Solutions for Rapid Prototyping

Answering the Needs of Practicing Engineers

Analog Devices participates in many vibrant hardware and software ecosystems, from Arduino to Pmod. Rapidly make your prototype and test your concepts. ADI's reference designs support many different applications and technologies, and include everything from hardware to embedded firmware that makes it easier for engineers to get their product concepts up and running fast.

Adapter Boards

Not all development platforms support the popular hardware interfaces that ADI uses. So for some of the platforms, we’ve produced adapter boards that enable additional hardware interface options to help scale the number of add-on boards that can be used. Analog Devices’ goal is to ensure that we can provide hardware add-on boards for as many of the popular development platforms as possible to assist you with creating applications that work on your preferred embedded target. Below is a selection of the current supported development platforms along with a list of the available hardware interfaces they support without additional adapter boards.

**MAXREFDES72**
Arduino to Pmod-compatible adapter
- One Pmod-compatible port with universal serial interfacing
- 1.8 V to 5 V digital logic compatible
- On-board real-time clock
- Visit analog.com/MAXREFDES72

**PMD-ARD-INTZ**
4-channel Pmod-compatible peripheral to Arduino controller
- Two SPI, one I²C, and one UART port
- Channel independent level translation
- Channel independent IOREF selection
- Visit analog.com/PMD-ARD-INTZ

**PMD-RPI-INTZ**
4-channel Pmod-compatible peripheral to Raspberry Pi controller
- Two SPI, two I²C Pmod-compatible ports
- QuikEval and power system management ports
- Flexible pin remapping matrix
- Visit analog.com/PMD-RPI-INTZ

**FTHR-PMD-INTZ**
FeatherWings to Pmod Adaptor
- One SPI, one I²C Pmod-compatible port
- Selectable Pmod-compatible power (3.3 V or 5 V)
- Selectable digital I/O voltage (3.3 V or 1.8 V)
- Visit analog.com/FTHR-PMD-INTZ
Arduino Shields

Arduino shields, first standardized by Arduino, are a popular hardware form factor that is typically mechanically and electrically compatible with the Arduino Uno Rev 3 board. Many different FPGA, microprocessor, and DSP vendors provide plug and play connectivity into their development boards and environments using this form factor. Arduino shields provide analog and digital pins to configure devices and digitize signals coming from the real world. The digital communications protocols supported by Arduino shields are SPI, I2C, UART, PWM, and GPIO. Most of the boards below are compatible with either the EVAL-ADICUP360 or EVAL-ADICUP3029 and should work with most compatible Arduino form factor microcontroller platforms. All software is open-source and can be found on github.com/analogdevicesinc/.

**DC2847A-KIT**
Dual RF rms power detector with integrated bidirectional bridge
- Measure forward and reverse rms power
- 9 kHz to 7 GHz
- SMA input connector
- Visit analog.com/DC2847A-KIT

**DC2870A-KIT**
RF/microwave rms power detector
- 100 MHz to 40 GHz
- SMA input connector
- On-board voltage reference
- Visit analog.com/DC2870A-KIT

**EVAL-ADL5902-ARDZ**
TruPWR™ rms detector
- 50 MHz to 9 GHz
- SMA input connector
- 65 dB rms power monitor
- Visit analog.com/EVAL-ADL5902-ARDZ

**EVAL-ADXL362-ARDZ**
Ultra low power, 3-axis, programmable g accelerometer with display
- Ultra low power sleep and wake-up modes
- Programmable acceleration ranges
- Board mounted LCD display
- Visit analog.com/EVAL-ADXL362-ARDZ

**EVAL-ADXL372-ARDZ**
Micropower, 3-axis, ±200 g digital output accelerometer
- Ultra low power sleep and wake-up modes
- ±200 g measurement range
- Adjustable high-pass filter
- Visit analog.com/EVAL-ADXL372-ARDZ

**EVAL-CN0216-ARDZ**
Precision weigh scale/load cell measurement system
- High gain, low noise
- 4- or 6-wire load cell compatible
- Full-scale sensor output up to 10 mV
- Visit analog.com/EVAL-CN0216-ARDZ

**EVAL-CN0338-ARDZ**
NDIR thermopile-based gas detection
- Optimized for CO2 gas
- Maintains accuracy in high humidity
- Single supply
- Visit analog.com/CN0338

**EVAL-CN0357-ARDZ**
Electrochemical toxic gas detector
- Programmable for multiple other gases
- Resolution down to 1 ppm
- Low power, single-supply operation
- Visit analog.com/EVAL-CN0357-ARDZ

**EVAL-CN0391-ARDZ**
Universal 4-channel thermocouple measurement system (digital)
- Flexible 4-channel thermocouple system
- Cold junction compensation
- 24-bit digitization
- Visit analog.com/CN0391

