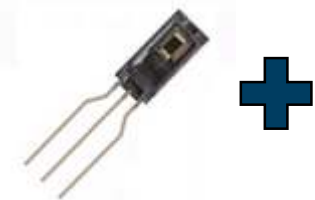
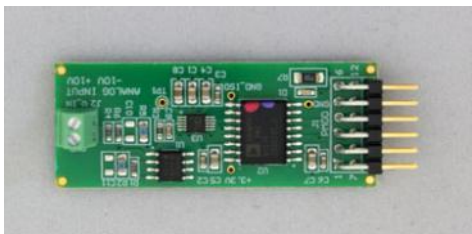


# Modular Approach to Designing and Prototyping Solutions

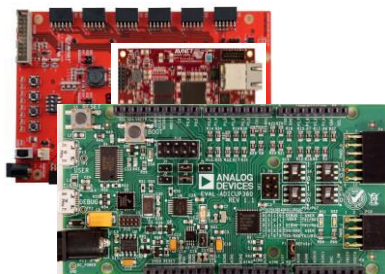
ADI / 3<sup>rd</sup> Party Vendors



ADI



ADI / Partners



ADI

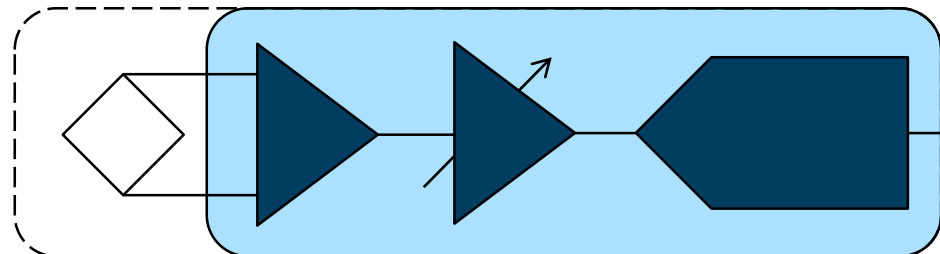
```
#include <stdio.h>
main()
{
  int array[100], n, c;
  printf("Enter the number of elements in array\n");
  scanf("%d", &n);
  printf("Enter %d elements\n", n);
  for ( c = 0 ; c < n ; c++)
    scanf("%d", &array[c]);
  printf("Array elements entered by you are:\n");
  for ( c = 0 ; c < n ; c++)
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



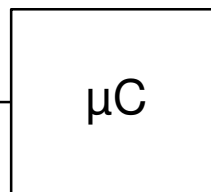
ADI / Partners

- 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*

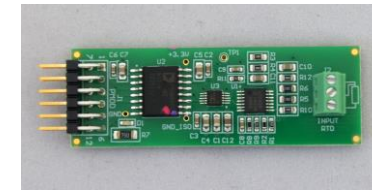
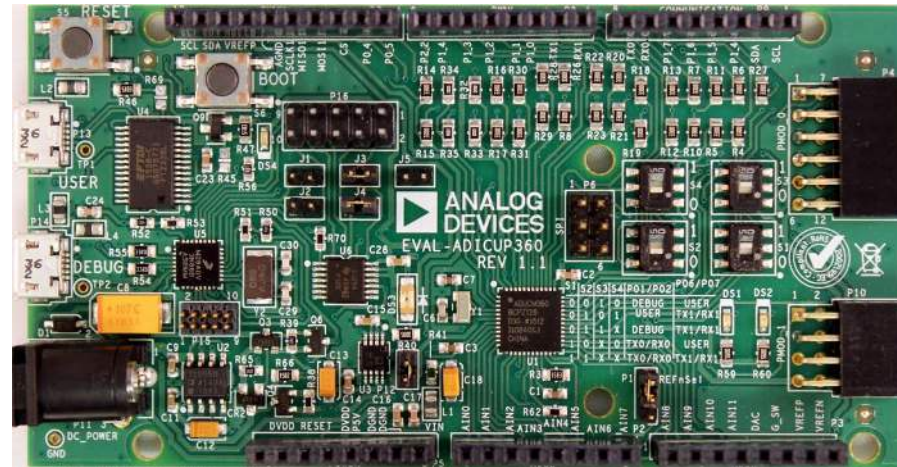
Provide *C code, Linux drivers, No-OS drivers, HDL code*, and other software that a customer can use in their own design

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



AHEAD OF WHAT'S POSSIBLE™

# Aspects of the EVAL-ADICUP360 Ecosystem



GitHub repository interface for **analogdevicesinc / EVAL-ADICUP360**. The page shows the repository name, a search bar, and navigation options like Code, Issues, Pull requests, Wiki, Pulse, Graphs, and Settings. The current branch is **master**, and the selected path is **EVAL-ADICUP360 / projects /**. A list of commits is displayed, including:

- vlupei** ADuCM360\_demo\_cn0326: Initial revision.
- 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

