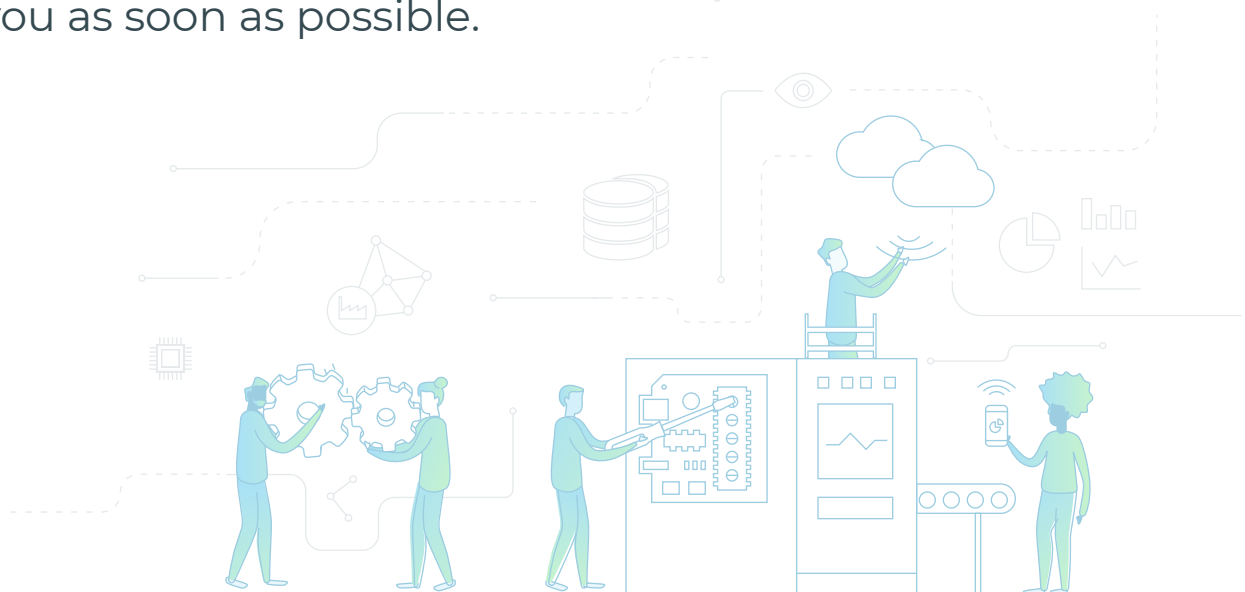# KOSMOS

Schneider Electric Setup Guide

What will this guide teach me?

🕐 30 minutes

This guide contains step-by-step instructions on how to set up the **Schneider Electric ATV312** to connect to the Kosmos industrial IoT platform.

Once you've finished these steps, you'll be ready to start gaining valuable insights from your sensors & actuators using Kosmos' dashboards, alerts, controls, and more.

For questions about setting up your Kosmos IoT System, please email support@temboo.com and we'll get back to you as soon as possible.

What You'll Need

Kosmos Gateway
(Raspberry Pi Model 3 B+)

2 x Ethernet Cable

USB Flash Drive

Raspberry Pi 5V 2.5A
Power Adapter

USB Micro SD
Card Reader

Micro SD Card
(8+GB, U3 Speed)

Schneider Electric
ATV312

NCD RS-485 Modem
(Emulator Version)

NCD 12V 3A
Power Adapter

NCD Wireless Modem

Before You Get Started

Before moving on to the next steps in this guide, please make sure that you've created your Temboo account and generated your Kosmos application files for your chosen hardware. If you haven't, head to **temboo.com** and complete those steps now!