**EVAL-CN0394-ARDZ**
Universal 4-channel thermocouple measurement system (analog)
- Flexible 4-channel thermocouple system
- Cold junction compensation
- 24-bit digitization
- Visit analog.com/CN0394
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAL-CN0395-ARDZ</td>
<td>Volatile organic compound gas detection</td>
<td>Temperature and humidity compensation, Can be used with multiple sensor types, Low power, Visit analog.com/CN0395</td>
</tr>
<tr>
<td>EVAL-CN0396-ARDZ</td>
<td>Dual electrochemical gas detector</td>
<td>Temperature compensation, Work with industry-standard gas sensors, Programmable for a variety of gases, Visit analog.com/CN0396</td>
</tr>
<tr>
<td>EVAL-CN0397-ARDZ</td>
<td>Ultra low power visible light recognition measurement system</td>
<td>Recognizes red, green, and blue light sources, Sensors are integrated on board, Ultra low power, Visit analog.com/CN0397</td>
</tr>
<tr>
<td>EVAL-CN0398-ARDZ</td>
<td>Soil moisture and pH with temperature measurement system</td>
<td>Temperature compensation, Uses BNC standard pH probe connector, Uses voltage output moisture probes, Visit analog.com/CN0398</td>
</tr>
<tr>
<td>EVAL-CN0409-ARDZ</td>
<td>Water turbidity measurement system</td>
<td>0 FTU to 1000 FTU measurement range, ±0.5 FTU system accuracy (up to 1000 FTU), Integrated ambient light rejection, Visit analog.com/CN0409</td>
</tr>
<tr>
<td>EVAL-CN0410-ARDZ</td>
<td>Programmable, 3-channel LED 1 A current source</td>
<td>1 A max current load per channel, Designed to drive red, green, and blue LEDs, Isolated repeater for multiple LED banks, Visit analog.com/CN0410</td>
</tr>
<tr>
<td>EVAL-CN0411-ARDZ</td>
<td>Total dissolved solids measurement system</td>
<td>Temperature compensation, 1 μs to 1 s measurement range, Standard BNC conductivity probe connector, Visit analog.com/CN0411</td>
</tr>
<tr>
<td>EVAL-CN0415-ARDZ</td>
<td>Robust closed-loop solenoid control design</td>
<td>Overvoltage and undervoltage sensor control, Useful for on/off and proportional solenoids, Closed-loop driver circuit for precise control, Visit analog.com/CN0415</td>
</tr>
<tr>
<td>EVAL-CN0416-ARDZ</td>
<td>RS-485 communications design</td>
<td>Isolated and nonisolated bus path, Selectable as a main or a subordinate node, Connects up to 32 boards together, Visit analog.com/CN0416</td>
</tr>
<tr>
<td>EVAL-CN0418-ARDZ</td>
<td>4-channel analog output PLC module with HART</td>
<td>±10 V, 4 mA to 20 mA output, Hardware open wire detection, HART compliant, Visit analog.com/CN0418</td>
</tr>
<tr>
<td>EVAL-CN0428-ARDZ</td>
<td>Conductivity, pH, and ODR water quality measurement system</td>
<td>Measure from one to four sensor channels, Selectable SPI, PC, or UART communication, 10-pin JTAG/SWD connector for easy programming, Visit analog.com/CN0428</td>
</tr>
</tbody>
</table>
**EVAL-CN0429-EBZ**
Multichannel electrochemical gas detector
- 3- or 4-wire electrochemical gas sensors
- Gas sensor diagnostics and life expectancy
- Temperature and humidity compensation
- Visit analog.com/CN0429

**EVAL-AD5941BATZ**
Electrochemical impedance spectroscopy for batteries
- Designed for lithium-ion battery testing
- MHz to kHz frequency sweep
- Accurate data for state of health and state of charge calculation
- Visit analog.com/CN0510

**EVAL-CN0537-ARDZ**
Multistandard verified smoke detector solution
- UL 217 and UL 268 algorithm available
- Highly integrated analog front end
- Dual wavelength sensing technology
- Visit analog.com/CN0537

**EVAL-CN0548-ARDZ**
Isolated, high voltage and current measurement system
- Voltage input ranges from ±16 V to ±40 V
- ±10 A current input
- 250 V isolation
- Visit analog.com/CN0548

**MAX11410B0B**
24-bit multichannel low power 1.9 kSPS sigma-delta ADC with PGA breakout board
- 10 channels with PGA, buffers
- Burnout current sources for fault detection
- 90 dB simultaneous 60 Hz/50 Hz line rejection
- Visit analog.com/MAX11410B0B

**MAX5719B0B**
Ultralow noise 20-bit voltage output DAC
- 20-bit resolution, 0.05 nV/s glitch
- Ultralow noise: 6 nV/√Hz
- Unipolar or bipolar operation
- Visit analog.com/MAX5719B0B

**MAXREFDES130**
Building automation platform, Arduino/Mbed compatible
- Eight 0 V to 10 V, one 4 mA to 20 mA analog output
- Eight nonlatching relays, three latching relays
- 4 mA to 20 mA output, 1-Wire™ main
- Visit analog.com/MAXREFDES130

**EVAL-CN0503-ARDZ**
Multichannel optical-based water quality analysis platform
- Measures colorimetry/absorbance, fluorescence, turbidity
- Photometric front end reduces component count and rejects ambient light
- Swappable LEDs and photodiode
- Visit analog.com/CN0503

**EVAL-CN0536-ARDZ**
Geiger counter with adjustable high voltage power supply
- Power supply adjustable from 280 V to 500 V
- Compatible with center excited Geiger-Müller tubes
- Audible and visual indication of radiation
- Visit analog.com/CN0536

**EVAL-CN0540-ARDZ**
IEPE-compatible data acquisition system
- For piezo and MEMS sensors
- 54 kHz analog input bandwidth
- 24-bit resolution, >108 dB SNR
- Visit analog.com/CN0540

**MAX11131B0B**
3 MSPS, low power, serial 12-/10-bit, 8-/16-channel ADCs breakout board
- 256 length channel sequencer
- 16 sample FIFO
- Unipolar or bipolar input range
- Visit analog.com/MAX11131B0B

**MAX11410B0B**
24-bit multichannel low power 1.9 kSPS sigma-delta ADC with PGA breakout board
- 10 channels with PGA, buffers
- Burnout current sources for fault detection
- 90 dB simultaneous 60 Hz/50 Hz line rejection
- Visit analog.com/MAX11410B0B

**MAX5719B0B**
Ultralow noise 20-bit voltage output DAC
- 20-bit resolution, 0.05 nV/s glitch
- Ultralow noise: 6 nV/√Hz
- Unipolar or bipolar operation
- Visit analog.com/MAX5719B0B
**MAXREFDES161**  
High performance frequency synthesizer  
- Frequencies between 23.5 MHz to 6 GHz  
- On-board clock reference  
- SMA input/output connectors  
- Visit [analog.com/MAXREFDES161](http://analog.com/MAXREFDES161)

---

**FeatherWings**  
Adafruit’s FeatherWing boards have a hardware form factor similar to shields and hardware attached on top (HAT) components but with a much smaller physical footprint and a design meant for connecting to feather motherboards. By design, you can plug as many wings onto a feather as you want, as long as you don't run out of power, space, or pin contentions.

