Application Note

Ignition Sensing Router Setup

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Document No. APP-0126-EN, revision from 15th November, 2024.

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Used symbols

Danger – Information regarding user safety or potential damage to the router.

Attention – Problems that can arise in specific situations.

Information – Useful tips or information of special interest.

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1. Introduction

This application note provides comprehensive guidance for configuring ignition sensing on Advantech routers that have been properly installed and correctly wired.

Ignition sensing enables the router to power on when the vehicle's ignition key is activated and to power off after a preset time delay once the ignition key is deactivated.

1.1 Operating Principle

A router that can be connected to a vehicle in this manner must support **Low Power Mode** (LPM) and have a **Digital Input** (DI). The arrangement is such that the router is continuously connected to the power supply and remains in **sleep mode**. Upon the vehicle's ignition being started, the router is awakened from sleep mode through a signal to the DI.

When the vehicle is turned off, the router will shut down after a time period which can be configured. This setting needs to be done in the Router App *Sleep Mode*, which must be installed on the router. In this Router App, you then enable waking the router from sleep mode via the signal on the digital input and further define the time for which the router will stay powered on after the vehicle has been turned off.

2. Product Families Setup

This chapter is organized into subchapters, with each focusing on a distinct router family. The first figure in each subchapter presents a functional diagram depicting the router's connection to a vehicle, illustrating the necessary wiring and components for successful integration. Following that, the second figure in each subchapter details the required configuration for the *Sleep Mode* Router App.

2.1 Connection Setup

For details about router connections, parameters, and more, please refer to the *Hardware Manual* of your router model. Similarly, information about the router's power consumption in sleep mode can be found in the Hardware Manual of your router, under the section *Technical Parameters* → *Basic Parameters*.

Advantech routers offer two primary connection methodologies, determined by their internal circuit design: **with or without a relay**. When a router family necessitates the use of a relay, it's imperative to select the appropriate relay type, either 12 V or 24 V coil voltage, according to the vehicle's electrical system. A diode is typically connected in parallel to the relay coil to protect the control circuit from sudden voltage spikes. Should the relay incorporate a built-in flyback diode, the need for an additional external diode is negated. However, it's essential to remember that excluding this diode, if not integrated into the relay, could potentially damage the device.

For circuit protection, it is advisable to use the correct fuses; **class T** fuses are recommended due to their suitability for this application.

2.2 Sleep Mode Router App Configuration

The second figure in each subchapter illustrates the setup of the *Sleep Mode* Router App, essential for the system's functionality. To engage Low Power Mode (LPM), check the *Enable Sleep Mode* option. Set the *Wake Up* feature to activate the router upon detecting an active binary input. Furthermore, specify how long the router should wait to return to sleep mode after the vehicle's ignition is switched off by adjusting the *Sleep if binary input is inactive for x s* setting. Although the default setting in these examples is 10 seconds, this interval can be altered to suit your requirements.

In case of incorrect wiring (if the relevant BIN is inactive), the router will enter sleep mode after the configured sleep time elapses, either when we confirm the configuration with the *Apply* button or upon connecting the router to the power supply. The router is inaccessible in sleep mode!

