B&B ELECTRONICS

PRODUCT INFORMATION

Model: 232SDA12
RS-232 Data Acquisition Module

Features

✓ Automatic Baud Rate Detection

✓ 11 Channels of 12-bit A/D

✓ 0.610mV A/D Resolution (with 2.5VDC Reference)

✓ 3 Digital Inputs (-30 to +30 VDC)

✓ 3 Digital Outputs (0 to 5 VDC)

Functional Description

The 232SDA12 provides a low-cost, easy to use solution for serial port data acquisition. It offers 11 channels of 12-bit A/D inputs, 3 digital outputs, and 3 digital inputs. With these features, the module can be used to sense a variety of external conditions and to control a variety of devices. The module comes with a demo program in QuickBasic. A data logging utility is included to provide a simple way to import data into other programs (such as Excel). These programs are Widows compatible (95, 98, NT, 2K, XP, and Vista). RS-485 and 10-bit A/D versions are available (232SDA10, 485SDA10, and 485SDA12).

Ordering Information

Model Number	Description
232SDA12	RS-232 Data Acquisition Module
Accessories	
232PS	12VDC@100mA Power Supply, Wall transformer
232CAM	6 ft PC-AT Computer to Modem Cable

Operation

- A manual is contained on the CD ROM which ships with the module.
- There are only three commands required to control the 232SDA12: Read A/D, Read Digital I/O, and Set Output State. Bit error detection is also possible. Refer to the manual for information concerning these commands.
- A/D Converter: The module has 11 channels of 12-bit A/D inputs. The full-scale voltage can be set anywhere from 2.5 VDC to 5.0 VDC. A 5 VDC reference is available to provide a 0 to 5 VDC range without any external components. The A/D converter has a conversion time of approximately 10 microseconds. However, the sampling rate is limited by the serial communications. The actual sampling rage for a single channel is approximately 120 samples per second at 9600 baud. This

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rate drops to 25 samples per second when sampling all of the channels. The A/D inputs are made via a DB-25 female connector.

- Digital I/O Lines: The 232SDA12 has 3 digital inputs and 3 digital outputs. The digital outputs are CMOS/TTL compatible. The digital inputs are CMOS/TTL compatible and can handle voltages from -30 to +30 VDC. A DB-25 female connector is used.
- Communications: Connect the unit to your PC. The baud rates between 1200 and 9600 are automatically detected. Format is 8 data bits, 1 stop bit, and no parity. The 232SDA12 is a DCE device. Refer to the product manual for more information.

I/O Connector Pin-out

Pin	Function	Pin	Function
1	Ground	14	Digital Output Number 0
2	+12 VDC Output (see note)	15	Digital Output Number 1
3	Digital Input Number 0	16	Digital Output Number 2
4	Digital Input Number 1	17	+5 VDC Output
5	Digital Input Number 2	18	A/D Reference Input (+)
6	Digital Ground	19	A/D Reference Input (-)
7	Analog Ground	20	No Connection
8	A/D Input Number 0	21	A/D Input Number 6
9	A/D Input Number 1	22	A/D Input Number 7
10	A/D Input Number 2	23	A/D Input Number 8
11	A/D Input Number 3	24	A/D Input Number 9
12	A/D Input Number 4	25	A/D Input Number 10
13	A/D Input Number 5	**Note: Actual output is equal to power supply input minus 0.7 VDC**	

RS-232 Connector Pin-out

Pin	Signal	Direction	Notes
2	Transmit Data (TD)	Input	Connection is required
3	Receive Data (RD)	Output	Connection is required
4	Request to Send (RTS)	Input	May be used to power unit if kept high
5	Clear to Send (CTS)		Internally looped back to RTS
6	Data Set Ready (DSR)		Internally looped back to DTR
7	Signal Ground (SG)		Connection is required
8	Data Carrier Detect (DCD)		Internally looped back to DTR
20	Data Terminal Ready (DTR)	Input	May be used to power unit if kept high

Specifications

Analog to Digital Converter
Resolution: 12 Bit
Channels: 11
Reference Range: 5.0 VDC Max (1.221 mV per Bit)
 2.5 VDC Min (0.610 mV per Bit)
A/D Ref Input (negative): 0 to 2.5 VDC
A/D Ref Input (positive): 2.5 to 5.0 VDC
Input Voltage Range: Negative 0.3 to Positive 5.3 VDC
Total Adjusted Error: Plus or minus 1.0 LSB Max.
Note: A/D input must be driven from a source impedance less than 1 k ohm

Digital Outputs
Channels: 3
Low Voltage: 0.6 VDC @ 8.7 milliamps
High Voltage: 4.3 VDC @ -5.4 milliamps

Communications
Standard: RS-232 (unit is DCE)
Data Rate: 1200 to 9600 baud (automatic detection)
Format: 8 data bits, 1 stop bit, no parity
Connector: DB-25 Female

5 Volt Reference
Output Voltage: 4.975 VDC to 5.025 VDC
 (5.0 VDC typical)
Accuracy: Plus or minus 0.5 %
Max Output Current: 5 mA

Digital Inputs
Channels: 3
Voltage: Minus 30 to Positive 30 VDC
Low Voltage: Minus 30 to Positive 1 VDC
High Voltage: Positive 2 to Positive 30 VDC
Leakage Current: 1 micro amp maximum

Power Supply
Input Voltage: 7 to18 VDC
Current: 5 milliamps
 Does not include external devices
Connection: 2.5 mm Jack (positive tip)
 or port powered (see manual)