```
ADuCM360_demo_cn0326: Initial revision.
..
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
```

```
uiAwake = 0;
/* Infinite loop */
while (1)
{
    if (Disord(INTACC_PORT) & INTACC_PIN)
    {
        if (uiAwake == 0)
        {
            uiAwake = 1;

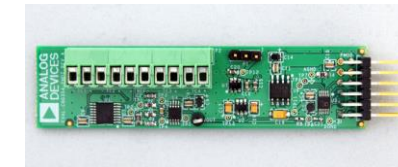
            /* Set BLLED pin - turn on LCD backlight */
            DioSet(BLLED_PORT, BLLED_PIN);

            Lcd_DisplayString(0, 00, (int8_t *)"00");
            Lcd_DisplayString(1, 00, (int8_t *)"00");
            Lcd_DisplayString(2, 00, (int8_t *)"00");

            #if TRF_ADC == 1
                Lcd_DisplayString(3, 00, (int8_t *)"ADC");
            #else
                Lcd_DisplayString(3, 00, (int8_t *)"IC");
            #endif

            uiXu = 0;
            uiYd = 0;
            uiYu = 0;
            uiZd = 0;
            uiZl = 0;

            Lcd_DisplaySymbol(0, 0, 0, pui8RecInv8x8);
            Lcd_DisplaySymbol(1, LEFT_X, 0, pui8RecInv8x8);
            Lcd_DisplaySymbol(2, LEFT_X, 0, pui8RecInv8x8);
            Lcd_DisplaySymbol(3, LEFT_X, 0, pui8RecInv8x8);
        }
    }
}
```





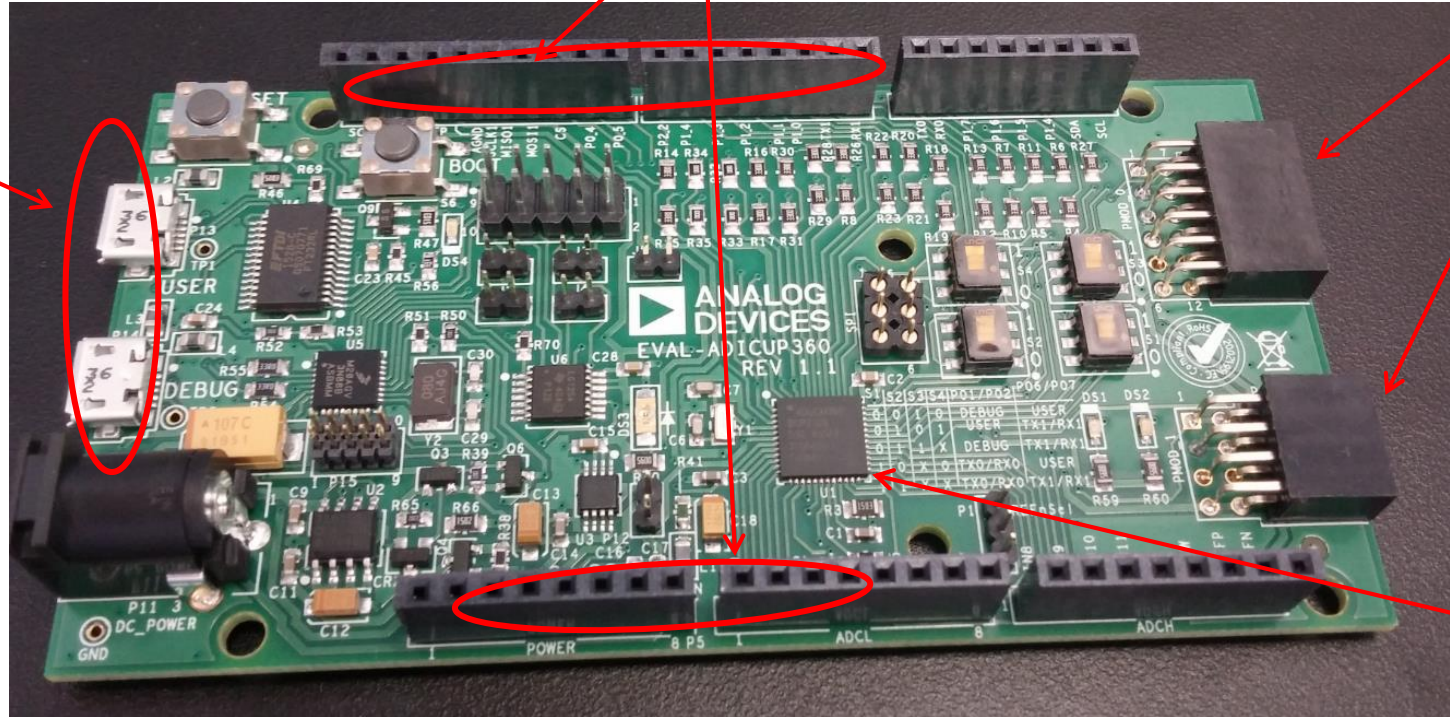
# ADuCM360 Arduino Compatible Platform – 2<sup>nd</sup> Hardware

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

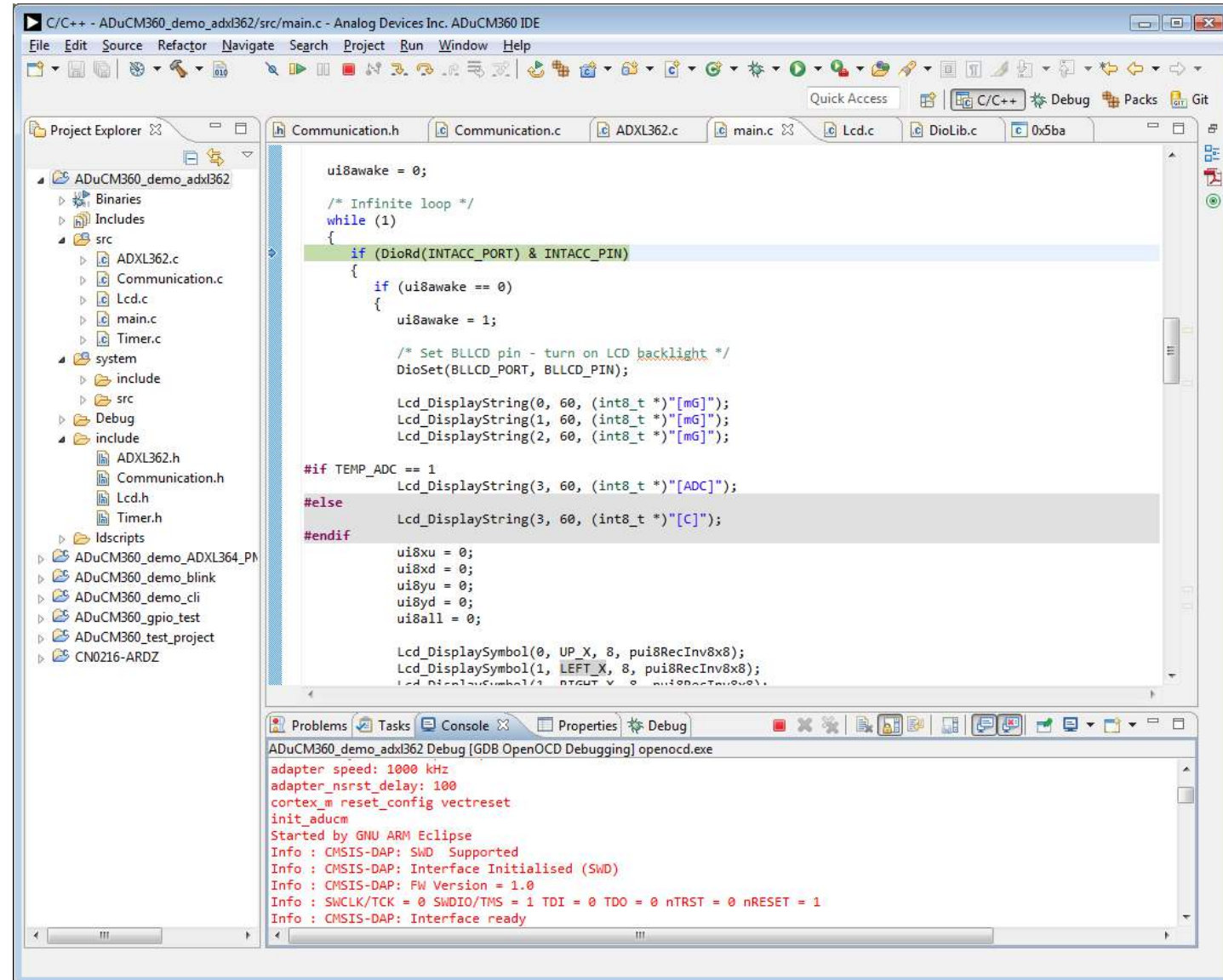
- Eclipse based (open source)
- ADI plug-ins
- ADuCM360 specific

## 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