2.3 SmartStart (BB-SLxx) Family

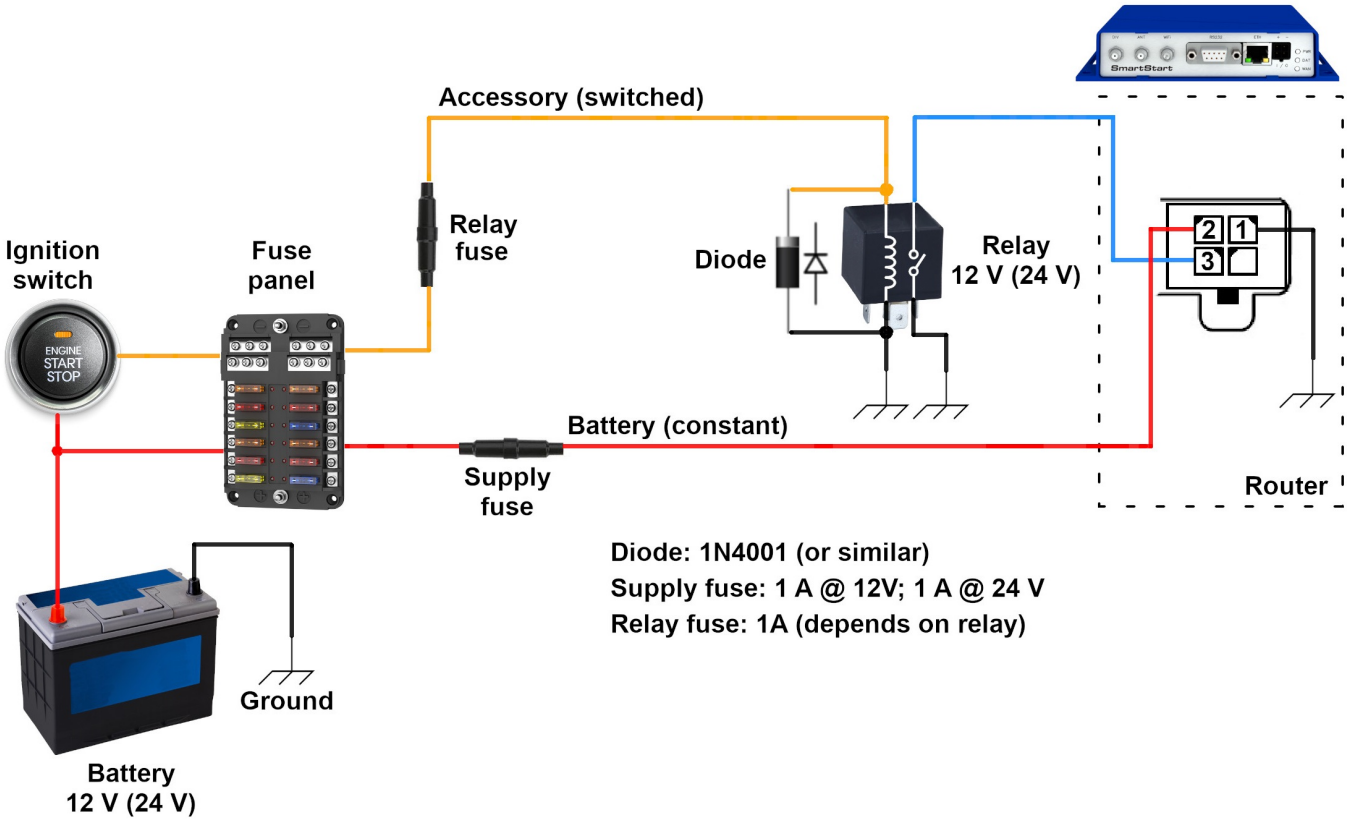

Figure 1: SmartStart Connection Schema

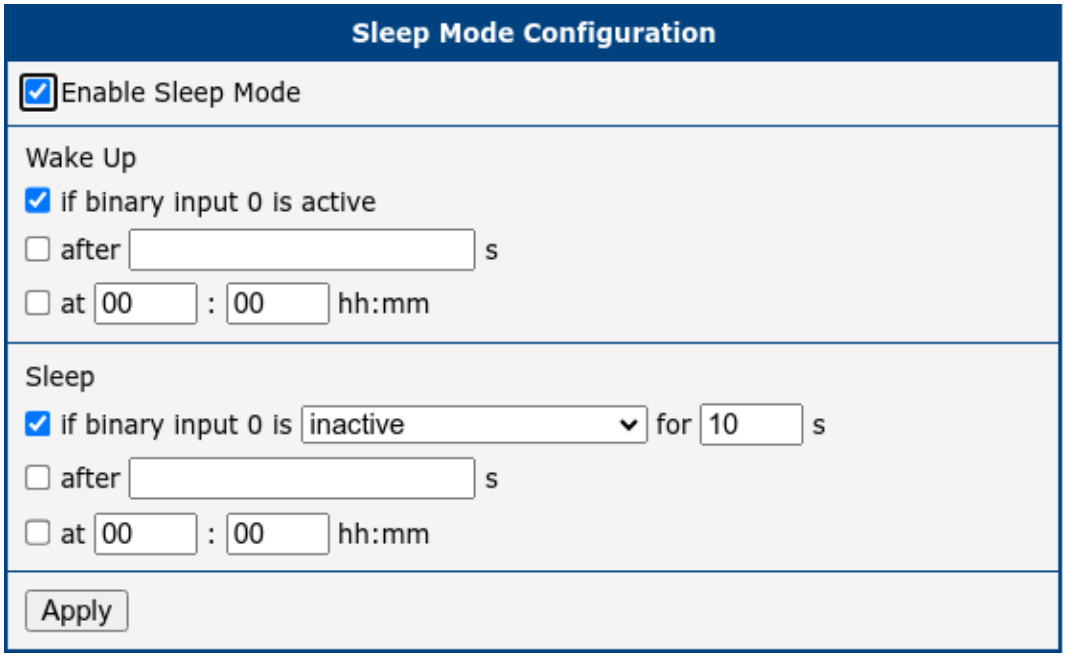

Figure 2: SmartStart Sleep Mode Router App Configuration

2.4 SmartFlex (BB-SRxx) Family

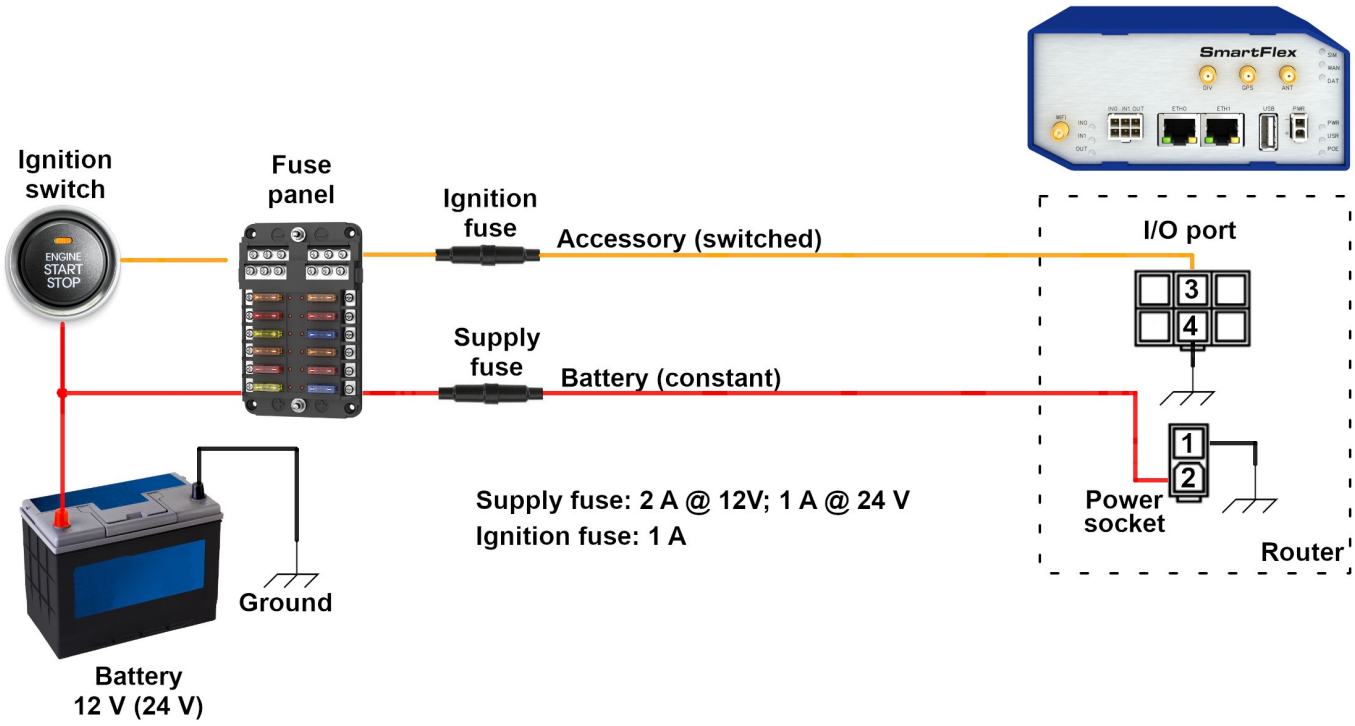

