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Strata Current Sense EVB User Guide

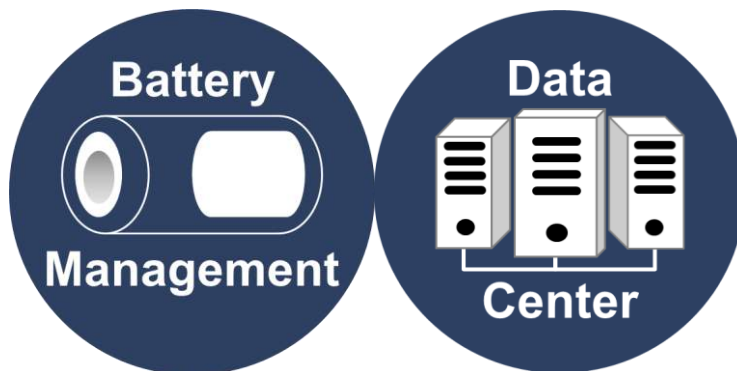


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Introduction

The Strata Current Sense EVB provides an easy to use evaluation kit within the Strata Development Environment for the NCS210R, NCS211R, NCS213R, NCS214R, and NCS333A current sense amplifiers from ON Semiconductor. Through Strata, the developer can access datasheets, BOMs, schematics, and other collateral they may need. This document will provide instructions on how to use the evaluation kits.

Features

- Vin Range from 0.1V to 26V
- 5 current reading options ranging from 0 – 30A
 - 0 - 100 μ A
 - 0 – 2mA
 - 0 – 100mA
 - 0 – 1A
 - 0 – 30A
- Programmable on-board load up to 10A
- Programmable OCP and OVP settings

Applications

- Current Sensing (High side)
- Power Management
- Battery Management

User Guide

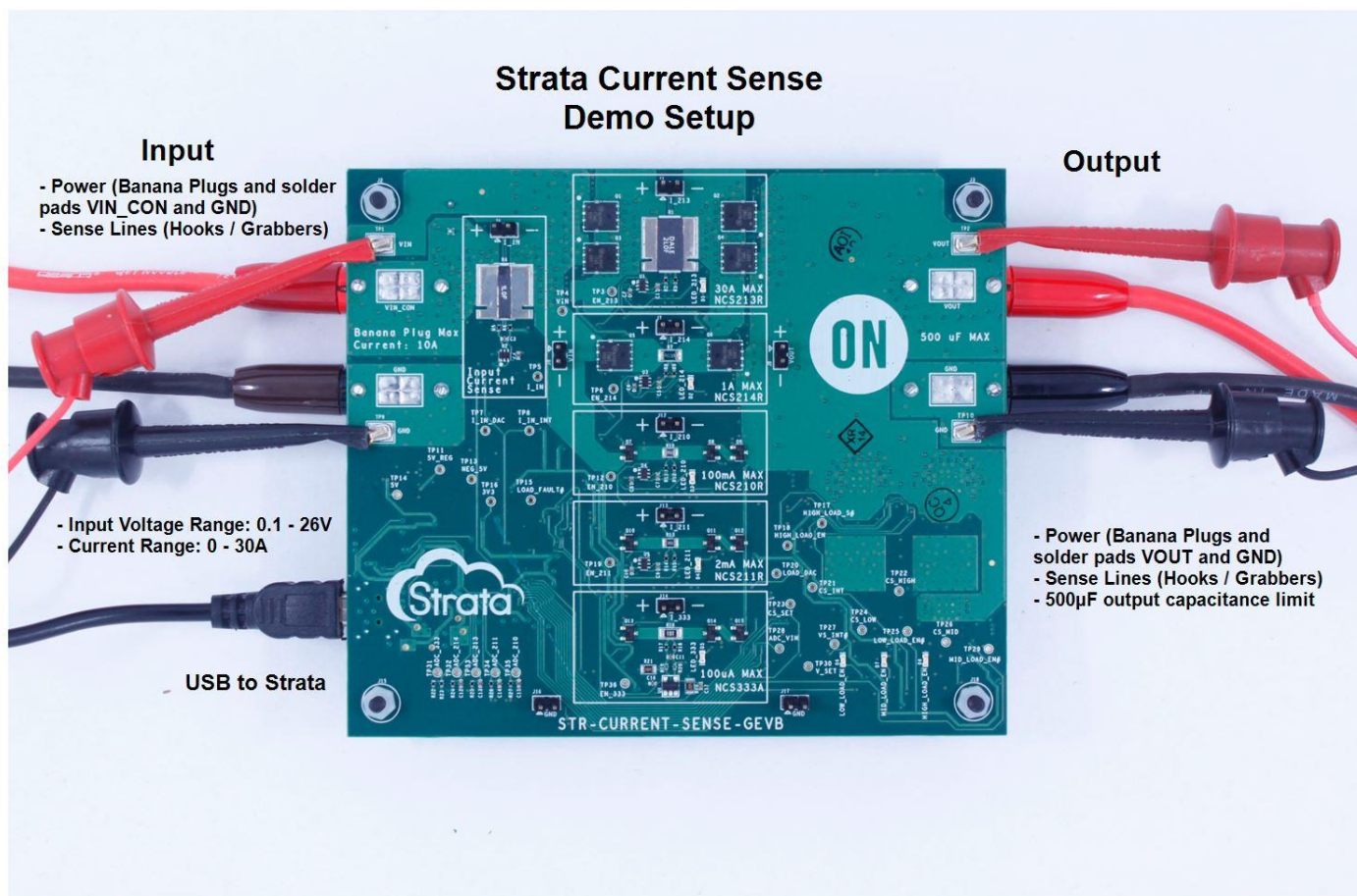
This section will explain how to use the Strata Current Sense EVB in a step by step manner. It will cover the hardware required, how to use the User Interface in Strata, and the controls specific to the current sense amplifiers.

