Application Note: AZD063
Azoteq RS100 Remote Streamer Overview

Contents

1 Introduction

The behaviour of a battery powered capacitive system will change if a wire connection is made from the device to a PC. The system will therefore be changed if an Azoteq dongle such as the DS100 or CT210 is connected. For example: If a dongle is used to view data on a PC to choose thresholds, these thresholds may no longer be acceptable once the dongle is disconnected.

This problem led to the development of the RS100. The Azoteq RS100 is a configuration tool extension which allows for wireless interaction with ProxSense devices. The RS100 supports the same functionality as that of the DS100 Data Streamer, but no wired connection is made between the PC and the capacitive system. The only wired connection to the system is to the RS100 remote dongle, which should have a very small impact, as it is also battery operated.

The RS100 is recommended for the characterisation of portable capacitive systems.

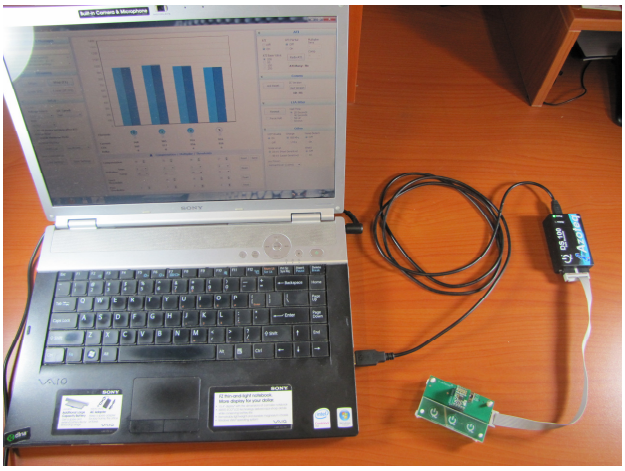

Figure 1-1: Streaming with Azoteq USB dongle (Ground connected to PC)

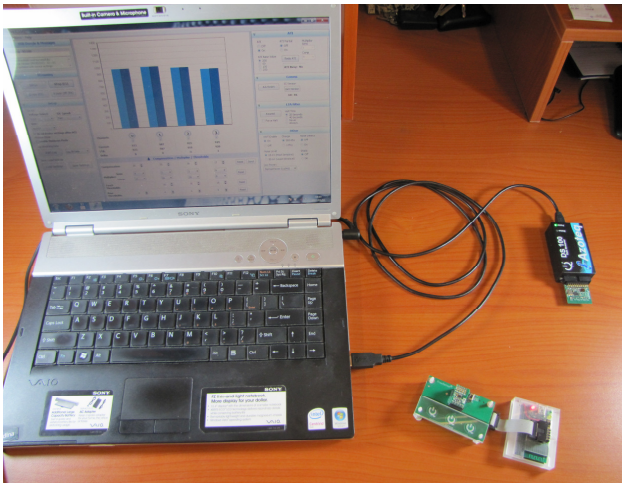

Figure 1-2: Streaming with RS100

(No wire connection from PC to capacitve system.)

2 Requirements and assembly

In order to make use of the RS100, the following components are required:

- Azoteq configuration tool (DSxxx or CTxxx) with latest firmware.
  - Not included with purchase of RS100.
  - Not compatible with CT120.
- RF add-on board. (figure 1-1)
- RS100 Remote Module. (figure 1-2)

