free annual content updates for three years.</li> </ul>





NEW Keysight U3810  
Series Advanced IoT  
Teaching Lab Solutions

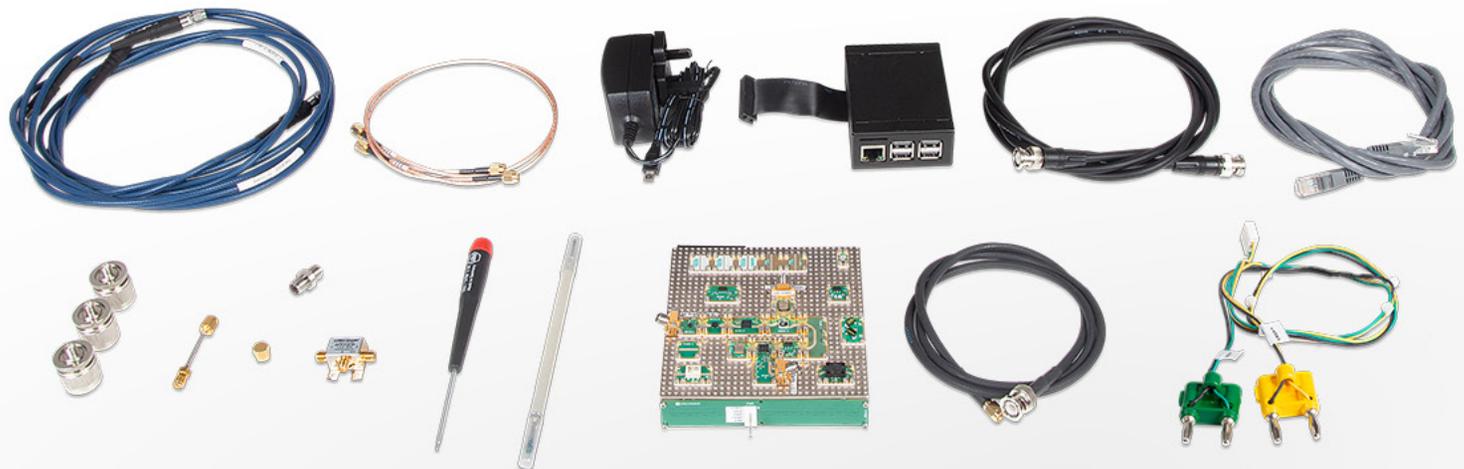
## RF MICROWAVE 5G NEW RADIO (NR)

The Keysight RF Microwave Teaching Solution establishes a solid foundation in RF microwave fundamentals, paving the way for students' specialization in advanced 5G or IoT wireless applications. Practical skills and real-world application knowledge gained through the courseware will make students industry-ready and highly sought-after.

Products	Key features and specifications	In the product kit	Where does this fit into your curriculum?
U3851A	<ul style="list-style-type: none"> <li>• Delivers lab courseware covering the RF system design life cycle</li> <li>• Helps university professors save time and resources by expanding current engineering programs</li> <li>• Helps universities easily integrate the lab courseware into current curriculum</li> <li>• Ensures students up to date with the latest developments in engineering</li> </ul>	<ul style="list-style-type: none"> <li>• Modular prototype kit</li> <li>• Kit controller</li> <li>• RF adapters and splitter</li> <li>• Cables (RF, power, LAN, BNC)</li> <li>• Power adapter</li> <li>• Carrying case</li> </ul>	<ul style="list-style-type: none"> <li>• Target university subject: RF and microwave design</li> <li>• Target year of study: third- and final-year undergraduates</li> <li>• Prerequisites: basic circuits, signals and systems, analog electronics, and electromagnetics</li> </ul>



U3851A RF Microwave Circuit Design, Simulation and Measurement Courseware



# Teaching Lab Solutions

## FROM BASIC ELECTRONICS TO RF LAB

The pace of technology innovation is increasing, driving time-to-market pressures and the need for productivity gains. Ensuring engineering graduates are ready to step in and be productive from day one has never been more critical.

Keysight offers hardware and software solutions to help educators produce industry-ready engineers who are knowledgeable of the tools and processes used in industry today. Students learn the fundamentals of electronics and basic test and measurement tasks, as well as how to use the hardware and software.