Figure 3: SmartFlex Connection Schema

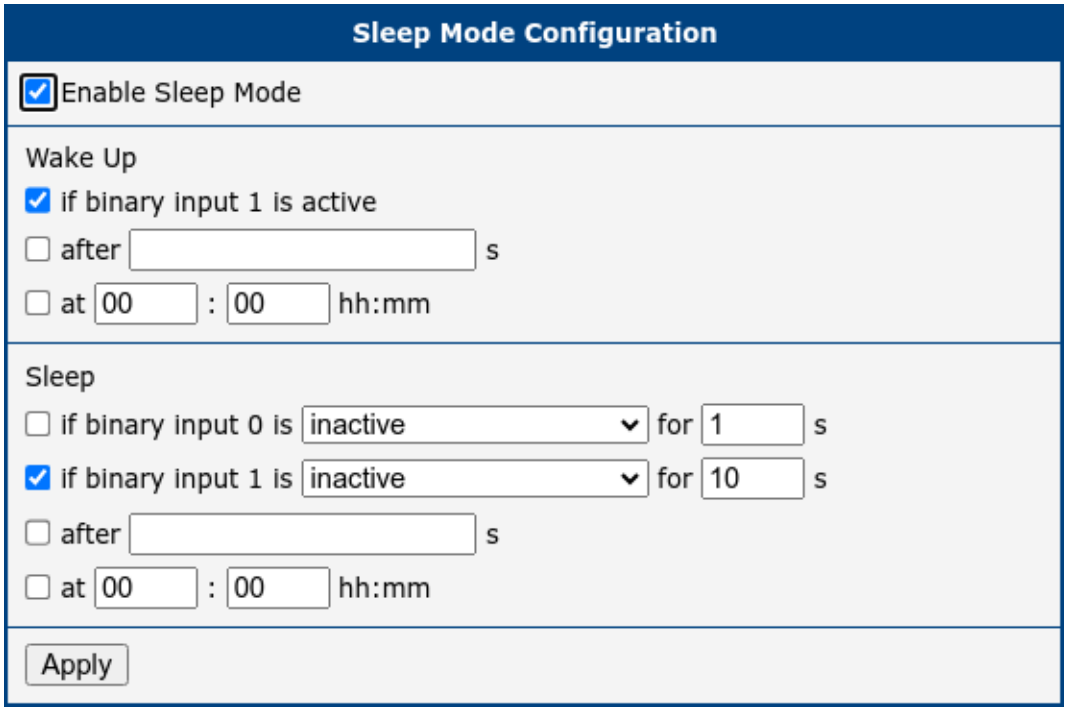

Figure 4: SmartFlex Sleep Mode Router App Configuration

2.5 ICR-2800 Family

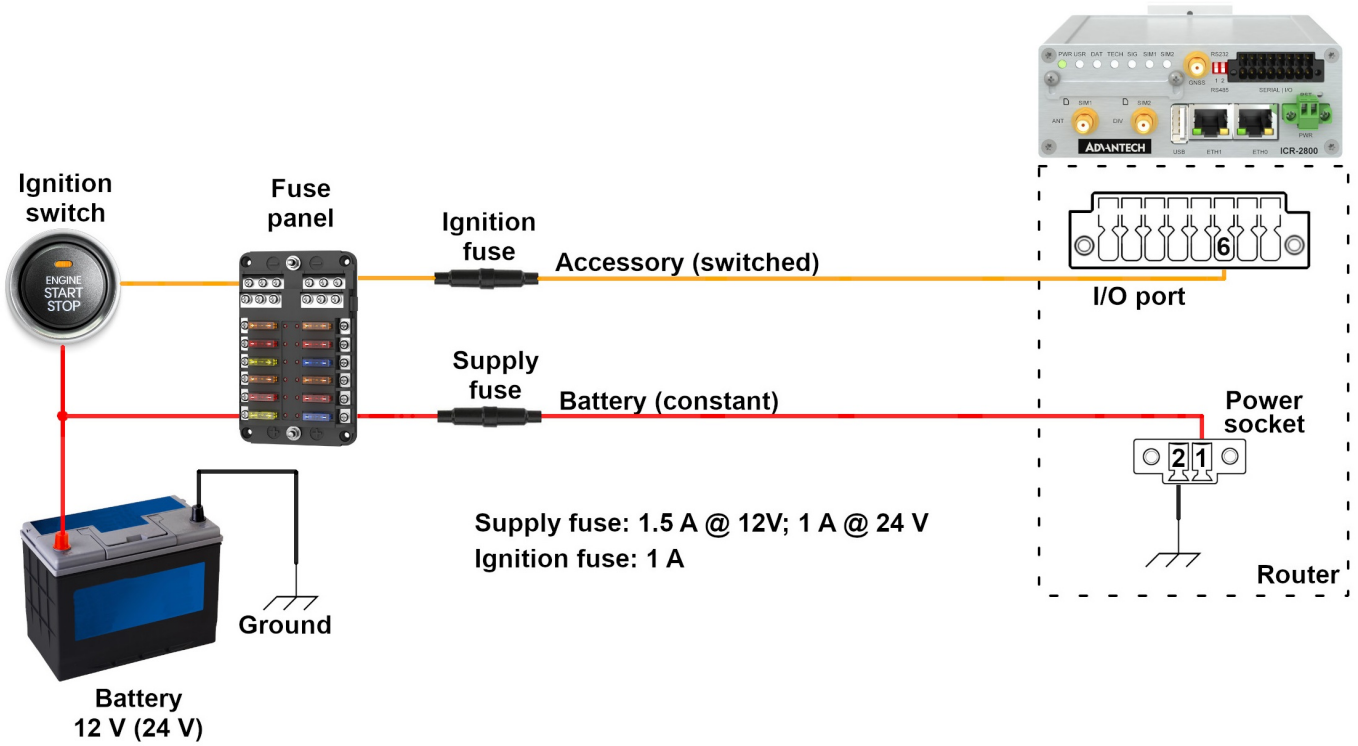

Figure 5: ICR-2800 Connection Schema

