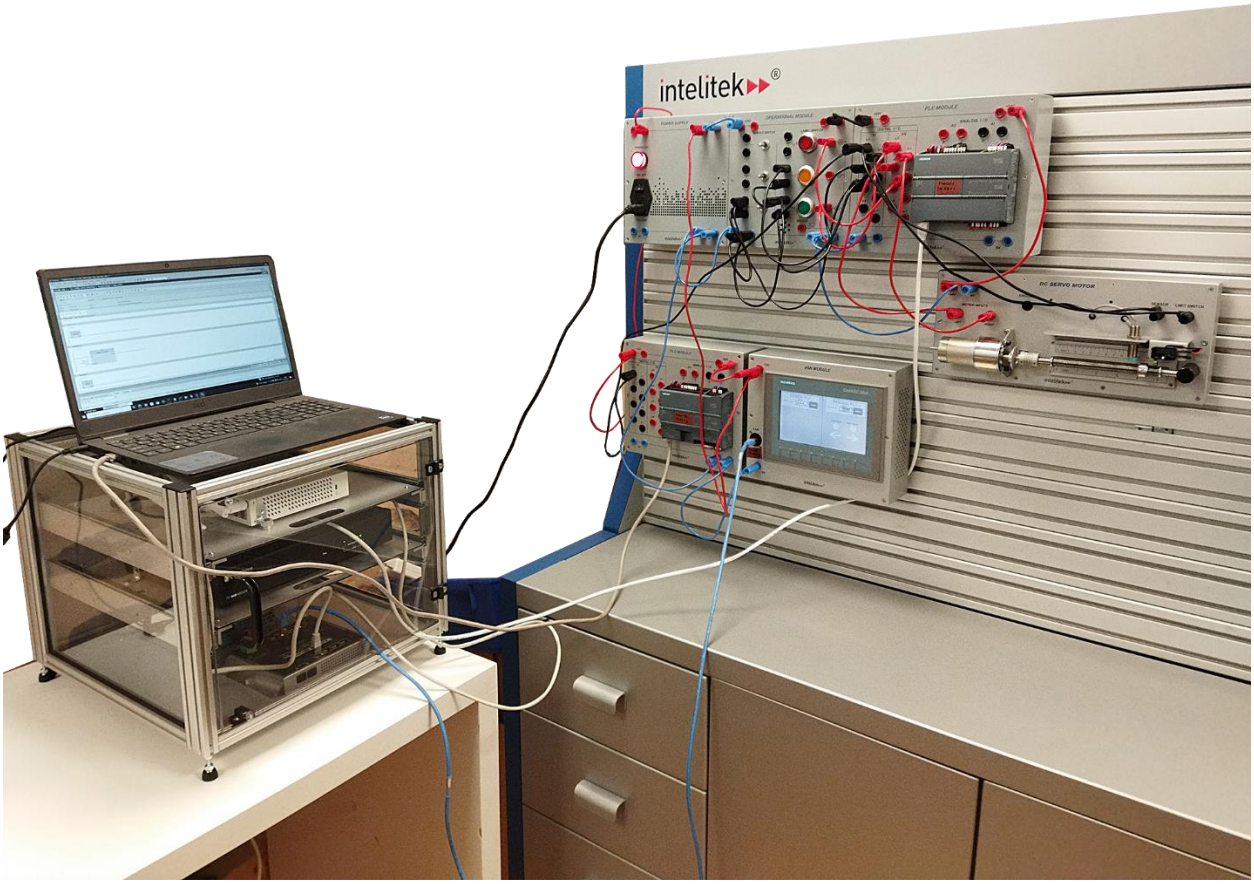
Industrial Cybersecurity Experimentation Package



LAB ACTIVITY GUIDE

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Industrial Cybersecurity Lab Activity Guide

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Intelitek software and documentation are available at http://intelitekdownloads.com.

