**ADuCM350 Software Development Kit Quick Start Guide**

**HARDWARE EQUIPMENT NEEDED**
1 EVAL-ADuCM350EBZ board  
1 USB-SW/UART-EMUZ  
1 ADuCM350 switch mux configuration board (daughter board)  
1 USB cable

**SOFTWARE EQUIPMENT NEEDED**
IAR Embedded Workbench for ARM (from Version 7.10+)  
ADuCM350 software development kit (SDK)

**GENERAL DESCRIPTION**
The ADuCM350 is a 16 MHz ARM® Cortex™-M3 core with a high precision AFE specifically designed for high precision data acquisition.

The ADuCM350 has a 16-bit precision analog core with four dedicated voltage measurement channels and up to eight current measurement channels. It has an integrated complex impedance measurement system and uses an integrated parameter is able waveform generator to generate complex waveforms. It uses an excitation amplifier control loop to do accurate potentiostat type measurements and has a highly configurable switch matrix that allows application specific amplifier configuration.

The device has a large array of peripherals including USB, CapTouch®, Display, Audio, an array of serial interfaces and GPIOs.

The ADuCM350 includes 384 kB of Flash, 32 kB of SRAM, and 16 kB of Flash configured as EEPROM.

The ADuCM350 support package comes with an extensive software development kit with examples and drivers to interrogate and evaluate the ADuCM350.

This user guide describes the setup of the software development kit. For more information, see the ADuC350 Hardware Reference Manual and EVAL-ADuCM350EBZ user guide.

**TYPICAL SETUP**

---

Figure 1. EVAL-ADuCM350EBZ Board
TABLE OF CONTENTS
Hardware Equipment Required .......................................................... 1
Software Equipment Required .......................................................... 1
General Description ........................................................................ 1
Typical Setup .................................................................................. 1
Revision History ............................................................................. 2
Quick Impedance Measurement Using the Software Development Kit .................................................. 3

REVISION HISTORY
5/14—Revision 0: Initial Version
QUICK IMPEDANCE MEASUREMENT USING THE SOFTWARE DEVELOPMENT KIT

1. After downloading the IAR software, go to the newly installed ADuCM350 SDK directory:
   C:\Analog Devices\ADuCM350BBCZ\Eval-ADUCM350EBZ\examples\ImpedanceMeasurement_2Wire.
2. Open the ImpedanceMeasurement_2Wire.eww workspace in the IAR Embedded Workbench.
3. Click the Download and Debug button to download firmware to device.

   Figure 2. Download and Debug Button

   For extra information, click View > Terminal I/O and/or View > Register (see Figure 3).

   Figure 3. View Menu

4. Click the Go button (see Figure 4).

   Figure 4. Go Button

5. The DFT results from the AFE sequencer are displayed in the Terminal I/O window. The magnitude and phase calculated on the core are also displayed (see Figure 5).

   Figure 5. ImpedanceMeasurement_2Wire Example Project

6. Click the Stop Debugging to exit debug mode (see Figure 6).

   Figure 6. Stop Debugging Button
NOTES

ESD Caution

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

Legal Terms and Conditions

By using the evaluation board discussed herein (together with any tools, components documentation or support materials, the "Evaluation Board"), you are agreeing to be bound by the terms and conditions set forth below ("Agreement") unless you have purchased the Evaluation Board, in which case the Analog Devices Standard Terms and Conditions of Sale shall govern. Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement.  Do not use the Evaluation Board until you have read and agreed to the Agreement. Your use of the Evaluation Board shall signify your acceptance of the Agreement.

ADI hereby grants to Customer a free, limited, personal, temporary, non-exclusive, non-sublicensable, non-transferable license to use the Evaluation Board FOR EVALUATION PURPOSES ONLY. Customer understands and agrees that the Evaluation Board is provided for the sole and exclusive purpose referenced above, and agrees not to use the Evaluation Board for any other purpose. Furthermore, the license granted is expressly made subject to the following additional limitations: Customer shall not (i) rent, lease, display, sell, transfer, assign, sublicense, or distribute the Evaluation Board; and (ii) permit any Third Party to access the Evaluation Board. As used herein, the term "Third Party" includes any entity other than ADI, Customer, their employees, affiliates and in-house consultants. The Evaluation Board is NOT sold to Customer; all rights not expressly granted herein, including ownership of the Evaluation Board, are reserved by ADI. CONFIDENTIALITY. This Agreement and the Evaluation Board shall all be considered the confidential and proprietary information of ADI. Customer may not disclose or transfer any portion of the Evaluation Board to any other party for any reason. Upon discontinuation of use of the Evaluation Board or termination of this Agreement, Customer agrees to promptly return the Evaluation Board to ADI. ADDITIONAL RESTRICTIONS. Customer may not disassemble, decompile or reverse engineer chips on the Evaluation Board. Customer shall inform ADI of any occurred damages or any modifications or alterations it makes to the Evaluation Board, including but not limited to soldering or any other activity that affects the material content of the Evaluation Board. Modifications to the Evaluation Board must comply with applicable law, including but not limited to the RoHS Directive. TERMINATION. ADI may terminate this Agreement at any time upon giving written notice to Customer. Customer agrees to return to ADI the Evaluation Board at that time. LIMITATION OF LIABILITY. THE EVALUATION BOARD IS PROVIDED "AS IS" AND ADI MAKES NO WARRANTIES OR REPRESENTATIONS OF ANY KIND WITH RESPECT TO IT. ADI SPECIFICALLY DISCLAIMS ANY REPRESENTATIONS, ENDORSEMENTS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, RELATED TO THE EVALUATION BOARD INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT WILL ADI AND ITS LICENSORS BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES RESULTING FROM CUSTOMER'S POSSESSION OR USE OF THE EVALUATION BOARD, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DELAY COSTS, LABOR COSTS OR LOSS OF GOODWILL. ADI'S TOTAL LIABILITY FROM ANY AND ALL CAUSES SHALL BE LIMITED TO THE AMOUNT OF ONE HUNDRED US DOLLARS ($100.00). EXPORT. Customer agrees that it will not directly or indirectly export the Evaluation Board to another country, and that it will comply with all applicable United States federal laws and regulations relating to exports. GOVERNING LAW. This Agreement shall be governed by and construed in accordance with the substantive laws of the Commonwealth of Massachusetts (excluding conflict of law rules). Any legal action regarding this Agreement will be heard in the state or federal courts having jurisdiction in Suffolk County, Massachusetts, and Customer hereby submits to the personal jurisdiction and venue of such courts. The United Nations Convention on Contracts for the International Sale of Goods shall not apply to this Agreement and is expressly disclaimed.