



Model UD128A8D

USB Data Acquisition System

Includes Application Software

- 8 Analog 12-Bit A/D Inputs**
- 4 Analog 10-Bit D/A Outputs**
- 8 Digital I/O – 4/4 Selectable**

The UD128A8D USB Data Acquisition System provides quick and easy Plug N Play connection to any USB equipped Windows 98/ME/2000 or XP compatible computer. The USB Host connection provides fast sampling and powers the module, minimizing additional hardware, converters or power supplies. Analog and Digital I/O connections are made through a DB25 female connector.

Our BB-DAC Application Software is included so you can log or monitor analog values (voltage or current), to output analog control voltages for other devices or to set or read on/off conditions. With the BB-DAC Application, you can use our Example program, or you can easily define your own custom design by selecting a Control, size, location, label, scale, markings, and the I/O connection. For the advanced professional, we include a Visual Basic Data Acquisition Library with UD module functions to access each I/O connection and to manage single or multiple modules.

Features

- Powerful Data Acquisition System in compact, lightweight, and portable package
- USB connection provides Plug-N-Play support for multiple unit operation under Windows.
- USB 1.1 Full Speed Interface provides fast data transfer
- Power Supplied by USB power bus
- Multi-Function module supports A/D, D/A and Digital-I/O
- 8 Analog 12-bit A/D Inputs software selectable in pairs as single-ended or differential A/D Inputs
- High impedance Analog Inputs minimize loading and simplify input scaling
- 4 Analog 10-bit D/A Outputs
- 8 Digital I/O lines, software selectable as 8 Inputs, 8 Outputs or 4 of each.
- Built-in Digital Reference Voltage for +5V pull-ups
- Includes BB-DAC Application Software for controlling, displaying, measuring and saving real world signals in minutes.
- Visual, Graphical or Text Display in User defined units – BB-DAC Application
- Log to File – BB-DAC Application
- Includes UD module Programmer Library Functions for Visual Basic

System Includes

- UD128A8D Module with Software on CD-ROM Disc
- Driver Software for Windows 98/ME/2000/XP
- BB-DAC Application Design Software with ready-to-run Sample Design.
- Visual Basic UD module Data Acquisition Reference Library Software

Optional Accessories Available: USB cable, Relay Module, or terminals/connectors.

International Headquarters:

B&B Electronics Mfg. Co. 707 Dayton Road P.O. Box 1040 Ottawa, IL 61350 USA
815-433-5100 Fax 433-5104 www.bb-elec.com orders@bb-elec.com support@bb-elec.com

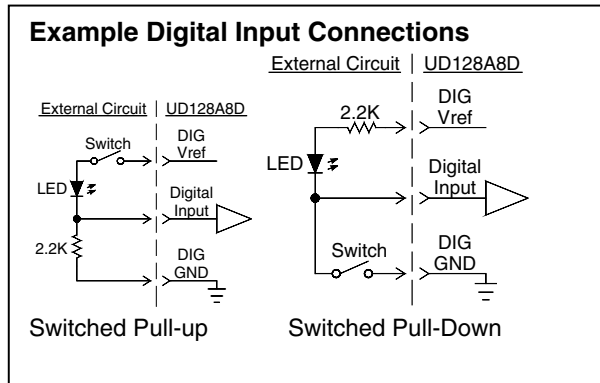
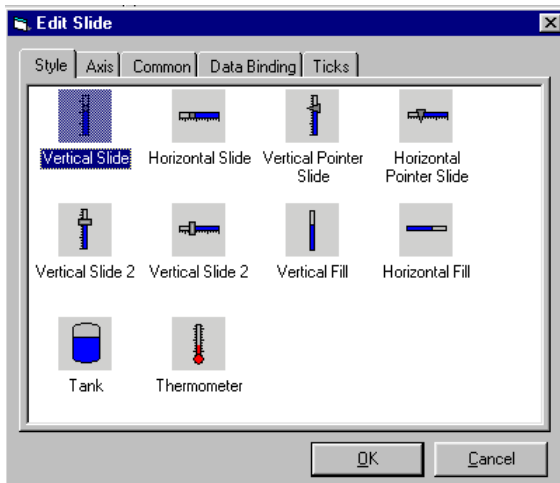
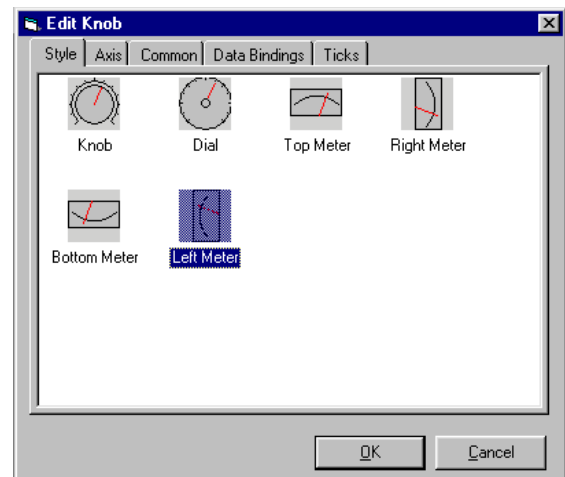
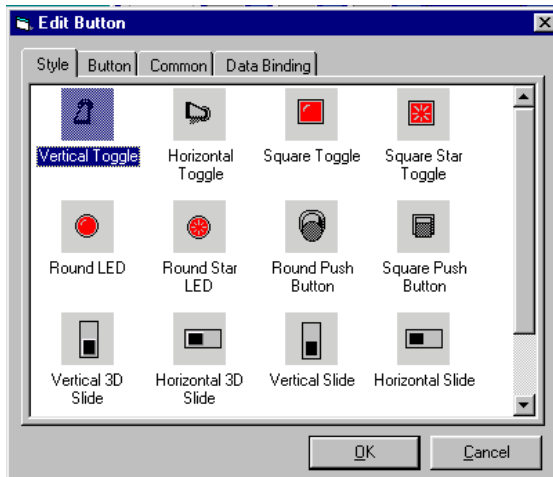
B&B Electronics Ltd Westlink Commercial Park Oranmore Co. Galway Ireland
+353 91 792444 Fax +353 91 792445 www.bb-europe.com orders@bb-elec.com support@bb-europe.com

