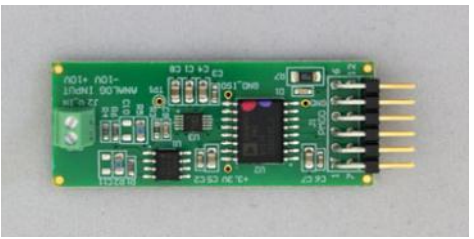


# Modular Approach to Designing and Prototyping Solutions

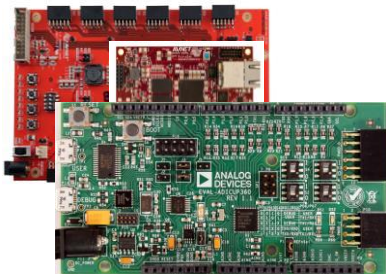
ADI / 3<sup>rd</sup> Party Vendors



ADI



ADI / Partners



ADI

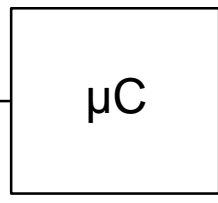
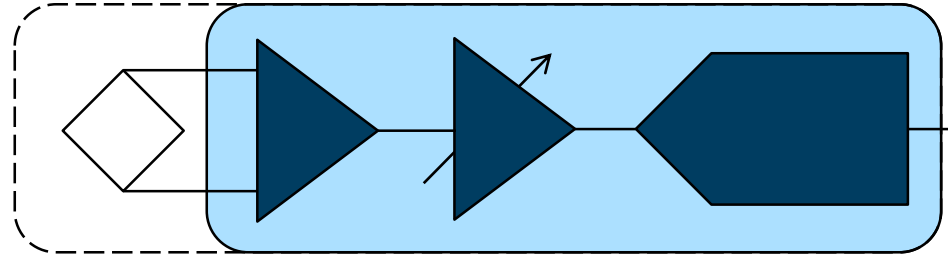
```
#include <stdio.h>
main()
{
  int array[100], n, c;
  printf("Enter the number of elements in array\n");
  scanf("%d", &n);
  printf("Enter %d elements\n", n);
  for ( c = 0 ; c < n ; c++)
    scanf("%d", &array[c]);
  printf("Array elements entered by you are:\n");
  for ( c = 0 ; c < n ; c++)
    printf("array[%d] = %d\n", c, array[c]);
  return 0;
}
```



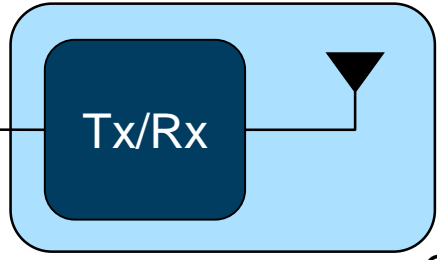
ADI / Partners

- WiFi
- Bluetooth
- Other
- Zigbee
- Wireless HART

PMODs/Shields



PMODs/Shields/Modules



Sensors

Conditioning/Conversion

FPGA/Processor

Software

Connectivity

Use many sensors from vendor partners: *Honeywell, Omron, Alphasense, Hamamatsu*

Many different PMOD/Arduino Compatible form factor signal conditioning boards from ADI