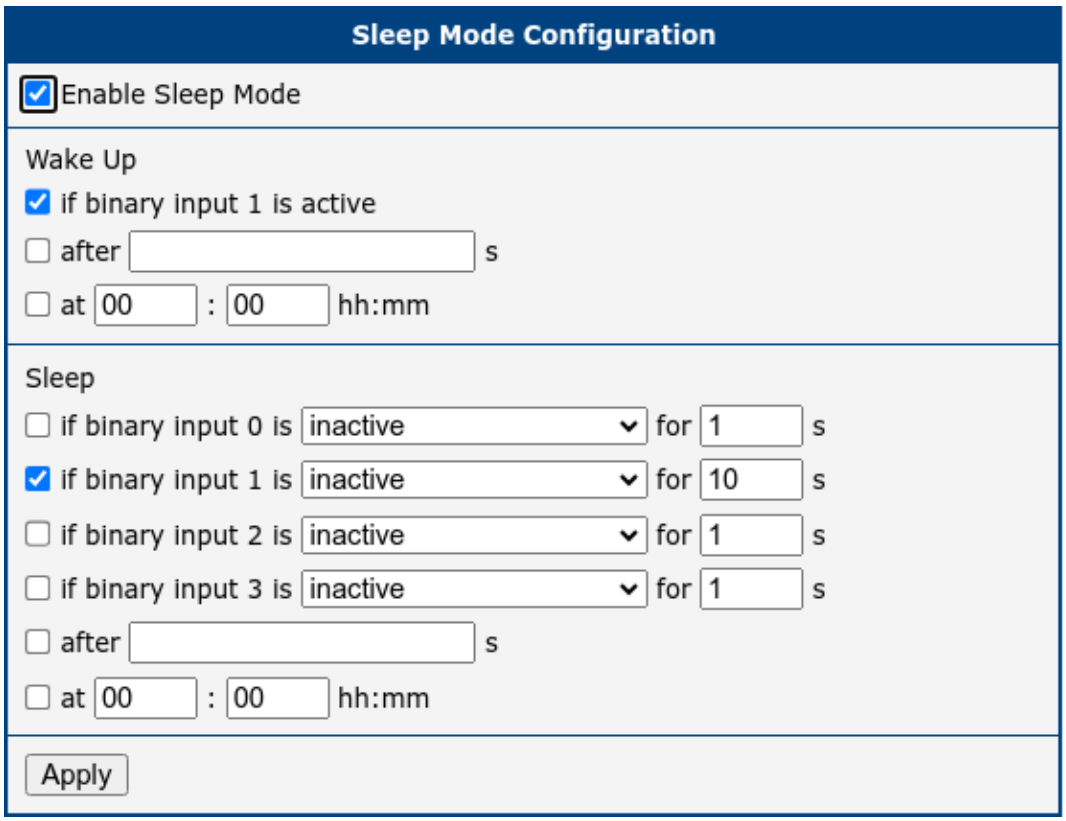

Figure 6: ICR-2800 Sleep Mode Router App Configuration

2.6 ICR-3200 Family

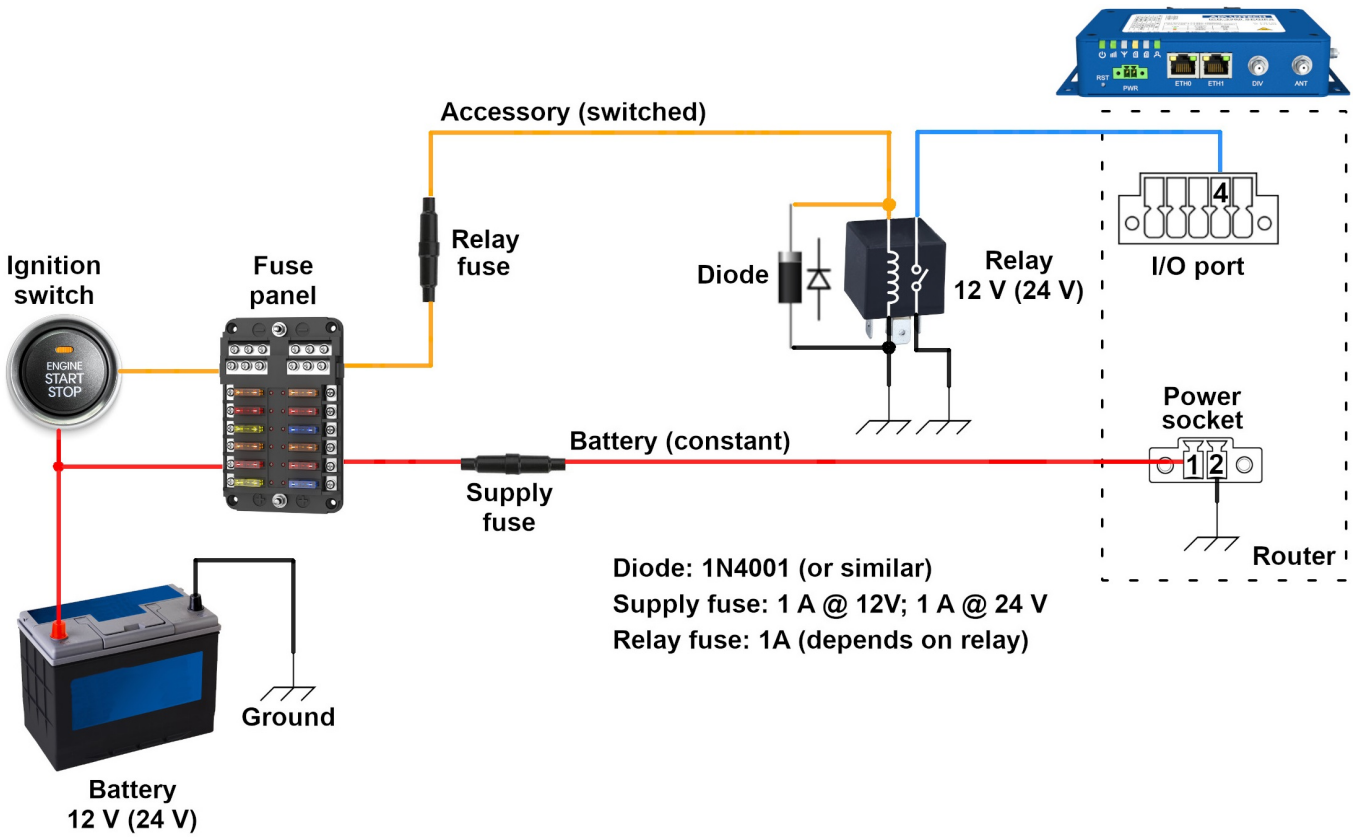

Figure 7: ICR-3200 Connection Schema

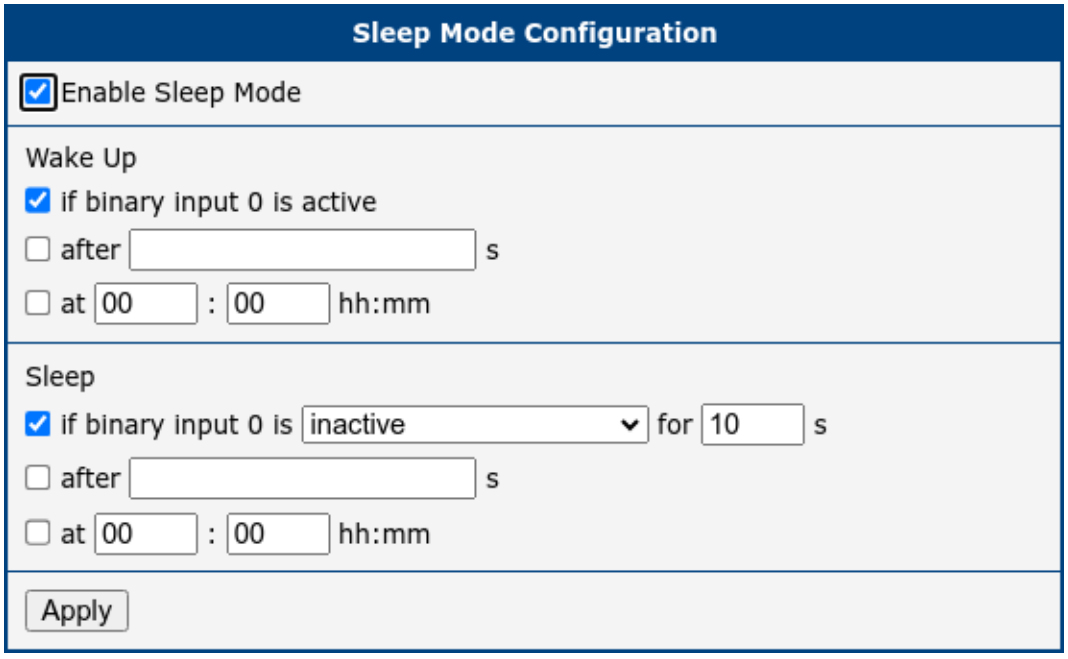

Figure 8: ICR-3200 Sleep Mode Router App Configuration