BB-DAC Application Software

The BB-DAC Application is a Design Tool and Run-Time Environment for custom Data Acquisition applications. It comes with an example Design that lets you control 4 analog outputs, set 4 digital outputs, read 4 digital inputs, and read 8 analog inputs. You can use the example design for data sampling and logging, or custom modify it to meet your specific needs. Different Designs can be loaded or saved for use.

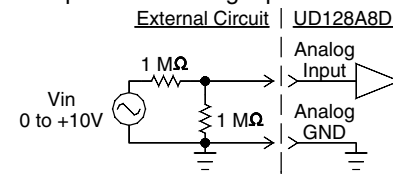
As an Application Design Tool, you start with a blank application window, select your control style for control or indication, position it, size it, specify values, markings, text, and select the I/O point that the control accesses. Device I/O point settings can be selected, the module selected, and the sampling interval selected.

3 Control Styles are provided: Button Style for On/Off control or indication, Knob Style or Slide Style for Analog Control or Indication, as shown below.

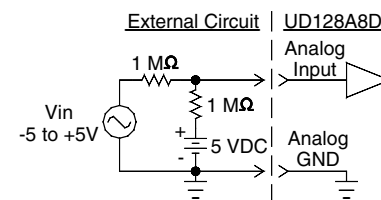


Example Analog Input Connections

Hi-Impedance Analog Inputs

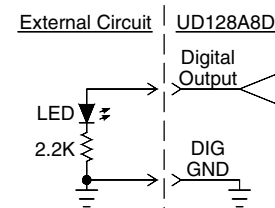


Simplified Voltage Scaling



Simplified Voltage Offsets

Example Digital Output Connection



International Headquarters:

B & B Electronics Mfg. Co. 707 Dayton Road P.O. Box 1040 Ottawa, IL 61350 USA
815-433-5100 Fax 433-5104 www.bb-elec.com orders@bb-elec.com support@bb-elec.com

B & B Electronics Ltd Westlink Commercial Park Oranmore Co. Galway Ireland
+353 91 792444 Fax +353 91 792445 www.bb-europe.com orders@bb-elec.com support@bb-europe.com

Application Development With VB

Visual Basic programmers familiar with serial device programming will easily be able to access the UD128A8D after enabling the B&B Electronics Data Acquisition Type Library with their Project References and adding the global variables and constants to their Declarations. Multiple UD devices are supported, devices can be accessed by name or connected order, and connected devices can be opened for access or closed. Events are generated by connection or disconnection of each device, so you can determine what action should be taken without polling. Examples:

Digital Inputs return a True or False value, Digital outputs are set with a True or False value

```
InVar = Device1.IoPoints(DIG_IO_3).Value ` reads input value into InVar  
Device1.IoPoints(DIG_IO_4).Value = True ` sets output high
```

Analog Inputs return a count value from 0 to 4095, Analog outputs are set with a value from 0 to 1023

```
InVarA = Device1.IoPoints(AD_0).Value ` reads input into InVarA  
Device1.IoPoints(DA_0).Value = 1023 ` sets Analog output to max voltage
```

Use of actual digital values for Input or output makes it easy to scale or watch for a particular value.

Input or Output points can be addressed individually and sampled by your code according to the point name or offset from a base point, or an alias can be assigned to individual points.

Hardware Timed Sampling can be used to access one or more of the Analog Inputs, with values returned in an array.

Visual Basic Source example code is provided on the program CD-ROM Disc.