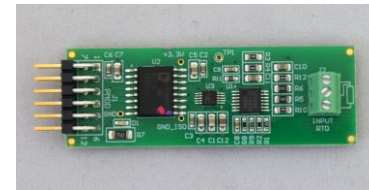
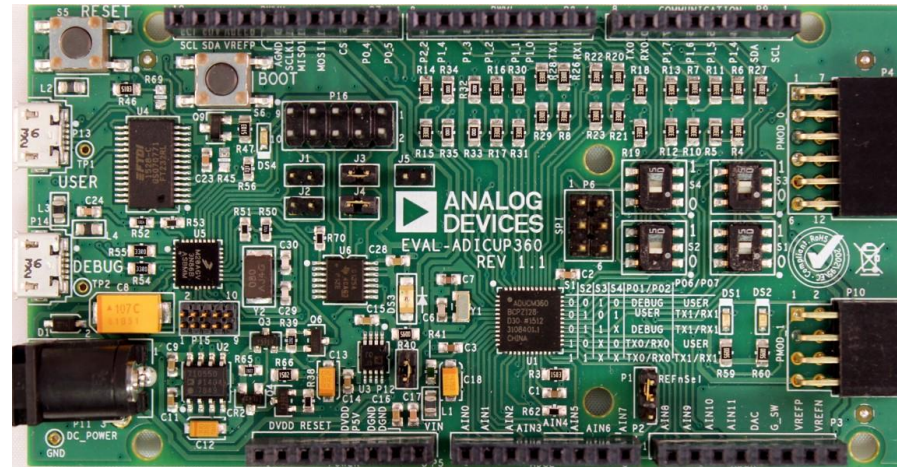
Use customers processor/ FPGA to connect to: *ADI, Xilinx, Arduino, Microchip, Renesas, ST*

Provide *C code, Linux drivers, No-OS drivers, HDL code*, and other software that a customer can use in their own design

Have different connectivity options for wireless and wired communication. Provide software and cloud connectivity using ADI and our Partners



# Aspects of the EVAL-ADICUP360 Ecosystem



GitHub repository page for **analogdevicesinc / EVAL-ADICUP360**. The page shows the repository name, branch (master), and a list of project folders with their descriptions:

- ADuCM360\_demo\_adxl362**: Changed pins configuration due to HW modifications and added files re...
- ADuCM360\_demo\_blink**: projects/system/include/CMSIS/ADuCM360.h: Fix case in include
- ADuCM360\_demo\_cli**: projects/system/include/CMSIS/ADuCM360.h: Fix case in include
- ADuCM360\_demo\_cn0326**: ADuCM360\_demo\_cn0326: Initial revision.
- ADuCM360\_demo\_cn0336**: ADuCM360\_demo\_cn0336: Updated CN0336\_WriteData() function + changed U...
- ADuCM360\_demo\_cn0337**: ADuCM360\_demo\_cn0337: Added second method to calculate RTD resistance...
- ADuCM360\_test\_project**: projects/system/include/CMSIS/ADuCM360.h: Fix case in include

```
C:\C++ - ADuCM360_demo_adxl362\src\main.c - Analog Devices Inc. ADuCM360 IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Quick Access C/C++ Debug Packs Git

Project Explorer
  ADuCM360_demo_adxl362
  Binsaries
  Includes
  src
  ADXL362.c
  Communication.c
  Lcd.c
  main.c
  Timer.c
  system
  include
  Debug
  include
  ADXL362.h
  Communication.h
  Lcd.h
  Timer.h
  Idscripts
  ADuCM360_demo_ADXL364_P1
  ADuCM360_demo_blink
  ADuCM360_demo_cli
  ADuCM360_gpio_test
  ADuCM360_test_project
  CN0216-ARDZ

Communication.h Communication.c ADXL362.c main.c Lcd.c DioLib.c OsSbe

main.c
  ui8Awake = 0;
  /* Infinite loop */
  while (1)
  {
    if (DiOrd(INTACC_PORT) & INTACC_PIN)
    {
      if (ui8Awake == 0)
      {
        ui8Awake = 1;

        /* Set BLLCD pin - turn on LCD backlight */
        DioSet(BLLCD_PORT, BLLCD_PIN);

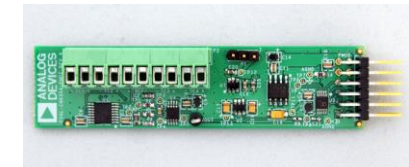
        Lcd_DisplayString(0, 60, (int_t *)"[M]");
        Lcd_DisplayString(1, 60, (int_t *)"[mg]");
        Lcd_DisplayString(2, 60, (int_t *)"[mg]");

        #if TEMP_ADC == 1
          Lcd_DisplayString(3, 60, (int_t *)"[ADC]");
        #else
          Lcd_DisplayString(3, 60, (int_t *)"[C]");
        #endif

        ui8xu = 0;
        ui8xd = 0;
        ui8yu = 0;
        ui8yd = 0;
        ui8all = 0;

        Lcd_DisplaySymbol(0, UP_X, 8, pui8RecInv8x8);
        Lcd_DisplaySymbol(1, LEFT_X, 8, pui8RecInv8x8);
      }
    }
  }

Problems Tasks Console Properties Debug
ADuCM360_demo_adxl362 Debug (GDB OpenOCD Debugging) openocd.exe
adapter speed: 1000 kHz
adapter_nsrst_delay: 100
cortex_m_reset_config vectreset
init_aducm
Started by GNU ARM Eclipse
Info : CMSIS-DAP: SWD Supported
Info : CMSIS-DAP: Interface Initialised (SWD)
Info : CMSIS-DAP: FW Version = 1.0
Info : SHCLK/TCK = 0 SCLK/IHS = 1 TDI = 0 TDO = 0 nTRST = 0 nRESET = 1
Info : CMSIS-DAP: Interface ready
```