Hardware Setup

The hardware required to use the Strata Current Sense EVB are a computer (with Windows), a power supply, and a load. Sense lines are recommended if available with equipment being used. Follow the steps below.

1. Plug the power supply into the input of the current sense board using the banana plugs J22 and J24. Do not apply over 26V to the input. The minimum voltage needed for the current sense board to turn on is 0.1V.
2. Connect the computer to the current sense board using the USB connector J26 on the bottom of the board.
3. Plug the load into the output using the banana plugs J21 and J23.
4. If available, connect sense lines to input using TP1 and TP9, and connect sense lines to the output using TP2 and TP10.
5. If currents above 10A are needed, use solder pads VIN_CON, VOUT_CON, and GND to solder wires directly to inputs of board. The banana plugs are only rated to 10A.

An example picture of the setup can be found below.

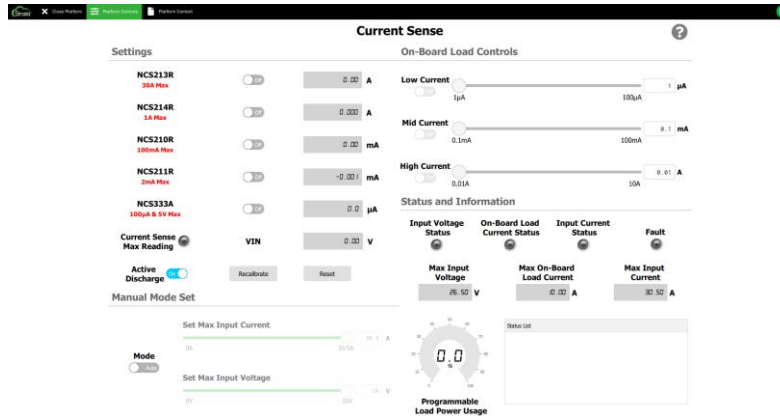


User Interface

The UI within the Strata app will allow the user to control the current sense board and monitor its telemetry without needing other lab equipment or training to do so. The steps below cover what is in the UI.

1. First, download and install the most recent version of Strata. It can be found here: <https://www.onsemi.com/support/strata-developer-studio>

2. Open the Strata app. Login and the home screen will appear.
3. The app will automatically detect the device and will bring up the UI for the board that is plugged in.



4. The view that comes up is UI for the current sense board. It offers telemetry such as: current sense readings for each current sense amplifier, interrupt statuses for each programmable protection feature, and a status list for error and warning messages. It also offers controls for enables, setting protection settings, and on-board load settings.
5. The round button with a question mark in the top right corner of the screen is the help button, which will give the user a description of what everything on the UI is doing.
6. To view the collateral provided with the EVB, click on the “Platform Content” tab at the top of the screen.

Telemetry, Controls, and Functionality

This section will go over the specific telemetry and controls in the UI.

1. Current Sense Max Reading – This LED will indicate if the current being drawn through the board exceeds the range of the current sense amplifier trying to measure it.
2. Recalibrate – This will recalibrate the offset of the current sense amplifiers. It is recommended this is done before the first measurement or any time the input voltage changes to ensure accurate measurements.
3. Reset – This will reset the board to its default state. A reset is required after a fault occurs.
4. Active Discharge – This will enable the bleeder circuit to discharge the output when all current sense amplifiers are disconnected.
5. Mode – Determines the protection mode the board is in. “Auto” mode means all protection levels are set automatically. “Manual” mode allows the user to set protection levels manually.
6. On-Board Load Controls – There are 3 ranges for the on-board load for the user to select from. Each range consists of an enable switch, and a slider to set the current being drawn by that load. Only one load may be used at a time.

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