AWS IoT Core on Talaria TWO™ Platform

Getting Started Guide
Release: 02-17-2021

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## Revision History

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<th>Version Number</th>
<th>Date</th>
<th>Comments</th>
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<tr>
<td>1.0</td>
<td>17-02-2021</td>
<td>First Release</td>
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1 Naming Conventions

<table>
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<tr>
<th>Talaria TWO™</th>
<th>Family of devices using the InnoPhase ultra-low power wireless technology, including the Talaria TWO™ SoC and Talaria TWO™ Modules</th>
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<tbody>
<tr>
<td>Talaria TWO™ SoC</td>
<td>InnoPhase custom wireless platform (INP2045)</td>
</tr>
<tr>
<td>Talaria TWO™ Modules</td>
<td>Modules integrating the Talaria TWO™ SoC (INP1010, INP1011, INP1012, INP1013)</td>
</tr>
<tr>
<td>Talaria TWO™ EVB-A</td>
<td>Evaluation boards containing the Talaria TWO™ Modules (INP3010, INP3011, INP3012, INP3013)</td>
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</tbody>
</table>

2 Figures

Figure 1: EVB-A Kit Contents

3 Terms & Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>AWS</td>
<td>Amazon Web Services</td>
</tr>
<tr>
<td>ELF</td>
<td>Executable and Linkable Format</td>
</tr>
<tr>
<td>EVB</td>
<td>Evaluation Board</td>
</tr>
<tr>
<td>GPIO</td>
<td>General Purpose Input/Output</td>
</tr>
<tr>
<td>HTTP</td>
<td>Hypertext Transfer Protocol</td>
</tr>
<tr>
<td>IoT</td>
<td>Internet of Things</td>
</tr>
<tr>
<td>MQTT</td>
<td>Message Queuing Telemetry Transport</td>
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<tr>
<td>SDK</td>
<td>Software Development Kit</td>
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4 Overview

The INP3010/3011/3012/3013 EVB-A’s are available for evaluating the performance and capability of the Talaria TWO™ INP1010/1011/1012/1013 modules.

The kits use InnoPhase’s award-winning Talaria TWO™ Multi-Protocol Platform with ultra-low power Wi-Fi + BLE5 for wireless data transfer, an embedded Arm Cortex-M3 for system control and user applications plus advanced security elements for device safeguards.

The kits include an Arduino UNO format baseboard with a Talaria TWO™ module attached and a different antenna option per kit.

The EVB-A can be used in stand-alone mode or attached to an Arduino UNO compatible host or shield board. The baseboard has all module GPIOs accessible through either an internal 20-pin header or the Arduino connectors. Power is supplied from USB, host Arduino board or battery connector.

Also mounted on the baseboard are environmental sensors for capturing temperature, humidity, pressure and light. It is ideal platform for developing exciting new battery-based, cloud connected products such as smart locks, smart sensors, or security and health monitoring devices.


For more details, visit: https://innophaseinc.com/talaria-two-modules/.
5 Hardware Description

5.1 Datasheet

Datasheet for the modules used in the kit can be downloaded from the following link:

5.2 Standard Kit Contents

Contents of the INP3010/INP3011 EVB-A Kit are as follows:

<table>
<thead>
<tr>
<th>INP3010/INP3011 EVB-A Kit Contents</th>
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</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
</tr>
<tr>
<td>Baseboard</td>
</tr>
<tr>
<td>Talaria TWO Module Included (Mounted on Baseboard)</td>
</tr>
<tr>
<td>Environmental Sensors (Mounted on Baseboard)</td>
</tr>
<tr>
<td>USB Interface</td>
</tr>
<tr>
<td>USB Cable</td>
</tr>
<tr>
<td>Antenna</td>
</tr>
<tr>
<td>Battery Holder</td>
</tr>
<tr>
<td>Accessories</td>
</tr>
</tbody>
</table>

*Figure 1: EVB-A Kit Contents*


5.3 Additional Hardware References

Schematics of the kit can be downloaded from the following link: https://innophaseinc.com/wp-content/uploads/modules/INP3010_3011-Schematic.pdf

Additional documentation is available on the Talaria TWO™ modules webpage: https://innophaseinc.com/talaria-two-modules#doc
6 Set up your Development Environment

6.1 Tools Installation (IDEs, Toolchains, SDKs)

Talaria TWO™ Software Development Kit is used for developing applications on Talaria TWO™ Platform.