Know what's up before things go down

Introducing

KOSMOS

Build industrial Internet of Things systems

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GET STARTED

Gateway Application Setup

1 First, install Etcher so that you can copy the Kosmos gateway application to your micro SD card: https://www.etcher.io

2 Insert your micro SD card into your USB SD card reader and connect the card reader to your computer.

3 Open Etcher and flash the Kosmos gateway `.xz` file onto your micro SD card (you previously downloaded this file while creating your Kosmos application).
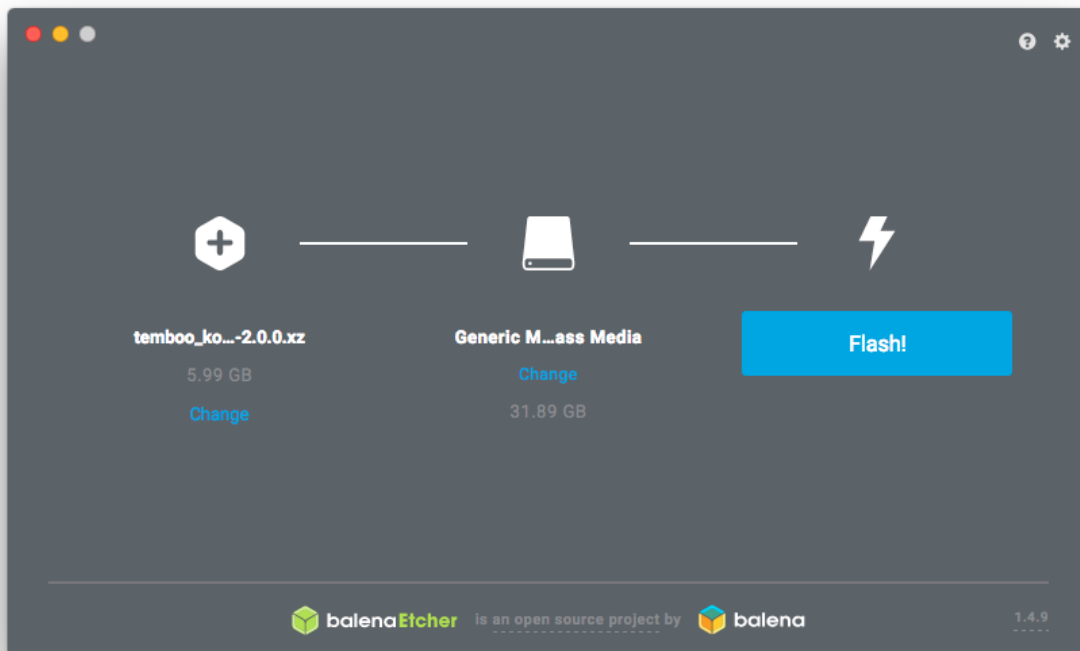
Kosmos Gateway Hardware Setup
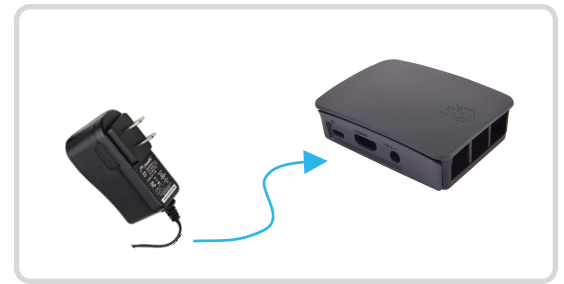
① Insert SD Card

Insert the micro SD card into the underside of the gateway (the metal contacts slide in face up).

② Power Up The Gateway

Connect the 5V 2.5A power adapter to your Kosmos gateway. Then, plug the adapter into a power outlet.
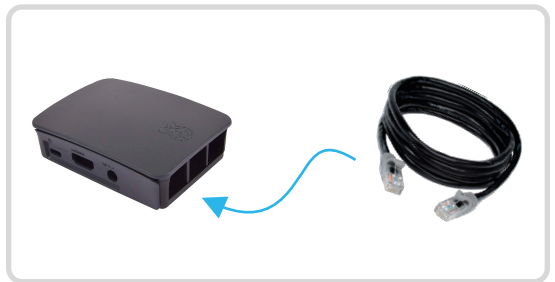

③ Connect Ethernet Cable

Use the ethernet cable to connect your Kosmos gateway to an ethernet outlet.

See instructions later in this guide if you want to connect your gateway via WiFi.