2.7 ICR-4200 Family

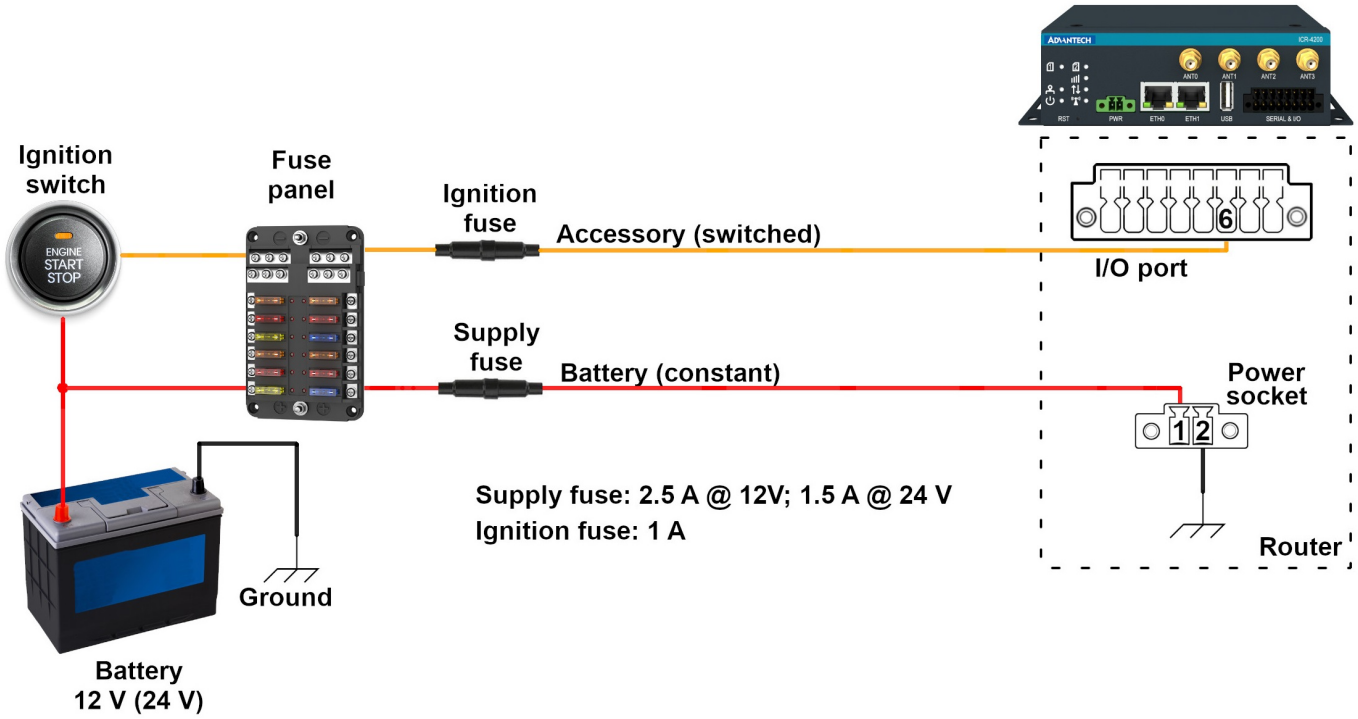

Figure 9: ICR-4200 Connection Schema

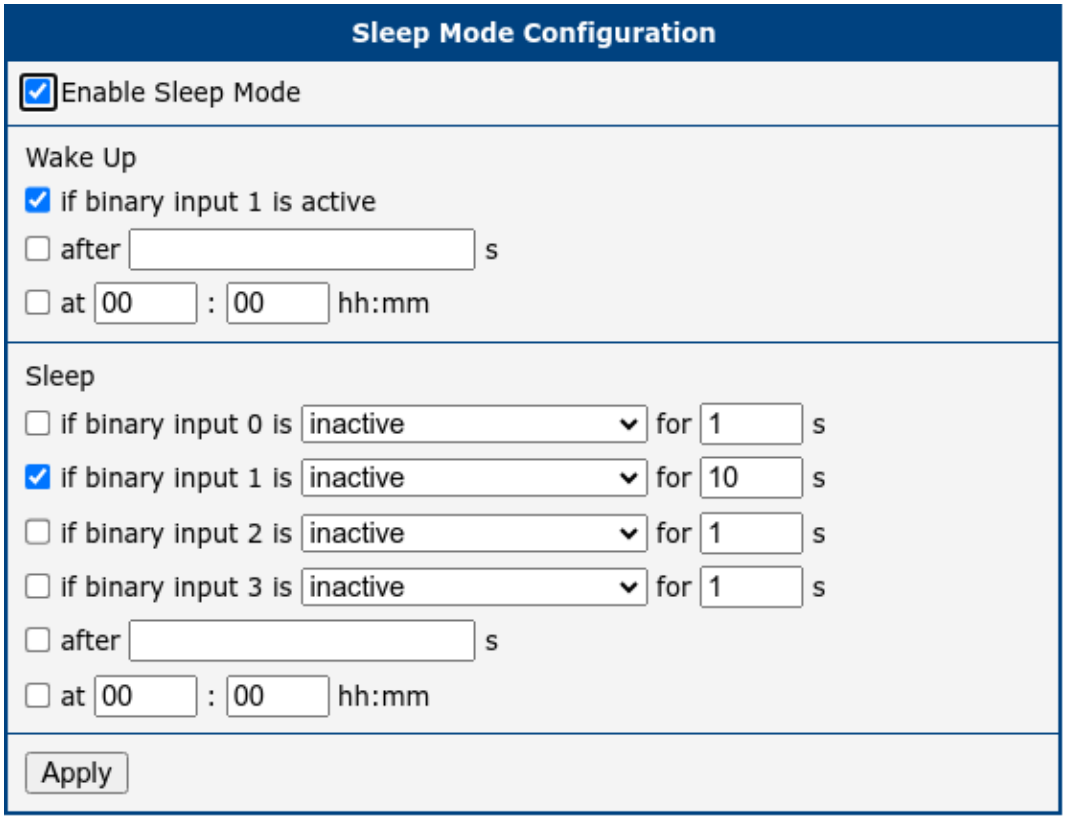

Figure 10: ICR-4200 Sleep Mode Router App Configuration

2.8 ICR-4400 Family

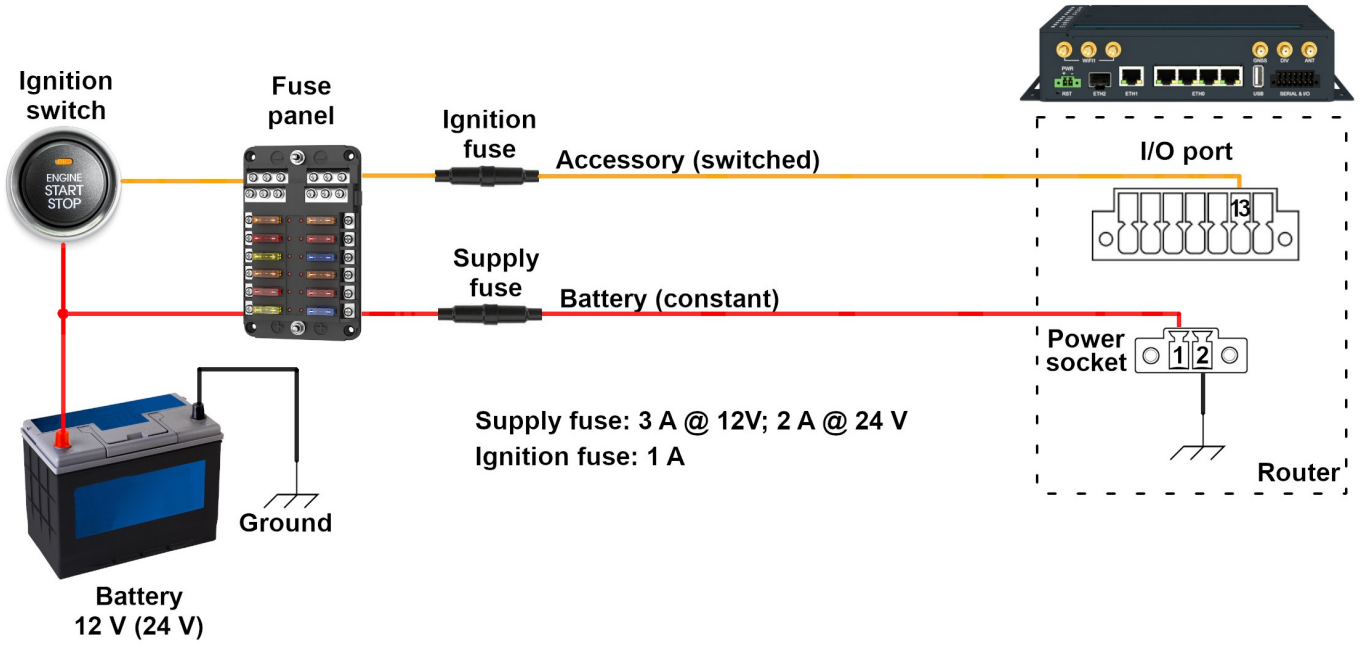