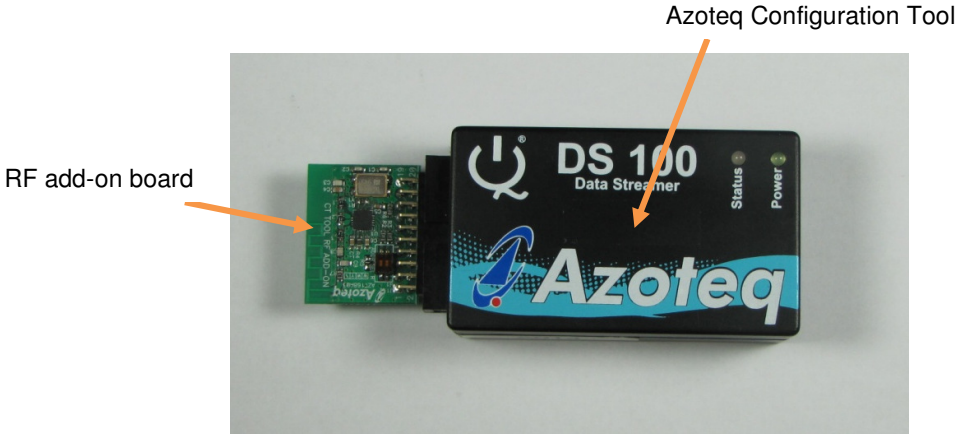

Figure 2-1: RF add-on board (connected to DS100)