## BASIC ELECTRONICS LAB HARDWARE

The Keysight Smart Bench Essentials Series is a set of four professional-grade instruments plus powerful PathWave BenchVue remote connectivity software and 24/7 technical support. Designed for the university teaching lab, the Smart Bench Essentials portfolio comprises a digital multimeter, power supply, function generator, and oscilloscope. Together, the instruments and software provide a complete learning lab that accelerates engineering teaching and learning.

With PathWave BenchVue application software, you can do the following:

- configure, control, and monitor multiple bench instruments from a single screen
- automate workflows from test setup to report generation

### Smart Bench Essentials

	Power supply	Oscilloscope
Products	<ul style="list-style-type: none"> <li>• EDU36311A</li> </ul>	<ul style="list-style-type: none"> <li>• EDUX1052A/G</li> <li>• DSOX1102A</li> <li>• DSOX1202A</li> <li>• DSOX1204A</li> </ul>

	DMM	Function generator
Products	<ul style="list-style-type: none"> <li>• EDU34450A</li> </ul>	<ul style="list-style-type: none"> <li>• EDU33211A</li> <li>• EDU33212A</li> </ul>



## RF LAB HARDWARE

Keysight's RF Microwave Teaching Solution covers the complete RF circuit design flow, from specification and simulation to prototype building and validation. It provides students with engineering essentials, practical skills, and everyday application knowledge to help them successfully develop 5G and IoT wireless applications. For university professors, the teaching solution integrates easily into your existing engineering curriculum — saving time and resources.

Products	Includes
Network Analyzer	<ul style="list-style-type: none"> <li>N9917A</li> <li>N9915A</li> </ul>
Signal Analyzer	<ul style="list-style-type: none"> <li>N9320B</li> <li>N9322C</li> <li>N9000B</li> </ul>
RF Signal Generator	<ul style="list-style-type: none"> <li>N9310A</li> </ul>



N9000B CXA  
Signal Analyzer

# SIMULATION SOFTWARE

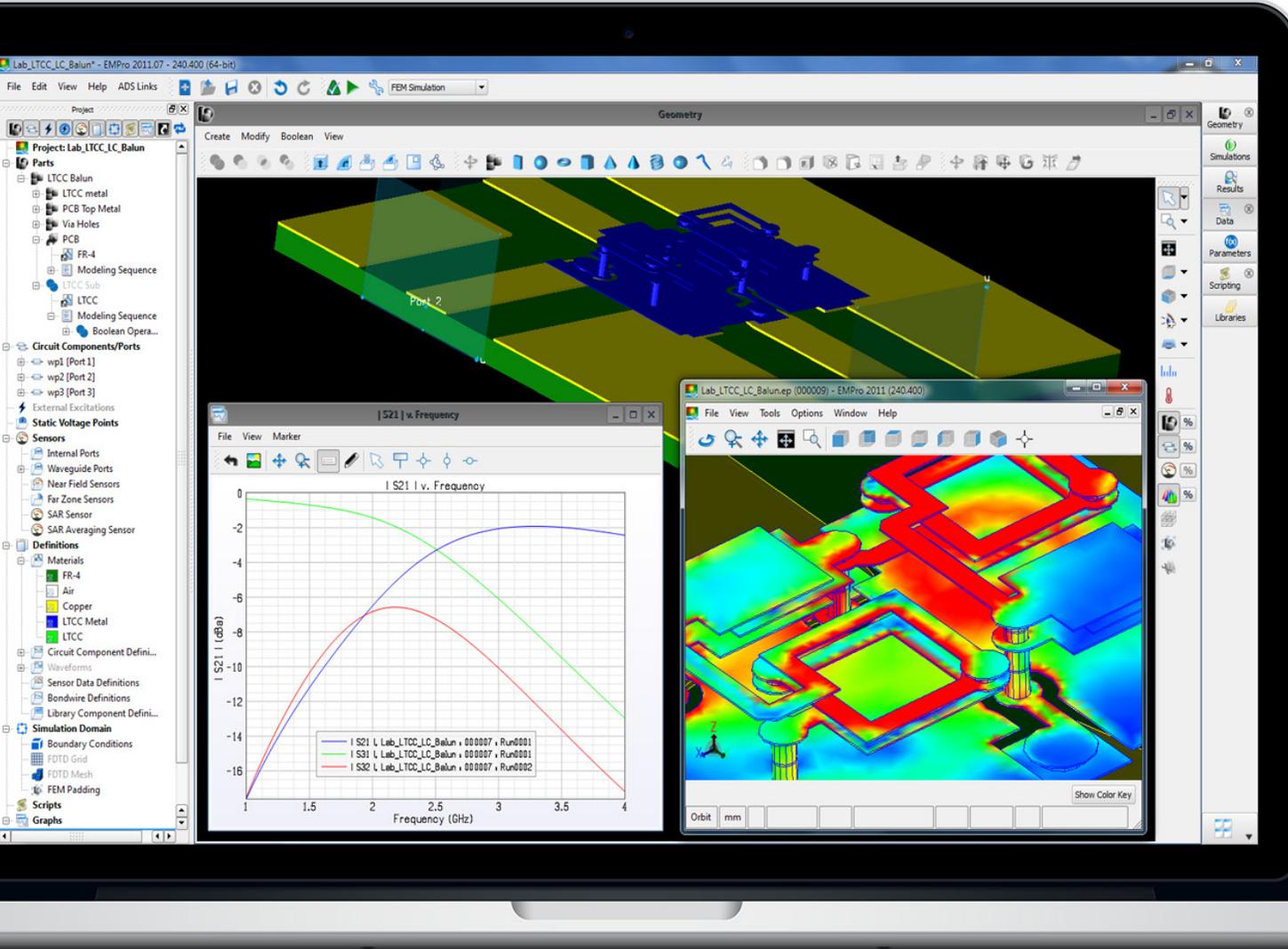
The Keysight PathWave platform is an open, scalable, and predictive software platform enabling fast and efficient data processing, sharing, and analysis at every stage in the product development workflow. Combining design software, instrument control, and application-specific test software, it fuels engineering and business operation improvements to help enterprises address increasing design, test, and measurement complexity and develop optimal electronic products.