**MAX11301WING**  
20-port configurable ADC/DAC/GPIO/analogue switch device  
- Up to 20 analog/digital inputs/outputs  
- Individually configured channels  
- 12-bit ADC/DAC resolution, internal reference  
- Visit [analog.com/MAX11301WING](http://analog.com/MAX11301WING)

**MAX30101WING**  
Pulse oximetry measurement sensor  
- Integrated LEDs and PDs  
- Ambient light cancellation  
- 0.7 μA of shutdown power  
- Visit [analog.com/MAX30101WING](http://analog.com/MAX30101WING)

**MAX30003WING**  
Biopotential front end for ECG measurements  
- Programmable offset for wide electrode use  
- On-chip FIFO and interrupts reduce software complexity  
- Decreased power usage for extended battery life  
- Visit [analog.com/MAX30003WING](http://analog.com/MAX30003WING)

**MAXREFDES220**  
Pulse oximeter smart sensor with digital signal processing  
- Low power heart rate and pulse oximetry measurements  
- Available algorithms for both measurements  
- 3-axis accelerometer increases measurement accuracy  
- Visit [analog.com/MAXREFDES220](http://analog.com/MAXREFDES220)

---

**FMC Boards**  
The FPGA mezzanine card (FMC) is an ANSI/VITA standard that defines the input/output pins of FPGAs and other reconfigurable devices. There are two types of connectors, low pin count (LPC) and high pin count (HPC) variations depending on the devices on the FMC card. It specifies a low profile connector and compact board size for compatibility with several industry-standard slot card, blade, low profile motherboard, and mezzanine form factors.

**AD-FMCOMMS11-EBZ**  
Direct RF-to-baseband transmit radio up to 5 GHz  
- 16-bit, 12 GSPS RF DAC  
- 12-bit, 2.5 GSPS, 3.2 GHz analog bandwidth RF ADC  
- Direct to RF (DRF) transmitter and observation receiver architecture  
- Visit [analog.com/AD-FMCOMMS11-EBZ](http://analog.com/AD-FMCOMMS11-EBZ)

**AD-FMCOMMS2-EBZ**  
AD8361 software-defined radio board (optimized for 2.4 GHz)  
- 2.4 GHz to 2.5 GHz operation  
- 200 kHz to 56 MHz bandwidth  
- Two receivers, two transmitters  
- Visit [analog.com/AD-FMCOMMS2-EBZ](http://analog.com/AD-FMCOMMS2-EBZ)

**AD-FMCOMMS3-EBZ**  
AD8361 wideband software-defined radio board  
- 70 MHz to 6 GHz operation  
- 200 kHz to 56 MHz bandwidth  
- Two receivers, two transmitters  
- Visit [analog.com/AD-FMCOMMS3-EBZ](http://analog.com/AD-FMCOMMS3-EBZ)

**AD-FMCOMMS4-EBZ**  
AD8364 wideband software-defined radio board  
- 70 MHz to 6 GHz operation  
- 200 kHz to 56 MHz bandwidth  
- One receiver, one transmitter  
- Visit [analog.com/AD-FMCOMMS4-EBZ](http://analog.com/AD-FMCOMMS4-EBZ)
**Development Platforms**

Development platforms are used to design, develop, test, and debug embedded software that will target a particular processor, controller, or configurable device. These development platforms provide additional peripherals and functions that enable them to be compatible with various industry-standard communications protocols, connectivity interfaces, and hardware interfaces (such as Arduino shields, Pmod devices, FMC, Raspberry Pi HATs, and FeatherWings). The goal of a development board is to provide a means to take your design and ensure it functions on the embedded target of your choice, so when you move to the end, the design, code, and hardware have already been proven out.

ADI's goal is to ensure that we can provide hardware add-on boards for as many of the popular development platforms as possible to assist you with creating applications that work on your preferred embedded target. Below is a selection of the current supported development platforms along with a list of the available hardware interfaces they support without additional adapter boards.

**Arria 10 SoC Dev Kit**

Intel® Arria® 10 SoC Development Kit
- Two LPC FMC connectors
- PCIe connector (Gen 3 ×8)
- Ethernet jack

**CoraZ7-07S**

Xilinx® Zynq™-7000 all programmable SoC
- Arduino Uno connector
- Two Pmod-compatible connectors
- Ethernet jack
- [Visit projects.digilentinc.com/products/cora-z7-07s](https://projects.digilentinc.com/products/cora-z7-07s)

**DE10-Nano**

Intel Cyclone V SoC
- Arduino Uno connector
- USB OTG
- Ethernet jack

**KCU105**

Kintex® UltraScale™ FPGAs KCU105 evaluation kit LPC FMC Connector, HPC FMC connector, Pmod-compatible connector, DDR4
- Two FMC connectors (LPC and HPC)
- Pmod-compatible connector
- PCIe edge connector (Gen 3 ×8)

**AD-FMCOMMS5-EBZ**

Synchronized 4 × 4 dual AD9361 transceiver board
- 70 MHz to 6 GHz operation
- 200 kHz to 50 MHz bandwidth
- Four receivers, four transmitters
- [Visit analog.com/AD-FMCOMMS5-EBZ](https://www.analog.com/AD-FMCOMMS5-EBZ)

