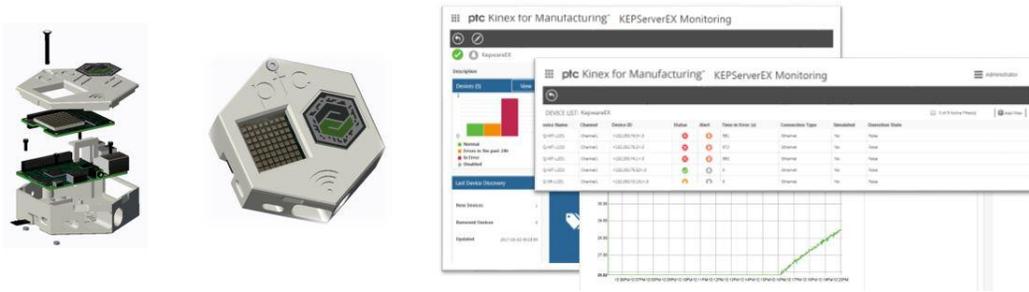


Sigma Tile Quick Start Guide



The Sigma Tile is a **very low cost** IoT device, equipped with **sensors** that can act as **Smart Connected Product** or as an **Industrial Controller** that you can build yourself. It is powered by the proven Raspberry Pi 3 and the Raspberry Pi Sense Hat. It is intended to be used for **IoT demonstration** and **IoT applications development and testing** purposes. After downloading and configuring the **FREE** trial of **Kepware KepServerEX** and of the **ThingWorx Manufacturing Apps**, you will be able to experience the power of Industrial IoT with your Sigma Tile acting as PLC communicating to your KepServerEX server via MODBUS and representing a device, an asset or a line streaming its sensor data: temperature, humidity, acceleration, etc

Step 1: Understanding your Sigma Tile

1. Using your mobile device, and the ThingWorx View App, scan the ThingMark on the cover of the Sigma Tile 
2. Explore the assembly and disassembly operations
3. Click on the “Learn More” link to be directed to the Sigma Tile webpage where you will find all the necessary instructions and documentation to build, connect, experience and develop with your Sigma Tile. Scan through the content on that page. (<http://www.ptc.com/manufacturing-software/sigma-tile>)

Step 2: Connecting your Sigma Tile to your network

1. Power your SigmaTile with the MicroUSB cable. Within about 15 seconds a WIFI symbol will be displayed on the LED display , indicating that the Sigma Tile is searching for a network.
2. Connect the Sigma Tile to a **network with internet access** using one of the following options:
 - a. Ethernet:
 - i. Connect your Ethernet cable
 - ii. Watch the LED screen of the Sense HAT for its IP address. It will take approximately 15 seconds. Make note of the IP address: `__ . __ . __ . __`
 - b. Wi-Fi:
 - i. Connect a mouse, keyboard, and monitor to your Raspberry Pi. You may have to turn-off and repower the Sigma Tile to be able to connect to the monitor.
 - ii. Log in: -user: **pi** -password: **raspberry**
 - iii. Use the pixel GUI to configure the Raspberry Pi with your network.
 - iv. Watch the LED screen of the Sense HAT for its IP address. It will take approximately 15 seconds. Make note of the IP address: `__ . __ . __ . __`

- Wait for the green status indicator on the LED display. Your Sigma Tile is now ready to be connected to the ThingWorx Manufacturing Apps: 

