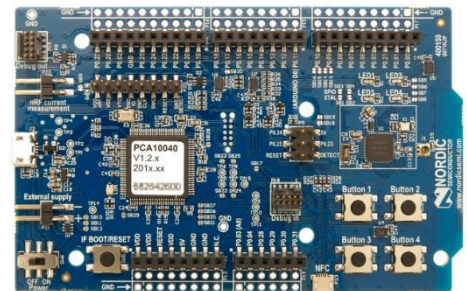


# Application note AN190901

## Insight SiP Test Board Connection to Nordic Development Kit



### Introduction

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#### Scope

This document gives details on hardware setup to connect and program Insight SiP module test boards directly from the Nordic Semiconductor Development Kits (for nRF52832 and nRF52810 or the version for nRF52840).

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## 1. Recommended Documentation

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The following documents and Dev Kits (software portion) are required to understand the complete setup and programming methods:

### Nordic Semiconductor Documents

- ✚ nRF52832 Development kit User Guide
- ✚ nRF52 Series Reference Manual.
- ✚ nRF52xxx PS (data sheet) for the Nordic Semiconductor device in the ISP module
- ✚ nRF5 SDK (for software development on the nRF51 and nRF52 Series).

To access documentation, go to:

- ✚ Official Nordic Semi website <http://www.nordicsemi.com>
- ✚ The Nordic Semiconductor Documentation library <https://www.nordicsemi.com/DocLib>
- ✚ Ask any Nordic related question and get help <https://devzone.nordicsemi.com/questions>
- ✚ For any question, you can also open a case on the <http://www.nordicsemi.com>

### Software Dev kits

- ✚ nRFgo Studio.
- ✚ nRF5 Software Development Kit (SDK) which includes precompiled HEX files, source code as well as SES and Keil ARM project files.
- ✚ SoftDevices for nRF52xxx.

To access these files, go to [www.nordicsemi.com](http://www.nordicsemi.com) and download the files.

### Insight SiP documents

To complete the above, following documents are available on Insight SiP website or/and on request:

- ✚ AN190901 App Note – this document.
- ✚ ISP1507 / ISP1807 / ISP1907 Data Sheets
- ✚ ISP1507 / ISP1807 / ISP1907 Development Boards
- ✚ Application Notes for Development Boards

## 2. Hardware setup

### Insight SiP Hardware

ISP15xx/18xx/19xx Test Board.

### Nordic Semiconductor Hardware

Nordic Semiconductor Development Kit:

- PCA10040 for nRF52832 and nRF52810/11
- PCA10056 for nRF52840

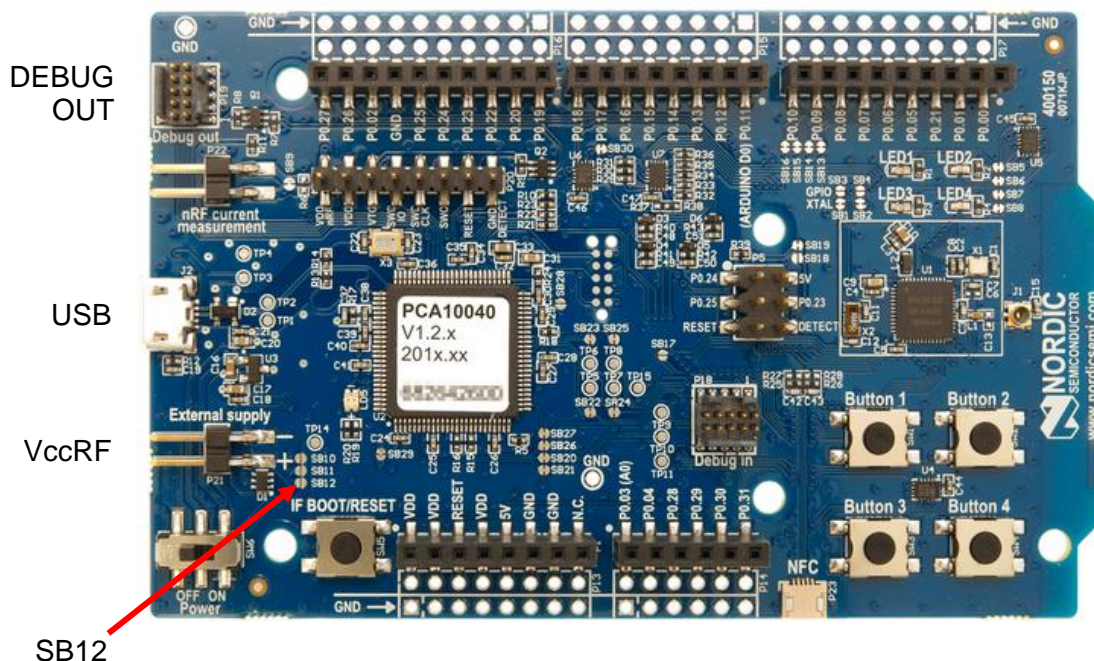
### Other Hardware

- Ribbon Cables / IDC Cables .050" Tiger Eye IDC Ribbon Cable Assembly, Socket 10 pin
  - Manufacturer Ref Samtec [FFSD-05-D-05.00-01-N](#)
  - Mouser 200-FFSD05D05.0001N
  - RS 180-0015
- 2 pin HE10 2.54mm cable Female to Female