**AD-FMCOMMS8-EBZ**

Dual 4 × 4 ADVR9008 transceiver platform with observation receiver for DPD
- 75 MHz to 6 GHz operation
- 200 MHz receiver bandwidth
- Multichip phase synchronization
- [Visit analog.com/AD-FMCOMMS8-EBZ](https://www.analog.com/AD-FMCOMMS8-EBZ)

**EVAL-CN0506-FMCZ**

10 Mbps/100 Mbps/1000 Mbps dual-channel, low power Industrial Ethernet PHY
- IEEE 1588 time stamping
- 1 Gbps with 180 m cable
- Supports managed and unmanaged operation via pin strapping
- [Visit analog.com/CN0506](https://www.analog.com/CN0506)

**EVAL-CN0577-FMCZ**

Analog front end and digital interface for serial LVDS SAR ADCs
- 18-bit resolution, 15 MSPS
- Arbitrary voltage inputs supported
- All clocking and power generated on board
- [Visit analog.com/CN0577](https://www.analog.com/CN0577)

**EVAL-CN0585-FMCZ**

Quad-channel, low latency, data acquisition, and signal generation module
- Four analog input channels with configurable voltage ranges
- Four analog output channels with configurable voltage range
- 200 ns latency between ADC measurement and DAC settling
- [Visit analog.com/CN0585](https://www.analog.com/CN0585)

**AD-FMCDATA02-EBZ**

High speed, dual-channel ADC and DAC with synchronization
- 14-bit, 1 GSPS ADC
- 16-bit, 800 MSPS DAC
- Input/output synchronization
- [Visit analog.com/AD-FMCDATA02-EBZ](https://www.analog.com/AD-FMCDATA02-EBZ)
**KC705**
Kintex-7 FPGA KC705 evaluation kit LPC FMC connector, HPC FMC connector, DDR3
► Two FMC connectors (LPC and HPC)
► PCIe edge connector (+8)
► Ethernet jack
► Visit xilinx.com/products/boards-and-kits/ek-k7-kc705-g.html

**VCU118**
Virtex UltraScale+™ FPGA VCU118 evaluation kit
► HPC FMC connector
► HSPC FMC+ connector
► Two Pmod-compatible connectors
► Visit xilinx.com/products/boards-and-kits/vcu118.html

**VC707**
Virtex®-7 FPGA VC707 evaluation kit
► Two HPC FMC connectors
► PCIe edge connector (Gen 2 ×8)
► Ethernet jack
► Visit xilinx.com/products/boards-and-kits/ek-v7-vc707-g.html

**ZC706**
Zynq-7000 SoC ZC706 evaluation kit
► Two FMC connectors (LPC and HPC)
► Pmod-compatible connector
► PCIe edge connector (Gen 2 ×4)
► Visit xilinx.com/products/boards-and-kits/ek-z7-zc706-g.html

**ZC702**
Xilinx Zynq-7000 SoC ZC702 evaluation kit
► Two LPC FMC connectors
► Two Pmod-compatible connector
► Ethernet jack
► Visit xilinx.com/products/boards-and-kits/ek-z7-zc702-g.html

**ZCU102**
XZCU9EG Zynq UltraScale+® SoC, 2× LPC FMC expansion connectors
► Two LPC FMC connectors
► Two Pmod-compatible connector
► PCIe edge connector (Gen 2 ×4)
► Visit xilinx.com/products/boards-and-kits/ek-u1-zcu102-g.html

**EVAL-ADICUP3029**
ADuCM3029, ultra low power Arduino form factor Arm® Cortex®-M3 development platform
► Arduino Uno connector
► Two Pmod-compatible connectors
► Grove connector
► Visit analog.com/EVAL-ADICUP3029

**MAX32520FTHR**
MAX32520 feather form factor microcontroller board
► FeatherWings connector
► Pmod-compatible connector
► USB programming
► Visit analog.com/MAX32520FTHR

**MAX32630FTHR**
MAX32630 feather form factor microcontroller board
► FeatherWings connector
► USB programming
► Bluetooth® connectivity
► Visit analog.com/MAX32630FTHR

**MAX32655FTHR**
MAX32655 feather form factor microcontroller board
► FeatherWings connector
► USB programming
► Bluetooth connectivity
► Visit analog.com/MAX32655FTHR

**ZedBoard™**
Single-core Arm SoC, FPGA with 8.5k logic slices, FMC, Pmod-compatible expansion headers
► LPC FMC connector
► Five Pmod-compatible connectors
► USB OTG
► Visit digilent.com/reference/programmable-logic/zedboard/start

**EVAL-ADICUP360**
ADuCM360, dual simultaneous 24-bit sigma-delta converter, Arduino form factor Arm Cortex-M3 development platform
► Arduino Uno connector
► Arduino Due connector
► Two Pmod-compatible connectors
► Visit analog.com/EVAL-ADICUP360

**MAX32620FTHR**
MAX32620 feather form factor microcontroller board
► FeatherWings connector
► Pmod-compatible connector
► USB lowercase
► Visit analog.com/MAX32620FTHR

**MAX32650FTHR**
MAX32650 feather form factor microcontroller board
► FeatherWings connector
► USB FeatherWings connector
► Visit analog.com/MAX32650FTHR

**MAX32655FTHR**
MAX32655 feather form factor microcontroller board
► FeatherWings connector
► USB programming
► Bluetooth connectivity
► Visit analog.com/MAX32655FTHR

**VISIT ANALOG.COM**
**Pmod-Compatible Devices**

The Pmod (peripheral module)-compatible interface is an open standard by Digilent (a National Instruments company) for peripherals used with FPGAs or microcontroller development boards. The modules are available from simple push buttons to more complex modules with analog-to-digital converters (ADCs), digital-to-analog converters (DACs), or LCD displays. These modules can be used with a variety of FPGA or microcontroller development boards from different vendors and support major digital communication protocols such as SPI, I²C, and UART. Pmod-compatible interfaces normally have additional software drivers and configuration is required. All software is open source and can be found on github.com/analogdevicesinc/.