④ Connect NCD Modem

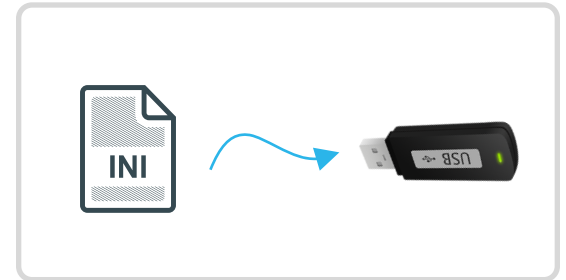Connect the NCD modem to your gateway via the USB cable provided.

Gateway Hardware Setup (Cont)
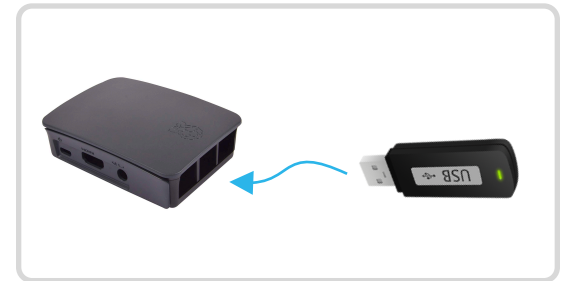
5 Prepare USB Drive

Copy the Kosmos config file **temboo_kosmos_config.ini** onto your USB drive.

6 Insert USB Drive

Insert the USB thumb drive into any available USB port on your Kosmos gateway.

Configure your ATV312

1 Set Baud Rate

Power on your ATV312. Select the "CON" menu and then the "tbr" submenu to set the baud rate to **9600**.

2 Set Address

Within the "CON" menu, use the "Add" submenu to set the ATV312's address to match the server address you entered during Kosmos app creation.

3 Set Data Encoding

Within the "CON" menu, use the "tfo" submenu to set the data encoding to **8n1** (8 bits, no parity bit, 1 stop bit).

4 Set Error Handling

Within the "CON" menu, use the "ErCO" submenu to set error handling to **0**.
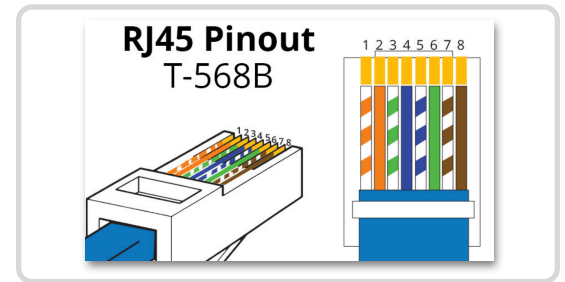
Connect ATV312 to RS-485 Modem

(1) ## ATV312 Wiring

Power off your ATV312 and connect an RJ45 ethernet cable terminated in the T-568B standard (most common) to your ATV312.

(2) ## Wire to RS-485 Modem

Connect the ATV312's RJ45 cable to the A, G, B inputs on NCD RS-485 modem as follows:

- Ethernet blue wire to A (positive)
- Ethernet brown to G (ground)
- Ethernet white/blue to B (negative)

(3) ## Power on RS-485 Modem

Connect the power supply to your NCD RS-485 modem.

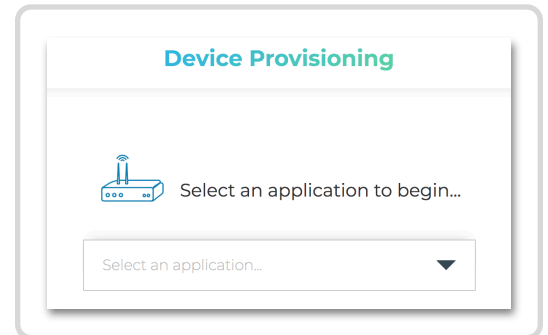**(4)** ## Power on ATV312

Power on your ATV312.

Provision your RS-485 Modem
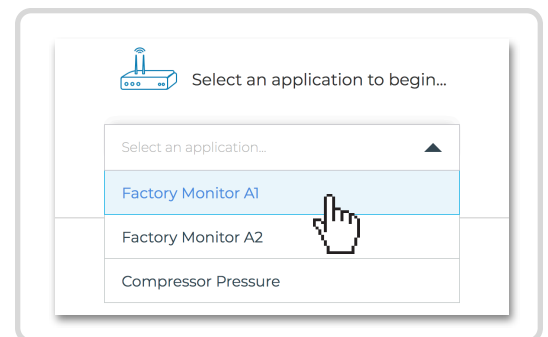
1

Log Into Kosmos

Log in to your Kosmos account and navigate to the Device Provisioning page.