# EVAL-ADICUP360 Packaging

► Overview

► Top

## ADICUP360 PACKAGING



► Bottom



ADICUP360

### Ecosystem

With integrated and comprehensive tools, software, and hardware, you can create and contribute to projects that everyone can be a part of.

### Prototyping

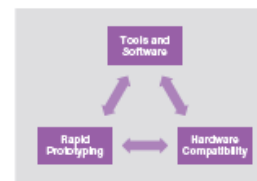
Use hardware modules and software examples together or create your own to develop your final system.

### Open Source

Collaborate in an open-source environment. Design and develop code and algorithms that are flexible, scalable, and cost-effective.

### Integration

This platform provides opportunities to explore the intersection of precision analog signal conditioning and embedded digital programming.

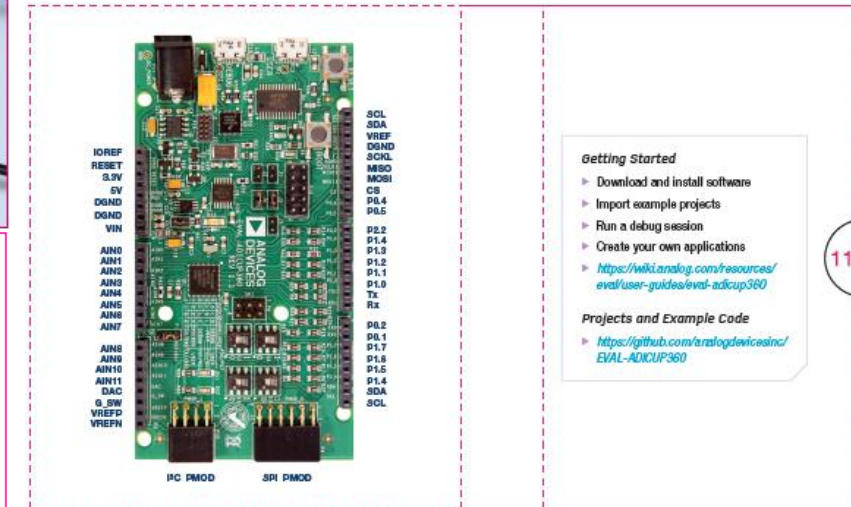


<https://ez.analog.com/community/analog-microcontrollers>

DAI102ES-0003 (9/11/16-003) This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Manufacturer: Analog Devices, Inc. One Technology Way, Norwood, MA 01962-9106, U.S.A. Manufactured in PRC.