---

**MAX32666FTHR**

MAX32666 feather form factor microcontroller board
- FeatherWings connector
- USB programming
- Bluetooth connectivity
- Visit [analog.com/MAX32666FTHR](http://analog.com/MAX32666FTHR)

**MAX78000FTHR**

MAX78000 feather form factor microcontroller board
- FeatherWings connector
- USB programming
- Audio input/output jacks
- Visit [analog.com/MAX78000FTHR](http://analog.com/MAX78000FTHR)

**Raspberry Pi 3B+**

Quad Arm core Cortex-A53 SoC, 1.5 GHz, 1 GB RAM, gigabit Ethernet, SPI, PC, GPIO, USB
- Raspberry Pi HAT connector
- Four USB ports
- Ethernet jack
- Visit [raspberrypi.com/products/raspberry-pi-3-model-b-plus/](http://raspberrypi.com/products/raspberry-pi-3-model-b-plus/)

**Raspberry Pi 4**

Quad Arm core Cortex-A72 SoC, 1.5 GHz, 8 GB RAM, dual display, gigabit Ethernet, SPI, PC, USB, GPIO
- Raspberry Pi HAT connector
- Four USB ports
- Ethernet jack
- Visit [raspberrypi.com/products/raspberry-pi-4-model-b/](http://raspberrypi.com/products/raspberry-pi-4-model-b/)

**Raspberry Pi Zero 2W**

1 GHz, quad Arm core Cortex-A53, 512 MB RAM, Wireless Ethernet, SPI, PC, GPIO
- Raspberry Pi HAT connector
- USB OTG
- Wi-Fi

**Raspberry Pi Zero W**

1 GHz, single Arm core, 512 MB RAM, wireless Ethernet, SPI, PC, GPIO
- Raspberry Pi HAT connector
- USB OTG
- Wi-Fi
EVAL-AD5770R-PMDZ
6-channel, current output DAC
► 14-bit resolution
► Per-output supply pins for reducing dissipation
► Output ranges from –60 mA to +300 mA
► Visit analog.com/EVAL-AD5770R-PMDZ

EVAL-AD7124-8-PMDZ
8-channel, 24-bit sigma-delta ADC with PGA and reference
► 16-input crosspoint mux with sequencer
► 1.7 SPS to 19.2 kSPS conversion rate
► PGA gain from 1 to 128
► Visit analog.com/EVAL-AD7124-8-PMDZ

EVAL-AD7685-PMDZ
16-bit, 250 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 16-bit, 250 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7685-PMDZ

EVAL-AD7686-PMDZ
16-bit, 500 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, fully differential analog input
► 16-bit, 500 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7686-PMDZ

EVAL-AD7687-PMDZ
16-bit, 250 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 16-bit, 250 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7687-PMDZ

EVAL-AD7688-PMDZ
16-bit, 500 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 16-bit, 500 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7688-PMDZ

EVAL-AD7690-PMDZ
18-bit, 400 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, fully differential analog input
► 18-bit, 400 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7690-PMDZ

EVAL-AD7691-PMDZ
16-bit, 250 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, fully differential analog input
► 16-bit, 250 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7691-PMDZ

EVAL-AD7693-PMDZ
16-bit, 500 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, fully differential analog input
► 16-bit, 500 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7693-PMDZ

EVAL-AD7942-PMDZ
14-bit, 250 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 14-bit, 250 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7942-PMDZ

EVAL-AD7946-PMDZ
14-bit, 500 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 14-bit, 500 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7946-PMDZ