```
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
├── Binaries
├── Includes
├── src
│   ├── ADXL362.c
│   ├── Communication.c
│   ├── Lcd.c
│   ├── main.c
│   └── Timer.c
├── system
│   ├── include
│   └── src
├── Debug
└── include
    ├── ADXL362.h
    ├── Communication.h
    ├── Lcd.h
    └── Timer.h
├── Idscripts
├── ADuCM360_demo_ADXL364_PH
├── 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 0x5ba

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, (int8_t *)"[MG]");
            Lcd_DisplayString(1, 60, (int8_t *)"[MG]");
            Lcd_DisplayString(2, 60, (int8_t *)"[MG]");

            #if TEMP_ADC == 1
                Lcd_DisplayString(3, 60, (int8_t *)"[ADC]");
            #else
                Lcd_DisplayString(3, 60, (int8_t *)"[C]");
            #endif

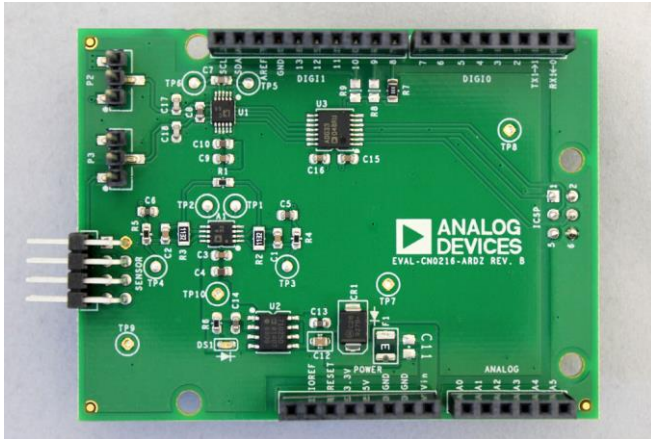
            ui8xu = 0;
            ui8xd = 0;
            ui8yu = 0;
            ui8yd = 0;
            ui8all = 0;

            Lcd_DisplaySymbol(0, UP_X, 8, pui8RecInv8x8);
            Lcd_DisplaySymbol(1, LEFT_X, 8, pui8RecInv8x8);
            Lcd_DisplaySymbol(2, RIGHT_X, 8, pui8RecInv8x8);
            Lcd_DisplaySymbol(3, DOWN_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 : SWCLK/TCK = 0 SWDIO/TMS = 1 TDI = 0 nTRST = 0 nRESET = 1
Info : CMSIS-DAP: Interface ready
```

# Arduino Shield Boards for ADuCM360 Launch

- ▶ CN0216 Weigh Scale shield



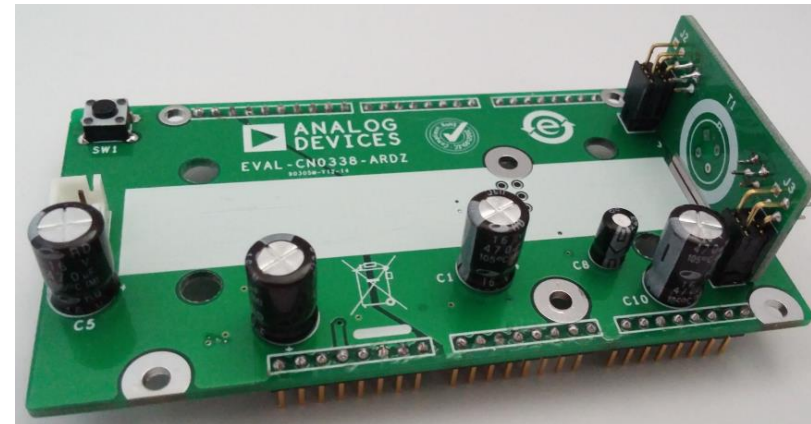
- ▶ CN0357 Toxic Gas Sensing shield



- ▶ 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