► Insert



### Getting Started

- Download and install software
- Import example projects
- Run a debug session
- Create your own applications
- <https://wiki.analog.com/resources/eval/user-guides/eval-adicup360>

### Projects and Example Code

- <https://github.com/analogdevicesinc/EVAL-ADICUP360>



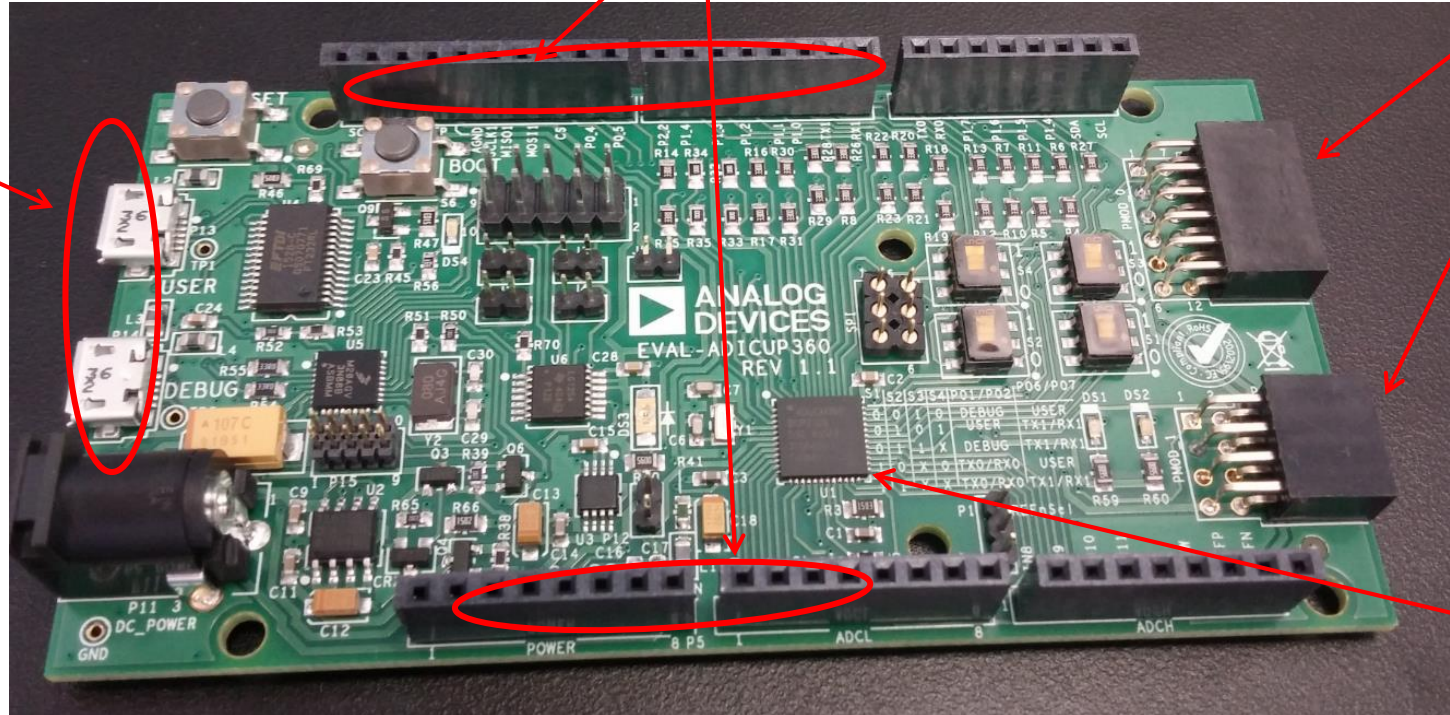
# ADuCM360 Arduino Compatible Platform – 2<sup>nd</sup> Hardware