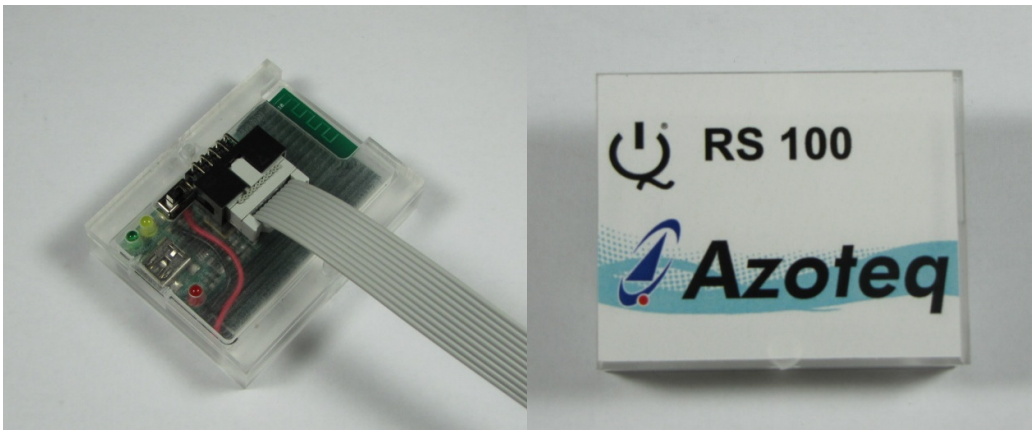

Figure 2-2: RS100 Remote Module

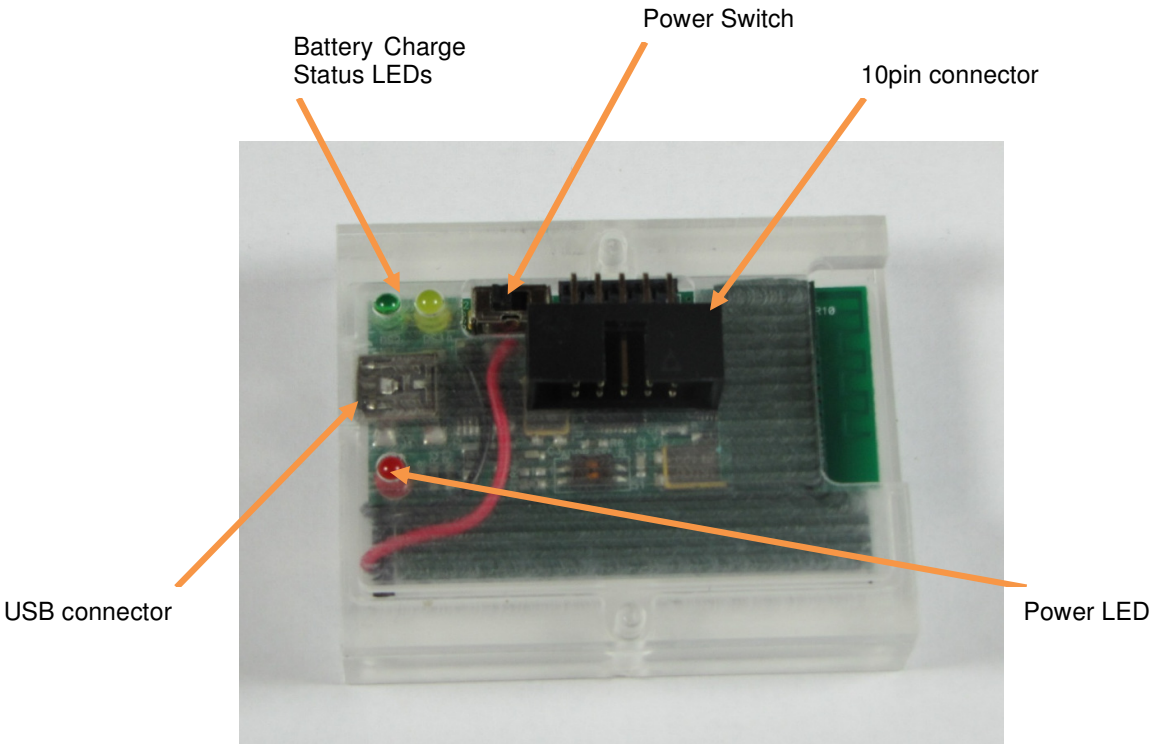

Figure 2-3: RS100 Description

Assembling the RS100:

- The 10 pin header connects to the ProxSense device or EVKit. (refer to Table1-1)
- Switch on RS100 with the sliding switch next to the 10 pin header.
- Red Power LED = device operational.
- Insert RF add-on board into configuration tool. (DSxxx or CTxxx)
- Connect configuration tool to USB cable.

RS100 pin #	Communication type		
	I^2C	1-wire	SPI
1	V_{SS}	V_{SS}	V_{SS}
2			
3	VDDHI	VDDHI	VDDHI
4			
5			
6			MOSI
7	SDA		SOMI
8			RDY
9	SCL		SCK
10	RDY	DATA	NSS

Table 2-1: Azoteq RS100 pin assignment

Confirm: Open the GUI which will be used to interact with the ProxSense device. Verify that an "RS100" has been detected.

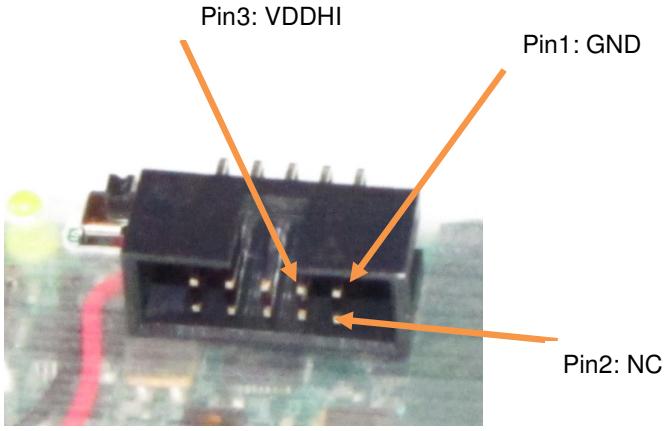

Figure 2-4: 10 pin Connector

3 Operating Guidelines

The RS100 operates in a similar fashion as the other configuration tools. Once the system has been set up and the GUI has detected the RS100, proceed as though using a DS100.

Figure 3-1: Example of working Setup

4 Recharging

The RS100 remote module has a battery charger on board and the battery can be charged via USB.