A comprehensive User Guide: UG_Environment_Setup_for_Linux.pdf is available covering how to setup the development environment for using Talaria TWO™ SDK on an Ubuntu VirtualBox based environment with a Windows 10 host.

This document details installing the toolchain and necessary software packages required for the development, CLI commands for building target executables, programming the target and debugging of the application.

Alternatively, Talaria TWO™ SDK also supports the development using an Eclipse based IDE in Windows OS based PC. The details of setting up the development environment in Windows OS using the IDE is provided in User Guide: UG_Eclipse_Setup_Windows.pdf.

Talaria TWO™ SDK comes with above mentioned User Guides, an SDK API reference manual: T2-RM001-Talaria TWO™ SDK API Reference Guide.pdf, various example applications, application notes and many reference applications with documents for the user to start the development targeting different use-cases.

Talaria TWO™ SDK is available through InnoPhase Customer Portal Access and is available after portal registration, Mutual Non-Disclosure Agreement (MNDA) and Development Tools License Agreement (DTLA).

For detailed information on registering the getting the SDK access, please use the following link: https://innophaseinc.com/portal/customer-registration/.
6.2 Other software required to develop & debug applications for the device

Talaria TWO™ Download Tool is used for programming the EVB-A and using Debug Console. This tool is available for Windows and Linux platforms.

User Guide for this tool can be found in the following link: https://innophaseinc.com/wp-content/uploads/modules/Talaria-TWO-Download-Tool-User-Guide.pdf

This tool can be downloaded from the following link: https://innophaseinc.com/talaria-two-modules#eval-software

The Download Tool is found in the following folder in the Evaluation Software download from above link: I-CUBE-T2-STW.zip\STM32CubeExpansion_T2-HostAPI-lib_V1.0\Utilities\PC_Software\TalariaTwo_DownloadTool\Tool_GUI
7  Set-up your hardware


This has all the details needed for a successful setup, including description of components, power supply requirements, details of jumpers and the driver needed etc.

8  Setup your AWS account and Permissions

Refer to the instructions at Set up your AWS Account. Follow the steps outlined in these sections to create your account and a user and get started:

1. Sign up for an AWS account and
2. Create a user and grant permissions
3. Open the AWS IoT console

Pay special attention to the Notes.

9  Create Resources in AWS IoT

Refer to the instructions at Create AWS IoT Resources. Follow the steps outlined in these sections to provision resources for your device:

1. Create an AWS IoT Policy
2. Create a thing object

Pay special attention to the Notes.
10  Provisioning the Device, Running the Demo & Debugging

Step by step detailed instructions on how to provision the device, and how to flash run and debug the demo AWS IoT Core related applications using Talaria TWO™ Download Tool, are provided in the application note document: Using AWS IoT Device SDK with Talaria TWO™.

This can be downloaded from the following link: https://innophaseinc.com/wp-content/uploads/modules/Using-AWS-IoT-Device-SDK.pdf

There are three sample applications provided with this application note and available with the Talaria TWO™ SDK:

1. Sample Application 1: sample_pub_sub
   Provides details on how to publish/subscribe to MQTT topics and send/receive messages.

2. Sample Application 2: shadow_sample
   Provides details on how to use the AWS IoT Device Shadow service, to update the shadow of a device.

3. Sample Application 3: jobs_sample
   Provides details on how to create a job in AWS IoT Core and have the device execute it.

This document also details about how the user should verify if the demo works successfully, using device debug console and AWS IoT Core console.

Screenshots of Talaria TWO™ EVB-A debug console and AWS IoT Core console for all the 3 sample applications are also provided in this document, confirming the success, for example, if the messages are being received by AWS IoT Core MQTT topic or Device Shadow as expected.

11  Troubleshooting

This is covered in detailed documents available with Talaria TWO™ SDK access.
12 Support

1. Sales Support: Contact an InnoPhase sales representative via email – sales@innophaseinc.com
2. Technical Support:
   a. Visit: https://innophaseinc.com/contact/
   b. Also Visit: https://innophaseinc.com/talaria-two-modules
   c. Contact: support@innophaseinc.com

InnoPhase is working diligently to provide outstanding support to all customers.
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