2

Select Your Application

Select the Kosmos application that you want to set up. During this process we'll configure your RS-485 modem to communicate securely at your chosen data frequency.
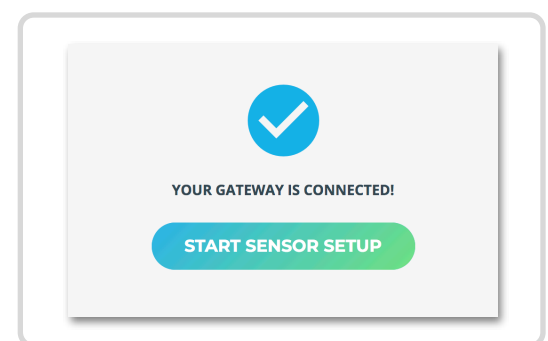

3

Confirm Connectivity

After selecting an application you'll see a screen displaying your gateway's connectivity status. When your gateway is online you can move on to configuring your modem.

Note: it can take up to one minute for your Kosmos gateway to connect to the internet and show as online on this screen.
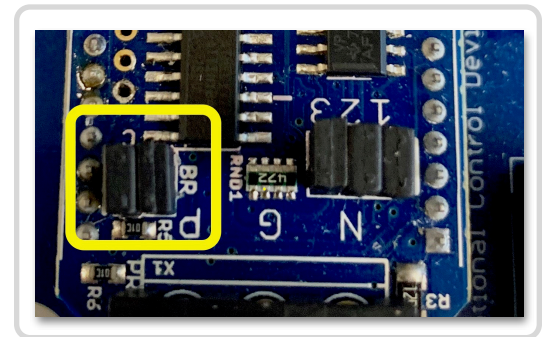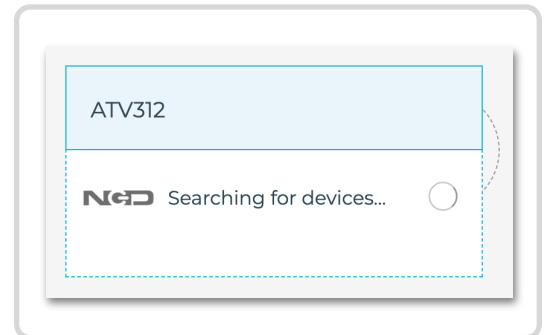
Provision your RS-485 Modem (cont)

4   **Enter Config Mode**

Your NCD RS-485 modem must be set to config mode before it can be updated.

To enter config mode, remove power from the RS-485 modem and install the **B & R jumpers** as shown. Then restore power.

Your RS-485 Modem's MAC address will appear on screen and you can pair with it.

5   **Exit Config Mode**

Once you've successfully provisioned the RS-485 modem, remove its power supply and remove the BR jumpers to set the modem back to run mode. The modem must be in run mode to send data to Kosmos.

When you've finished the provisioning process you will automatically be taken to your dashboard.
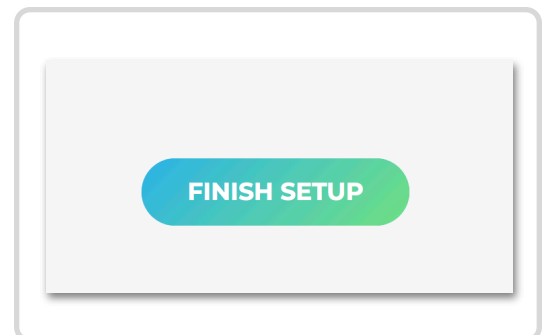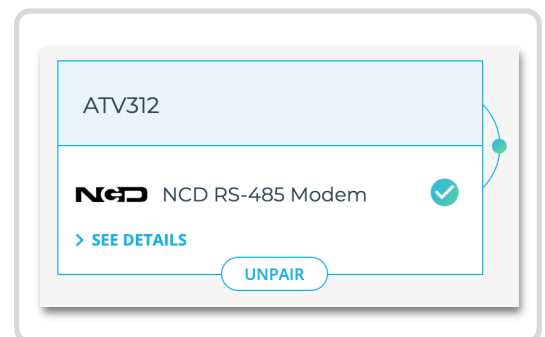
View Your Kosmos Sensor Data