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1. Getting Started

1.1. OVERVIEW

Thank you for purchasing the Intelitek *Industrial Cybersecurity Experimentation Package* for use in your classroom or laboratory. In a world where cyberthreats are ever-present, a manufacturing enterprise must do everything in its power to protect its valuable assets and information from external attack. The Intelitek *Industrial Cybersecurity Experimentation Package with the JobMaster Mechanical Training Bench* is meant to provide a scaled-down, smart factory network coupled with an accompanying informational technology (IT) network equipped with various cybersecurity features. The experimentation kit is usable in an educational setting, while still providing would-be technicians and factory managers authentic, industry-recognized hardware and software.

This guide is meant to help you get started with the laboratory curriculum and provide you with access to the various lab activities.

1.2. PREREQUISITES

It is strongly recommended that you complete Intelitek's Level 1 and Level 2 Industry 4.0 courses before performing these lab activities.

1.3. WHERE ARE THE LAB ACTIVITIES?

You can find the lab activities on the course page. A summary of each activity is found in Section 4, List of Lab Activities, on page 7.

If you have purchased the Cybersecurity Labs courseware, the lab activities are also available on the course page.

2. Materials

Materials required for each lab activity are also listed at the beginning of each activity. Make sure all materials are ready before the beginning of each lab period.

Individual lab activity exercises contain hyperlinks to download any required software. All software should be downloaded and installed before starting a lab activity.

The following materials are necessary for completion of the course.

		Quantity	Note
Hardware	Intelitek Cybersecurity Cabinet (includes data diode, switch, and firewall server)	1	
	Power Supply Module	1	
	Operational Module	1	
	PLC Module	2	One controller acts as the process PLC, the other as the cyber PLC
	DC Servo Motor Module	1	
	HMI Module	1	
	Electrical connectors		Banana plugs
	Ethernet cables		
	JobMaster Training System (JMTS) Panel	1	
	Ethernet switch	1	
Software	Software and firmware are accessed from the individual lab activities.		
Other	Personal Computer		Not provided by Intelitek

3. Navigating the Lab Activities

3.1. OVERVIEW AND PREPARATION

Lab activities include tasks that must be performed using the Intelitek *Industrial Cybersecurity Package*.

Participants are assigned with reading the lab activity PDFs (see Section 4, List of Lab Activities, below) and performing the tasks. Both participants and instructors are encouraged to read through the activities ahead of each lab period as preparation.

All activities require instructor verification to ensure that the work of the participants meet the requirements in the performance objectives. Performance objectives are listed at the beginning of each lab activity.

3.2. VIDEOS AND QR CODES

Lab activities may contain QR codes like the one below. Click these codes or scan them with your smartphone to watch instructional or illustrative videos that are relevant for the specific lab activity task.

An example QR code is given here:

4. List of Lab Activities (Course Outline)

Below is a list of lab activities in the *Industrial Cybersecurity Experimentation Package*.

Lab Activity	Description
Activity 1: Exploring the Factory Network	Explore the main components of the OT (Operational Technology) and IT (Information Technology) networks of the smart factory. Identify the main components of the IT and OT networks and test your knowledge about cybersecurity concepts.
Activity 2: The Switch	Install and configure the network switch.
Activity 3: The Data Diode	Install and configure the data diode.
Activity 4: The Firewall	Install and configure the firewall.
Activity 5: Testing the IT Network	Perform various tests on the cybersecurity components to ensure their proper configuration.
Activity 6: Setup and Activation of the Smart Factory	Physically connect each component of the Operational Technology Kit to set up your smart factory network. Observe how each device functions according to the PLC logic.
Activity 7: Simulated Attack on the Process PLC	Simulate a cyber-attack on the process PLC. Observe how the attack affects the process and how the parallel reference system (PRS) identifies it.
Activity 8: Simulated Attack on the Cyber PLC	Simulate an attack on the cyber PLC. Observe how the attack affects the process and how the parallel reference system (PRS) behaves under such an attack.
Activity 9: Threat Prevention	Critically analyze the vulnerability of the system by identifying the various weak points that could have led to its exploitation.