### Nordic Semiconductor Development Kit setup

For programming ISP modules either PCA10040 or PCA10056 can be used no matter which ISP module is to be programmed.

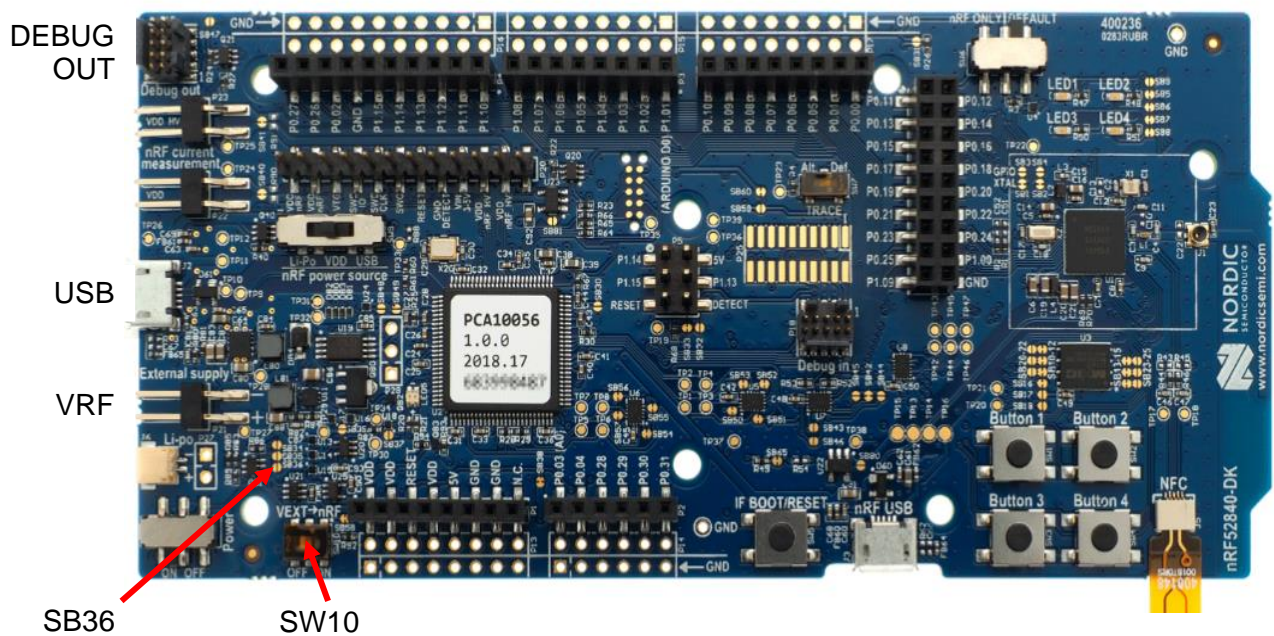
### PCA10040



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SB12 should be short circuited with a solder bead so that power from the USB and associated regulator is connected to the External supply P21 as an OUTPUT. See the Nordic Semiconductor User Guide for more information on p14.

### PCA10056



SB36 should be short circuited with a solder bead so that power from the USB and associated regulator is connected to the External supply P21 as an OUTPUT.

SW10 (VEXT -> nRF) should be OFF, as set by default.