- Switch off RS100 (sliding switch, Red LED = OFF)
- Connect RS100 to USB cable.
- Yellow LED = battery busy charging.
- Green LED = battery charging complete.
- BOTH Yellow and Green LEDs = error condition.
    - Most commonly this will occur if the battery is not within the allowable temperature range for charging. Disconnect the device and leave it for a while in room temperature, try to charge again. If the error persists, contact your supplier.
    - Note that the Red LED will be on to indicate that the device is powered up. The Red LED does not indicate anything with regards to the charge circuit.

5 Upgrading Firmware

To upgrade the RS100 firmware, follow these instructions:

- Switch off RS100 (sliding switch, Red LED = OFF)
- Disconnect all devices from RS100.
- Connect RS100 to USB cable.
- Upgrade firmware with an “RS100_v1.xx.dfu” ONLY. Use USBProg to upgrade firmware.

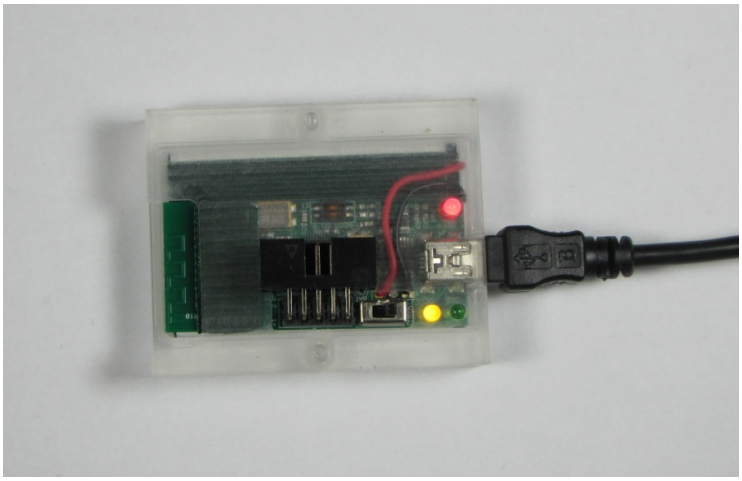

Figure 4-1: RS100 Connected to USB for Charging/Firmware update

6 Troubleshooting

This section contains some guidelines to assist with problems that might arise while operating the RS100.

- The GUI does not detect the RS100, but rather a CTxxx or DSxxx.
  - This means that the configuration tool has not detected the RF Add-On board.
  - Try to reset the configuration tool and check which device is now detected.
  - If the problem persists, disconnect the configuration tool from the USB and ensure that the RF Add-On board is properly connected to the 20 pin connector. (Check the orientation of the Add-On board and make sure it is inserted fully into the connector.)
  - Re-connect the device to the USB. If a DSxxx or CTxxx is still detected, please verify that the firmware on the configuration is the newest firmware available.
  - If the correct firmware is installed and the problem persists, contact your provider for further assistance.
- The GUI detects the RS100, but an “RF Comms Time-out” message is displayed.
  - This indicates that the configuration tool has detected the RF Add-on board, but that the communication with the RS100 has failed.
  - First try to reset the conifguration tool and see if the message persists.
  - Next check the RS100:
    - Ensure that the RS100 is ON and that the Red power LED is ON.
    - Try to reset the RF Remote Module by sliding the switch back and forth.
    - Lastly, try to reload the RS100 Firmware via USB.
- The GUI detects the RS100 without any “RF Comms Time-Out”, but errors occur when attempting to communicate with the ProxSense device.
  - Check the connection between the RS100 and the ProxSense Device.
  - If the problem persists, connect the ProxSense device directly to a configuration tool (CTxxx or DSxxx) to verify that the device is working properly.
- RF Address selection.
  - In the event of using multiple RS100 units in a small area interference may occur between units.
  - A small DIP switch can be found on both the RS100 Remote module and on the RF Add-on board.
  - This is used to determine the on-air RF address at which communication is to take place.
  - Ensure that the RS100 and the RF Add-on board have the same DIP selection before attempting any communication.
  - This allows for four unique RF addresses; if more is required please contact your provider.