Figure 11: ICR-4400 Family Connection Schema

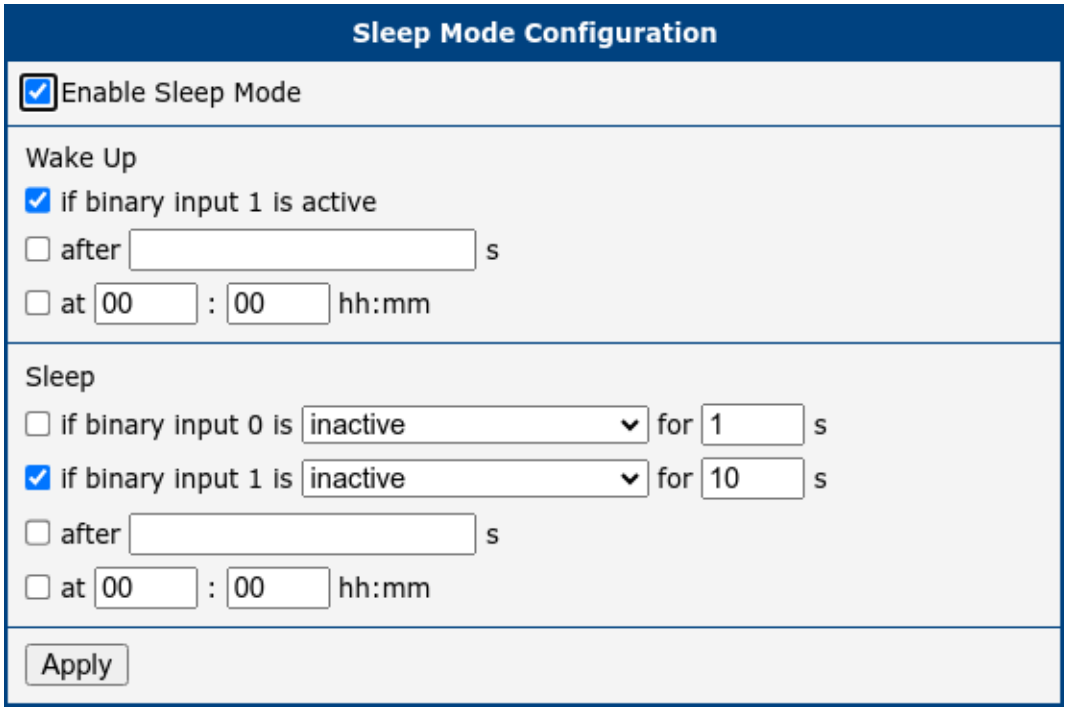

Figure 12: ICR-4400 Sleep Mode Router App Configuration

3. Related Documents

You can obtain product-related documents on the **Engineering Portal** at *icr.advantech.com*.

To access your router's documents or firmware, go to the *Router Models* page, locate the required model, and select the appropriate tab below.

Documents that are common to all models and describe specific functionality areas are available on the *Application Notes* page.

The **Router Apps** installation packages and manuals are available on the *Router Apps* page.

If you are interested in further options for extending router functionality, either through scripts or custom Router Apps, please see the information available on the *Development* page.