### Connections

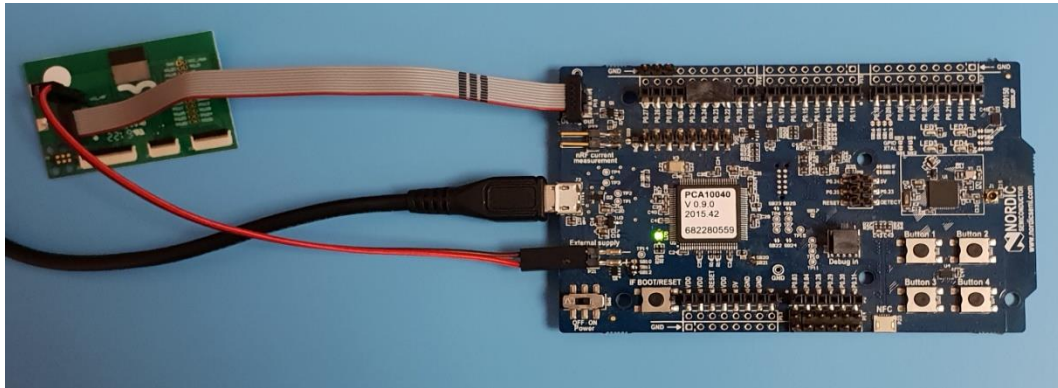
- Connect the External Power Output via 2 wires to the Power Input of the Test board (solder a 2 pin HE10 header onto the board). Take care to connect +PLUS (nRFDK) to VCCRF (ISP TB) and – MINUS(nRF DK) to GND (ISP TB) outer side of test board.
- Connect the 10 pin 1.27mm pitch cable to Debug Out (nRF DK) and Dbg (ISP TB)
- Connect the micro USB to the computer for power and download

The following Photos show the connections:

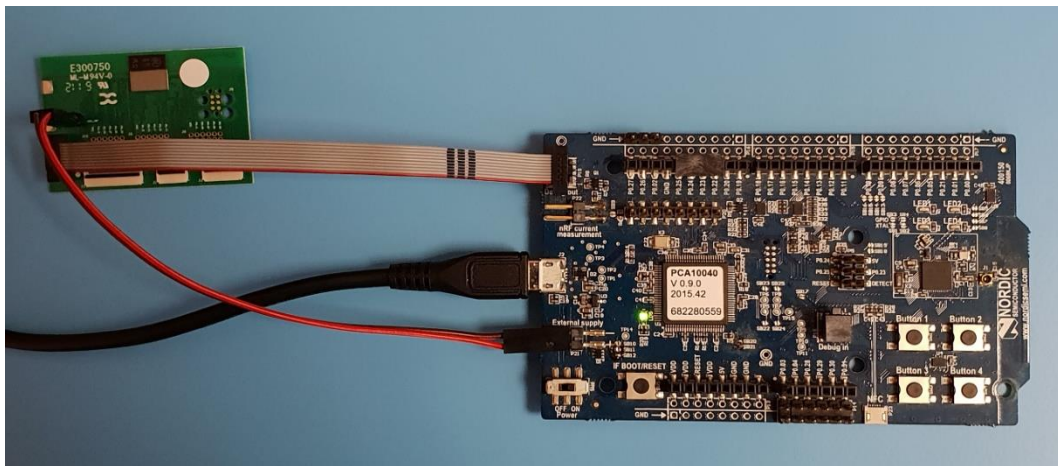


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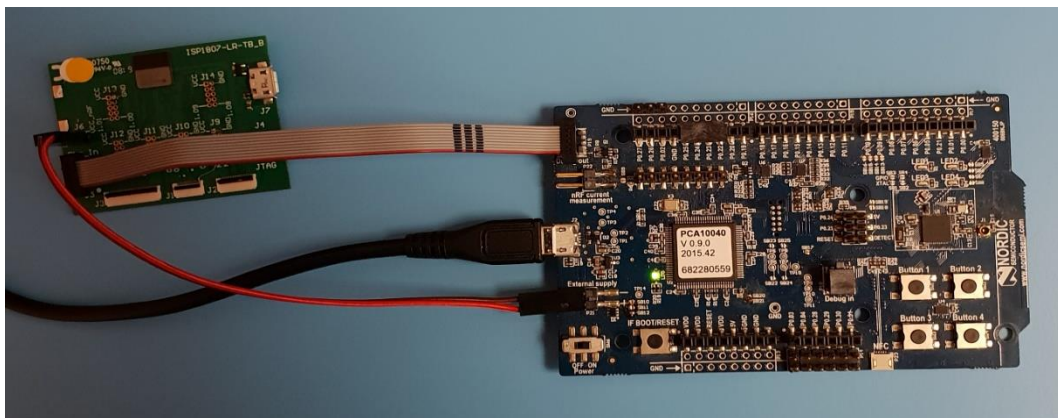
## ISP1507-AL & ISP1907-LL Test Board



## ISP1507-AX Test Board



## ISP1807-LR Test Board



### 3. Programming

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The above setup will detect the presence of a voltage on the Debug Out connector and connect the embedded Jlink JTAG/SWD interface to DEBUG OUT and hence to the ISP module Test Board. The other parts of the Dev Kit are not used.

The ISP test Board can be programmed via the appropriate IDE or JLink software using programs and files supplied by Nordic Semiconductor or developed by the customer.