USB programming and debug, along with UART to USB serial communication

- ▶ Analog (24-bit)
- ▶ SPI
- ▶ I2C
- ▶ UART
- ▶ Flash
- ▶ DMA

Arduino R3 compatible form factor

PMOD compatible ports, SPI and I<sup>2</sup>C



ADuCM360 Microcontroller, with dual 24-bit sigma delta ADCs and ARM Cortex M3

- ▶ FCC and CE certified

# ADuCM360 Arduino Eclipse IDE

## Customized IDE

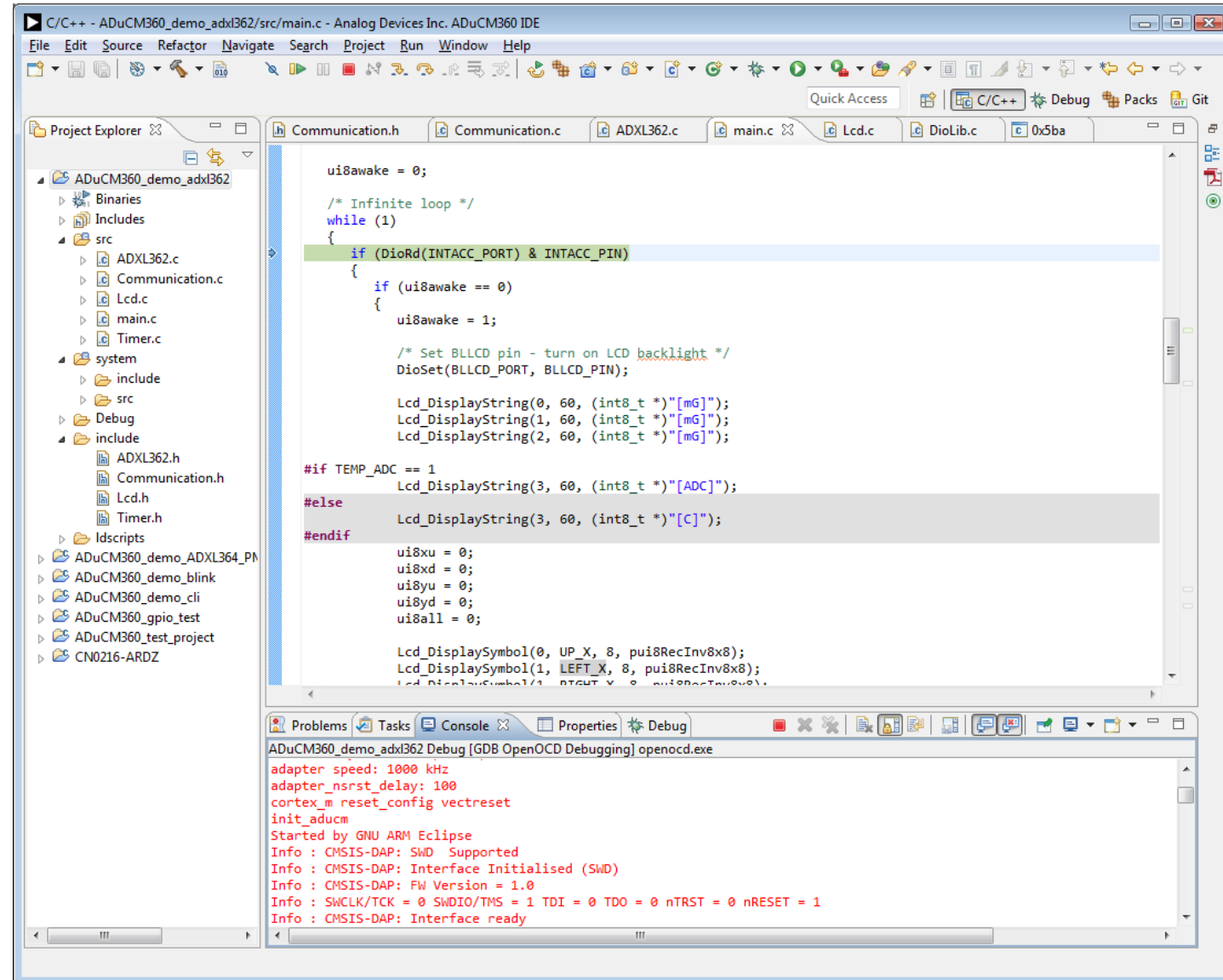
- Eclipse based (open source)
- ADI plug-ins
- ADuCM360 specific