Products	Includes
PathWave EM Design (EMPro)	<ul style="list-style-type: none"><li>• Genesys</li><li>• EMPro</li><li>• SystemVue</li><li>• Advanced Design Software</li><li>• Vector Signal Analysis Software</li><li>• BenchVue Instrument Apps</li></ul>

We are committed to helping students around the world acquire skills they need to advance quickly in their careers and bring positive impact to the industry.<sup>1</sup>

<sup>1</sup> Ee Huei Sin, vice president of Keysight Education and vice president & general manager of General Electronics Measurement Solutions (GEMS) at Keysight Technologies

# PathWave EM Design (EMPro)

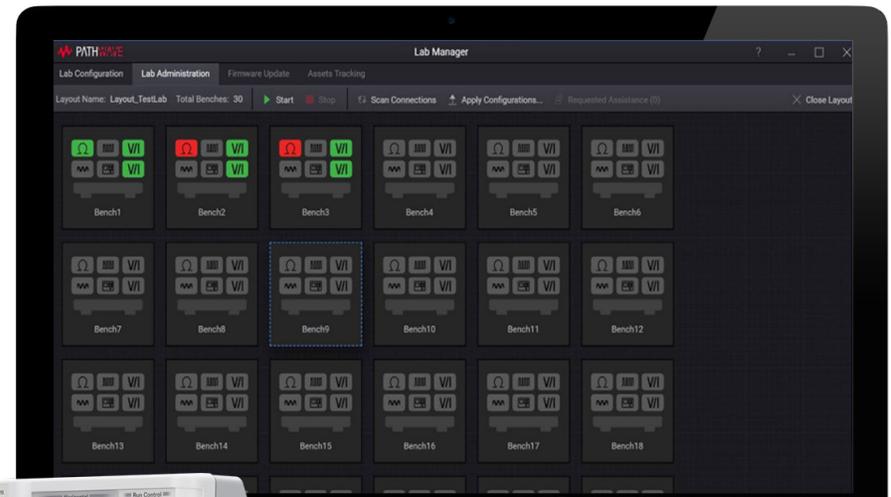


## LAB MANAGEMENT SOFTWARE

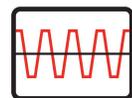
The optional PathWave lab management and control software allows users to configure lab equipment layout and setups. It also lets users track the status of lab assets, check for the latest firmware, and perform mass firmware updates on all the Smart Bench Essentials instruments.

Using the PathWave Lab Operations for Remote Learning software, students can connect and access their lab setups, perform lab work, and control the bench instruments through a web browser.

Product	Includes
PW9111EDU	PathWave BenchVue Lab Management and Control Solution
PW9112EDU	PathWave Lab Operations for Remote Learning



PathWave BenchVue Lab Management and Control Solution



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