EVAL-AD7980-PMDZ
16-bit, 1000 kSPS PulSAR ADC Pmod-compatible evaluation board
► Unipolar, single-ended analog input
► 16-bit, 1000 kSPS ADC
► On-board input buffers and reference
► Visit analog.com/EVAL-AD7980-PMDZ
<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAL-AD7982-PMDZ</td>
<td>16-bit, 1000 kSPS PulSAR ADC Pmod-compatible evaluation board</td>
<td>Unipolar, fully differential analog input, 18-bit, 1000 kSPS ADC, On-board input buffers and reference.</td>
</tr>
<tr>
<td>EVAL-AD7984-PMDZ</td>
<td>18-bit, 1333 kSPS PulSAR ADC Pmod-compatible evaluation board</td>
<td>Unipolar, fully differential analog input, 18-bit, 1333 kSPS ADC, On-board input buffers and reference.</td>
</tr>
<tr>
<td>EVAL-AD7988-5-PMDZ</td>
<td>16-bit, 500 kSPS PulSAR ADC Pmod-compatible evaluation board</td>
<td>Unipolar, single-ended analog input, 16-bit, 500 kSPS ADC, On-board input buffers and reference.</td>
</tr>
<tr>
<td>EVAL-ADT7420-PMDZ</td>
<td>±0.25°C accurate digital temperature sensor</td>
<td>16-bit digital temperature resolution, I²C interface for up to four nodes on a single bus, Low power (700 μW at 3.3 V normal mode, 7 μW at 3.3 V in shutdown mode).</td>
</tr>
<tr>
<td>EVAL-ADXL355-PMDZ</td>
<td>Low power, low noise 3-axis digital accelerometer</td>
<td>20-bit ADC resolution, Programmable high- and low-pass digital filters, Low power (200 μA in measurement mode and 21 μA in standby mode).</td>
</tr>
<tr>
<td>EVAL-CN0179-PMDZ</td>
<td>Programmable 4 mA to 20 mA current loop transmitter</td>
<td>Low power, 14-bit resolution control, High-side current source compatible with grounded loads.</td>
</tr>
<tr>
<td>EVAL-CN0326-PMDZ</td>
<td>Isolated pH monitor with temperature compensation</td>
<td>±0.5% accurate with temperature compensation, Works with pH sensors 1 MΩ to 1 GΩ output impedance, Uses standard connectors (BNC for pH and RCA for temperature).</td>
</tr>
<tr>
<td>Model Number</td>
<td>Description</td>
<td>Features</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| EVAL-CN0335-PMDZ | Fully isolated, ±10 V data acquisition system | - Galvanically isolated from processor  
- Standard ±10 V industrial input  
- Works from single 3.3 V supply  
- Visit [analog.com/CN0335](analog.com/CN0335) |
| EVAL-CN0336-PMDZ | Fully isolated, 4 mA to 20 mA data acquisition system | - Galvanically isolated from processor  
- Standard 4 mA to 20 mA industrial input  
- Works from single 3.3 V supply  
- Visit [analog.com/CN0336](analog.com/CN0336) |
| EVAL-CN0337-PMDZ | Fully isolated, 3-wire RTD temperature measurement system | - Galvanically isolated from processor  
- Uses standard 3-wire RTD sensors  
- Includes lead-wire temperature compensation  
- Visit [analog.com/CN0337](analog.com/CN0337) |
| EVAL-CN0338-PMDZ | Electrochemical toxic gas detector | - Programmable for multiple other gases  
- Resolution down to 1 ppm  
- Low power, single-supply operation  
- Visit [analog.com/CN0338](analog.com/CN0338) |
| EVAL-CN0339-PMDZ | High temperature 16-bit data acquisition system | - Entire board can work up to 175°C  
- Low power for battery applications  
- 16-bit, 600 kSPS DAQ  
- Visit [analog.com/CN0339](analog.com/CN0339) |
| EVAL-CN0340-PMDZ | Accurate relative humidity measurement system | - Contactless humidity measurement  
- Highly accurate  
- I2C digital output  
- Visit [analog.com/CN0340](analog.com/CN0340) |
| EVAL-CN0341-PMDZ | Piezoelectric vibration measurement system | - Vibration measurements up to 500 kHz  
- Uses wide variety of charge crystal sensors  
- Low power  
- Visit [analog.com/CN0341](analog.com/CN0341) |
| EVAL-CN0342-PMDZ | Temperature compensated bridge signal conditioner and driver system | - Connect pressure sensor or load cells  
- Drive voltage range or 5 V to 15 V  
- Full-scale sensor output from 10 mV to 1 V  
- Visit [analog.com/CN0342](analog.com/CN0342) |
| EVAL-CN0343-PMDZ | Dual-channel colorimeter | - Red, green, blue LED absorption  
- Vial holder and diffusor glass included  
- Digital synchronization between channels  
- Visit [analog.com/CN0343](analog.com/CN0343) |
| EVAL-CN0344-PMDZ | Single-supply LED current driver | - Programmable output current  
- Range from 0 mA to 20 mA  
- Low power  
- Visit [analog.com/CN0344](analog.com/CN0344) |
EVAL-CN0372-PMDZ
Ultra low power, multichannel data acquisition with energy harvesting
- Low power (100 μW at 22 kSPS)
- Photovoltaic or thermoelectric energy
- 4-channel 16-bit DAQ
- Visit analog.com/CN0372

EVAL-CN0531-PMDZ
Programmable 20-bit, linear, precision, bipolar ±5 V DC voltage source
- ±5 V output range
- 20-bit signal generation control
- Single 3.3 V power supply
- Visit analog.com/CN0531

EVAL-CN0552-PMDZ
Extended range capacitance to digital converter
- 4 pF range with 4 aF resolution, 50 pF extended range
- Dual capacitance inputs with internal temperature sensor
- 10 Hz to 90 Hz sample rate
- Visit analog.com/CN0552

MAX11205PMB1
16-bit, single-channel sigma-delta ADC with 2-wire interface
- 2.1 μV rms noise
- 50 Hz/60 Hz line noise rejection
- Ultra low power
- Visit analog.com/MAX11205PMB1

MAX11300PMB1
20-port configurable ADC/DAC/GPIO/analag switch device
- Up to 20 analog/digital inputs/outputs
- Individually configured channels
- 12-bit ADC/DAC resolution, internal reference
- Visit analog.com/MAX11300PMB1

MAX11312PMB
12-port configurable ADC/DAC/GPIO/analag switch device via PC
- Up to 12 analog/digital inputs/outputs
- Individually configured channels
- 12-bit ADC/DAC resolution, internal reference
- Visit analog.com/MAX11312PMB

MAX14001PMB
Dual-channel, isolated ADC for load and line measurements
- 10-bit, 10 kSPS isolated ADC
- 3.75 kV rms isolation
- Integrated isolated supply
- Visit analog.com/MAX14001PMB

MAX14840PMB1
RS-485 half-duplex transceiver
- 40 Mbps max baud rate
- Fail-safe receiver input
- ±35 kV human body model ESD protection
- Visit analog.com/MAX14840PMB1

MAX14912PMB
High voltage octal digital output driver with diagnostics
- Octal 24 V inductive-load tolerant push-pull driver
- SPI interface with CRC error checking
- Per-pin diagnostics fault/status LED indicators
- Visit analog.com/MAX14912PMB

MAX14850PMB1
6-channel digital isolator for SPI/UART isolation
- SPI or UART Pmod-compliant isolation
- Data rate DC to >20 Mbps
- 600 V isolation (60 s)
- Visit analog.com/MAX14850PMB1