1

Visit Your Dashboard

Log into your Kosmos account and navigate to the dashboard:

https://temboo.com/devices
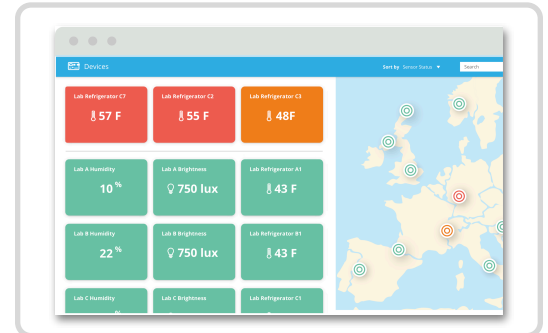
2

Monitor Gateway Status

When the gateway connects, a green dot will appear beside the name of your Kosmos application. The gateway takes ~90 seconds to connect.

3

View Modbus Data

Click into your application and then click on your Modbus device. You should see the first data points for any sensors that you have set up.

Connect Your Gateway Via WiFi (Optional)
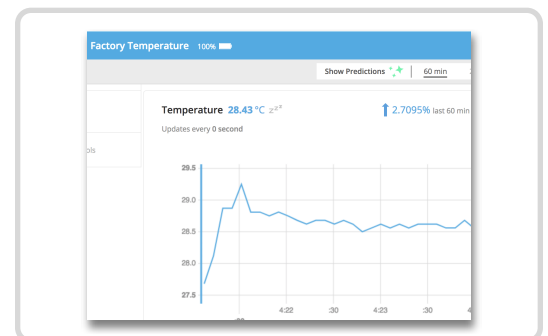
(i) We recommend using ethernet to connect your gateway to the Kosmos web dashboard.

✓ Fastest setup time   ✓ Most reliable connection

1 To use WiFi to connect your Kosmos gateway to the internet, first remove the USB thumb drive from your gateway and plug it into your computer.

2 Locate the **temboo_kosmos_config.ini** file on the USB thumb drive and open it with your favorite text editor.

3 Add the details of the WiFi network that you want your gateway to connect to (see lines 14 & 15 in the screenshot below), and then save your config file.

4 Eject the USB drive from your computer and insert it back into your Kosmos gateway. Remove the gateway's power supply and reconnect it. Your Kosmos gateway will power back up and connect via WiFi.

```
kosmos_gateway_config.ini

1   [credentials]
2   account_name = my-kosmos-account
3   appkey_name = myIndustrialIoTApp
4   appkey_value = WBnnvr12Mu5tlw123uZwaF12vpF1EZj
5
6   [cloud_connection]
7   gateway_id = my_gateway
8   auth_type = standard
9   port = 9009
10  websocket_version = 1
11  ws_url = wss://kosmos.temboo.com
12
13  [wifi]
14  ssid = myWifiNetwork
15  password = my-wifi-password

Line 15, Column 28              Tab Size: 4         Plain Text
```

⚠️ Troubleshooting Tips

Problem	Solution
Gateway isn't powering up.	When your gateway is powered on you'll see a red LED (solid) and green LED (blinking) inside the case. If you don't see those lights, check that the power supply is securely attached at both ends, and that the wall outlet you are using is active.
Your gateway doesn't appear online in your Kosmos dashboard.	Make sure that you wait 10 minutes after powering the gateway on, and that all gateway attachments are connected as described in this guide. If the gateway is still offline after 10 minutes, try restarting the gateway by removing and reinserting the power supply.
Your graphs have no data.	Check that you have created a Modbus table with at least one input row, and that you have explicitly opted to graph this row in the Kosmos dashboard. Wait for at least 10 minutes after powering up your gateway for data to arrive in your graphs. If you still don't see sensor data, confirm that your Modbus devices and Kosmos gateway are on the same network.

Questions?
support@temboo.com