Step 3 – Connecting to the ThingWorx Manufacturing Apps

- Register to the ThingWorx Manufacturing Apps Early Access Program to get an account giving you access to the free trial of the ThingWorx Manufacturing Apps:
<http://www.ptc.com/manufacturing-software/kinex-is-coming-to-manufacturing/>
- Download and install the free trial of Kepware from <http://mykepware.com> (currently only version 6.0 of Kepware is supported with the ThingWorx Manufacturing Apps)
- Download and install the ThingWorx Manufacturing Apps available from the Early Access Program download page:
<http://www.ptc.com/manufacturing-software/kinex-manufacturing-evaluation/downloaddw/>
We recommend that you use the installer to install all the necessary components on a clean machine (or VM): ThingWorx 7.3.1, PostGres and the ThingWorx Manufacturing Apps extension. If you have a previous installation of ThingWorx on your machine and want to use it, you can simply import the extension but note that only ThingWorx 7.3.1 is currently supported.
- From the Sigma Tile webpage: <http://www.ptc.com/manufacturing-software/sigma-tile>
 - Download the Kepware configuration file for the Sigma Tile (SigmaTile_SenseHat.opf)
 - Download the Sigma Tile Workshop Guide (.pdf)
- Import the provided OPF file into your instance of KEPServerEX following instructions in Chapter 3 of the Sigma Tile Workshop Guide. Change the IP address of the device to the IP Address of your Sigma Tile that you noted when setting up the Raspberry Pi. Open the Kepware Quick Client to verify you’re getting data from the Sigma Tile.
- Connect KEPServerEX to your instance of ThingWorx Manufacturing Apps following instructions in Chapter 4 of the Sigma Tile Workshop Guide.

Step 4: Experience the ThingWorx Manufacturing Apps

- Follow Chapter 5 of the Sigma Tile Workshop guide to experience the ThingWorx Manufacturing Apps



- Follow Chapter 6 of the Sigma Tile Workshop Guide to learn how to extend the ThingWorx Manufacturing Apps software by installing a pre-built Extension. This extension contains services and logic to communicate with the Sigma Tile from ThingWorx and update the Screen Control values in Kepware based on an alert being triggered in ThingWorx Manufacturing Apps.

Sigma Tile LED Display Status Icons		
Icon	Status Description	KepServerEX "Screen_Control" tag value
	Searching for network	NA
	Running	0
	Warning	1
	Planned Downtime	2
	Unplanned Downtime	3
	Device Error in the Last 24 hours	4
	Unavailable	5

Appendix A: Technical Support

If you have **any questions related to the Sigma Tile**, these instructions and/or any aspect of the Sigma Tile Workshop Guide or Quick Start guide, you can post your questions in the following Community Page:

- <https://community.thingworx.com/groups/sigma-tile>

If you have **any questions related to the ThingWorx Manufacturing Apps** (installation, configuration, capabilities), we invite to check our ThingWorx User Community page at the link below. You will be able to search and view posts from other participants of this Early Access program, from PTC Subject Matter Experts. You will be able to ask questions, share your lessons learned and provide feedback.

- <https://community.thingworx.com/groups/kinex-for-manufacturing>
 - If you already a PTC customer, you probably already have an account
 - If you do not have an account, you will first have to login on the top right end side of the page

If you have **any questions related to the KepServerEX**, check the Kepware Technical Support page:

- <https://www.kepware.com/en-us/support/technical-support/>

Appendix B: Connecting to a HooToo to establish a local network

To demonstrate the Sigma Tile while traveling, for example, at a customer site, we recommend you establish your own local network in advance using a HooToo Trip Mate Nano.

Note: Your phone will be used to establish internet connectivity. Ensure you have data access enabled.

1. Follow the directions that came with the HooToo to connect it to your phone's Wi-Fi hotspot.
2. Identify which Wi-Fi network corresponds to your HooToo.
3. Connect your Sigma Tile to your HooToo network as described in Step 4 above

Appendix C: Updating your Sigma Tile with the latest software

To ensure you have the latest code on your Sigma Tile, you can update the Raspberry Pi software and the Sigma Tile scripts from the GitHub repository with these additional steps:

- a. Use the IP address to SSH into the Pi.
or
Use the mouse and keyboard to access the command line of the Raspberry Pi.
user: **pi**
password: **raspberry**
 - i. Change to the directory that hosts all of the code: *cd mfg-tile/*
 - ii. Pull down the latest code from the repository: *git pull*
 - iii. Make sure the launcher is executable: *chmod +x launcher.sh*
- b. Restart your Raspberry Pi: *sudo reboot now*
- c. In 15-30 seconds, you should see its IP address scroll across the screen.