SPECIFICATIONS

Digital Inputs/Outputs

8 channels, selectable as 8 Inputs, 4/4 inputs/outputs or 8 outputs

Input Ratings

- Vin High: 2.0V minimum
- Vin Low: 0.8V maximum

Output Ratings

- Minimum Load Impedance: 209 ohms
- Maximum Sink/Source Current: 24mA per output
- Vout High: 5V nominal, 3.76 V minimum
- Vout Low: 0V nominal, 0.44 V maximum

Digital Reference Output Voltage

- Line Name: DIG +Vref
- +5VDC output for digital pull-up, +4.5V minimum
- Output Impedance: 54 ohms

Analog Outputs

- Outputs: 4 Channels
 - Single Ended, Voltage output
- Note: The last value output is held (latched) until changed
- Resolution: 10-bit A/D Output: 1024 Steps (values 0 to 1023)
- Linear Range: 0 to 4.995 (5V – 1 LSBit)
- Maximum load Capacitance: 100pF
- Output Impedance: ≈ 5 ohms maximum
- Recommended Load Impedance: 10K ohms, resistive

International Headquarters:

B&B Electronics Mfg. Co. 707 Dayton Road P.O. Box 1040 Ottawa, IL 61350 USA
815-433-5100 Fax 433-5104 www.bb-elec.com orders@bb-elec.com support@bb-elec.com

B&B Electronics Ltd Westlink Commercial Park Oranmore Co. Galway Ireland
+353 91 792444 Fax +353 91 792445 www.bb-europe.com orders@bb-elec.com support@bb-europe.com

Analog Inputs

Inputs: 8 channels
 - Pair selectable as Single Ended or Differential inputs
 - Differential input pair channels: 0-1, 2-3, 4-5, 6-7
 - Max Voltage on Differential input(-) pin: 1.25V
 Resolution: 12-bit A/D input: 4096 Steps (values 0 to 4095)
 Input Impedance: >10 Tera ohms (x10 to 12th power)
 Input Range: 0 to 5 volts (default internal ref. w/o external scaling)
 Linear Range using built-in 5 volt reference: +0.1 to +5.0 V
A/D Reference: Internal or External
 - Internal Reference: +5V ± 0.5%
 - External Reference: Shunt type, minimum value 1.0V
 Sampling Types: Hardware Timed or Software Polled
Hardware Timed sampling: started/stopped by software command
 Minimum Time between samples (Hardware Timed Mode): 62.5µs per channel
 (16K samples per second for 1 channel, 2k/sec for all 8 channels)
 Maximum Sampling Time error: ± 0.5us
 Overvoltage Protection: -10 to +15 V indefinitely
 Maximum current draw at maximum overvoltage: 11mA
 Total possible calibrated FSE: ±0.05%
 Maximum Load current: 2.5mA per channel (2k Ω resistive load minimum for 5V output)

Power Source

Power Supplied by USB power connections
 Current Draw: Full power device. May draw as much as 500mA after configured.
 Operation through a USB hub requires that the hub provide power for itself and downstream devices

Interface

USB 1.1 Full Speed (compatible with 2.0 controllers and hubs)

Connectors

USB Device: USB Type B, female
 I/O: DB25F, 25 pin female D-sub connector

Dimensions

3.8 x 2.4 x 1.1 inches (9.7 x 6.1 x 2.8 cm) (without connections)

Environmental

Operating Temperature Range: 0° to 50° C
 Operating Humidity: 0 to 95%, Non-condensing

Operating Systems Supported

Windows 98, SE/ME, 2000 and XP

Supplied Accessories

Software: CD-ROM Disc for Windows 98/2000/XP
 includes: Drivers, BB-DAC Application Software and
 the UD Data Acquisition Library for Visual Basic
 Instruction Manual

Optional Accessories

USB Type A Male to Type B Male cable (USBAMB-2M)
 25 Pin Terminal Block Adaptor (DTB25)
 DB25 Male connector (DB25P)
 Channel Relay Module (SDDRB4)
 Add-in 2 Port USB Host Adapter (USBHA) for PCI

*This product is Designed and Manufactured in the USA
 of domestic and imported components.*

DECLARATION OF CONFORMITY

Manufacturer's Name:	B&B Electronics Manufacturing Company
Manufacturer's Address:	P.O. Box 1040 707 Dayton Road Ottawa, IL 61350 USA
Model Number:	UD128A8D
Description:	USB Data Acquisition System
Type:	Light industrial ITE equipment
Application of Council Directive:	89/336/EEC
Standards:	EN 50082-1 EN 61000 (-4-2, -4-3, -4-4, -4-6)



William H. Franklin III, Director of Engineering



International Headquarters:

B&B Electronics Mfg. Co. 707 Dayton Road P.O. Box 1040 Ottawa, IL 61350 USA
 815-433-5100 Fax 433-5104 www.bb-elec.com orders@bb-elec.com support@bb-elec.com

B&B Electronics Ltd Westlink Commercial Park Oranmore Co. Galway Ireland
 +353 91 792444 Fax +353 91 792445 www.bb-europe.com orders@bb-elec.com support@bb-europe.com