MAX14914PMB
24 V, 1.3 A high-side industrial input/output driver
- 24 V, 1.3 A driver with current limit
- 5 V logic compatible
- Drives unlimited inductance
- Visit analog.com/MAX14914PMB
<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX3232PMB1</td>
<td>±15 kV ESD-protected true RS-232 transceiver</td>
</tr>
<tr>
<td></td>
<td>1 Mbps max baud rate</td>
</tr>
<tr>
<td></td>
<td>Single-supply, no external negative supply required</td>
</tr>
<tr>
<td></td>
<td>DB9 receptacle RS-232 connection</td>
</tr>
<tr>
<td>MAX22191PMB</td>
<td>Cold-junction compensated, type-K thermocouple-to-digital converter</td>
</tr>
<tr>
<td></td>
<td>Type-K thermocouple optimized</td>
</tr>
<tr>
<td></td>
<td>Integrated cold junction compensation</td>
</tr>
<tr>
<td></td>
<td>Open and short wire detection</td>
</tr>
<tr>
<td>MAX38165PMB1</td>
<td>Octal industrial digital input with diagnostics</td>
</tr>
<tr>
<td></td>
<td>12 V/24 V logic, no HV supply required</td>
</tr>
<tr>
<td></td>
<td>CRC error checking on SPI interface</td>
</tr>
<tr>
<td></td>
<td>Per-input LED indicator</td>
</tr>
<tr>
<td>MAX22190PMB</td>
<td>Peripheral module for MAX31723, digital thermometer and thermostat with SPI/3-wire interface</td>
</tr>
<tr>
<td></td>
<td>Measures temperature from –55°C to +125°C</td>
</tr>
<tr>
<td></td>
<td>Thermometer accuracy of ±0.5°C</td>
</tr>
<tr>
<td></td>
<td>Programmable, nonvolatile, thermostat output</td>
</tr>
<tr>
<td>MAX5216PMB1</td>
<td>16-bit high performance buffered DAC</td>
</tr>
<tr>
<td></td>
<td>16-bit DAC with 1.2 LSB INL</td>
</tr>
<tr>
<td></td>
<td>On-board 0.15% accurate reference</td>
</tr>
<tr>
<td></td>
<td>Low power (&lt;80 µA)</td>
</tr>
<tr>
<td>MAX9611PMB1</td>
<td>12-bit, programmable current limiter</td>
</tr>
<tr>
<td></td>
<td>Programmable current limit up to 1 A</td>
</tr>
<tr>
<td></td>
<td>30 V max operating voltage</td>
</tr>
<tr>
<td></td>
<td>Nine selectable I²C addresses</td>
</tr>
<tr>
<td>MAXREFDES11</td>
<td>16-bit high accuracy 0 V to 10 V input isolated analog front end</td>
</tr>
<tr>
<td></td>
<td>16-bit, 200 kSPS</td>
</tr>
<tr>
<td></td>
<td>On-board reference and isolated power</td>
</tr>
<tr>
<td></td>
<td>5 kΩ input impedance</td>
</tr>
<tr>
<td>MAXREFDES18</td>
<td>16-bit PLC analog output</td>
</tr>
<tr>
<td></td>
<td>±20 mA, 0 mA to 20 mA, 4 mA to 20 mA</td>
</tr>
<tr>
<td></td>
<td>±10 V, 0 V to 10 V, 0 V to 5 V</td>
</tr>
<tr>
<td></td>
<td>Data and power isolation</td>
</tr>
<tr>
<td>MAXREFDES24</td>
<td>Isolated 4-channel analog current and voltage outputs</td>
</tr>
<tr>
<td></td>
<td>16-bit, 0.1% total error</td>
</tr>
<tr>
<td></td>
<td>ISUP = ±24 mA, up to 1 kA load</td>
</tr>
<tr>
<td></td>
<td>VBP = ±12 V</td>
</tr>
<tr>
<td>MAXREFDES4</td>
<td>16-bit high accuracy 4 mA to 20 mA loop input isolated analog front end</td>
</tr>
<tr>
<td></td>
<td>On-board power and data isolation 0.02% accurate reference</td>
</tr>
<tr>
<td></td>
<td>4 mA to 20 mA or 0.2 V to 4.096 V voltage input</td>
</tr>
<tr>
<td>MAXREFDES5</td>
<td>16-bit high accuracy multichannel isolated analog front end</td>
</tr>
<tr>
<td></td>
<td>Two high impedance ±10 V input</td>
</tr>
<tr>
<td></td>
<td>Two 17 kΩ impedance ±10 V inputs</td>
</tr>
<tr>
<td></td>
<td>16-bit, ±2 LSB INL, on-board 3 ppm/°C max reference</td>
</tr>
</tbody>
</table>
# Raspberry Pi HATs

Raspberry Pi HATs are add-on boards specifically designed to be compatible with the Raspberry Pi 3B+ and later devices. In a nutshell, a HAT is a rectangular board that has four mounting holes in the corners that align with the mounting holes on the B+, has a 40-pin GPIO header, and supports the special autoconfiguration system that allows automatic GPIO setup and driver setup. The automatic configuration is achieved using two dedicated pins (ID_SD and ID_SC) on the GPIO header that are reserved for an I²C EEPROM. The EEPROM holds the board manufacturer information, GPIO setup, and a thing called a device tree fragment—basically a description of the attached hardware that allows Linux to automatically load the required drivers.