## Open source tool chain

- Open source GCC/GDB
- GNU ARM Tools
- OpenOCD
- CMSIS-DAP

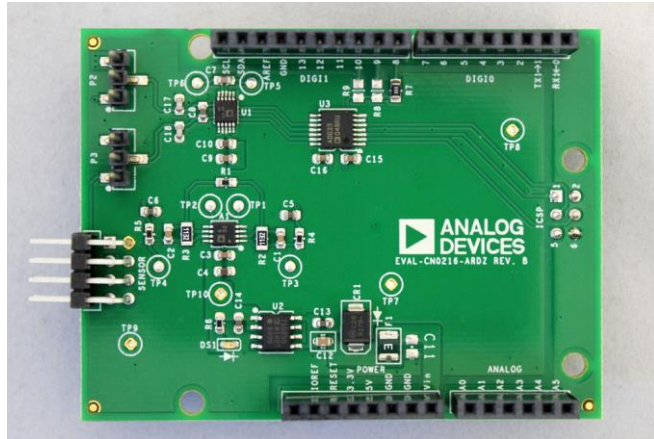
## ADI Content

- C Code examples
- Hardware examples
- Low level device drivers



# Arduino Shield Boards for ADuCM360 Launch

- ▶ CN0216 Weigh Scale shield



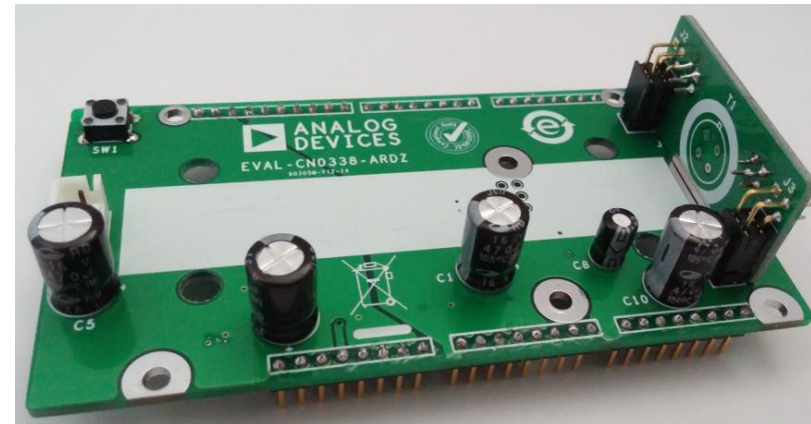
- ▶ CN0357 Toxic Gas Sensing shield



- ▶ ADXL362 Accelerometer shield



- ▶ CN0338 NDIR Gas Sensing shield





# ADI PMOD Compatible Boards

Reference Designs	Application
CN0179	4-20mA output
CN0336	4-20mA input
CN0335	0-10V input
CN0216	Weight Scale
CN0355	Differential Pres.
CN0337	RTD measurement
CN0354	Thermocouple
CN0326	pH Measurement
CN0332	MR Speed
CN0346	Humidity sensor
CN0349	Conductivity
CN0350	Piezoelectric Vib.
CN0357	Gas Detection
CN0370	LED Control

Reference Designs	Application
CN0363	Colorimeter
CN0365	High Temp DAQ
CN0372	Energy Harvest DAQ
10 Ld. PuLSAR	16-,18- ADC w/Driver
ADF7242	RF Transceiver