<table>
<thead>
<tr>
<th><strong>EVAL-ADISIMU1-RPIZ</strong></th>
<th><strong>EVAL-CN0508-RPIZ</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inertial measurement unit to Raspberry Pi adapter</td>
<td>Programmable, 75 W, single output benchtop power supply</td>
</tr>
<tr>
<td>▶ Direct sensor mount or remote mount with cable</td>
<td>▶ Software programmable</td>
</tr>
<tr>
<td>▶ Supports multiple IMU families</td>
<td>▶ Manual current and voltage control</td>
</tr>
<tr>
<td>▶ Powered from Raspberry Pi</td>
<td>▶ On-board diagnostics</td>
</tr>
<tr>
<td>▶ Visit analog.com/EVAL-ADISIMU1-RPIZ</td>
<td>▶ Visit analog.com/CN0508</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EVAL-CN0511-RPIZ</strong></th>
<th><strong>EVAL-CN0554-RPIZ</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC to 5.5 GHz signal generator with ±0.5 dB calibrated output power</td>
<td>±10 V analog input and ±15 V analog output for Raspberry Pi platforms</td>
</tr>
<tr>
<td>▶ DC to 5.5 GHz GHz sine output, 48-bit tuning resolution</td>
<td>▶ Selectable input and output voltage ranges</td>
</tr>
<tr>
<td>▶ 83 dB SFDR at 51 MHz</td>
<td>▶ 16 single-ended input and output channels</td>
</tr>
<tr>
<td>▶ On-board reference oscillator</td>
<td>▶ All power rails derived from the Raspberry Pi</td>
</tr>
<tr>
<td>▶ Visit analog.com/CN0511</td>
<td>▶ Visit analog.com/CN0554</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EVAL-CN0566-RPIZ</strong></th>
<th><strong>EVAL-CN0575-RPIZ</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phased array development platform</td>
<td>10BASE-T1L field device development platform with Class 12 and 13 SPoE</td>
</tr>
<tr>
<td>▶ 10 GHz to 10.5 GHz beamsteering platform</td>
<td>▶ Data and power delivery using single-pair power over Ethernet</td>
</tr>
<tr>
<td>▶ 360° phase shift with 2.8° resolution</td>
<td>▶ Power Class 12 and 13 delivery capable</td>
</tr>
<tr>
<td>▶ 31 dB amplitude tuning range with 0.5 dB resolution</td>
<td>▶ Provides speeds up to 10 MBPS at 1 km</td>
</tr>
<tr>
<td>▶ Visit analog.com/CN0566</td>
<td>▶ Visit analog.com/CN0575</td>
</tr>
</tbody>
</table>

## Solutions for Rapid Prototyping

Raspberry Pi HATs are add-on boards specifically designed to be compatible with the Raspberry Pi 3B+ and later devices. In a nutshell, a HAT is a rectangular board that has four mounting holes in the corners that align with the mounting holes on the B+, has a 40-pin GPIO header, and supports the special autoconfiguration system that allows automatic GPIO setup and driver setup. The automatic configuration is achieved using two dedicated pins (ID_SD and ID_SC) on the GPIO header that are reserved for an I²C EEPROM. The EEPROM holds the board manufacturer information, GPIO setup, and a thing called a device tree fragment—basically a description of the attached hardware that allows Linux to automatically load the required drivers.
Analog Devices Software Stack

The software stack ADI develops, maintains, and supports is made up of many layers designed to be modular at every step of the design process. Providing device specific drivers, hardware abstraction, interface layers, application layers, and example code allows for easy customization and integration of available software into your end design.

<table>
<thead>
<tr>
<th>Application Layer</th>
<th>Python, MATLAB®, LabVIEW, IIO-Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Interface Layer</td>
<td>pyadi-iio, MATLAB Toolboxes, LabVIEW-iio</td>
</tr>
<tr>
<td>Infrastructure Layer</td>
<td>iiod/Libiio</td>
</tr>
<tr>
<td>Device Driver</td>
<td>iiod/tinyiod</td>
</tr>
<tr>
<td>Peripheral Configuration</td>
<td>Linux Drivers/Kernel Bare Metal Drivers</td>
</tr>
<tr>
<td>Development Platform</td>
<td>Device Tree Device Tree Overlay Microcontroller SDK/BSP</td>
</tr>
<tr>
<td>Development Platform</td>
<td>FPGA RPI Microcontroller</td>
</tr>
</tbody>
</table>

Development Platforms: Hardware Interfaces and Software Device Drivers

<table>
<thead>
<tr>
<th>Development Platform</th>
<th>Hardware Interfaces</th>
<th>Software Device Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FMC</td>
<td>Arduino</td>
</tr>
<tr>
<td>Xilinx</td>
<td>ZC702</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>ZC706</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>ZCU102</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>KC705</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>KCU105</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>VC707</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>VCU18</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>ZedBoard</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Cora27-07s</td>
<td>✗</td>
</tr>
<tr>
<td>Intel</td>
<td>Arria 10 SoC Dev Kit</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Arria 10gx</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>DE10-Nano</td>
<td>✗</td>
</tr>
<tr>
<td>Raspberry Pi</td>
<td>Raspberry Pi 4</td>
<td>✗</td>
</tr>
<tr>
<td>Foundation</td>
<td>Raspberry Pi 3B+</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Raspberry Pi 3B</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Raspberry Pi Zero</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Raspberry Pi Zero W</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Raspberry Pi Zero 2 W</td>
<td>✗</td>
</tr>
<tr>
<td>Analog Devices</td>
<td>EVAL-ADICUP3029</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>EVAL-ADICUP360</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX3250FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX32820FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX32830FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX32850FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX32855FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX32866FTHR</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>MAX78000FTHR</td>
<td>✗</td>
</tr>
<tr>
<td>ST Micro</td>
<td>Nucleo</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>STM32</td>
<td>✗</td>
</tr>
<tr>
<td>Arduino</td>
<td>Arduino Uno Rev 3</td>
<td>✗</td>
</tr>
</tbody>
</table>
Circuits from the Lab® reference designs are built and tested by ADI engineers with comprehensive documentation and factory-tested evaluation hardware.

Visit analog.com/cftl

Engage with the ADI technology experts in our online support community. Ask your tough design questions, browse FAQs, or join a conversation.

Visit ez.analog.com