Accessories

▼ Simple Digital Interface for Crossbow Accelerometers

▼ Plugs into any RS-232 Port

▼ 38.4 KBaud, 200 Hz Sampling Rate

▼ Quickly Utilize Accelerometers for Vibration, Tilt, and Inertial Measurements

accelerometers

CXLDK
Digital Interface Card

The CXLDK is an easy-to-use accelerometer development system that provides a simple way to interface to any Crossbow accelerometer with a PC, laptop, or other RS-232 enabled hardware. The CXLDK combines an on-board 12-bit A/D, voltage regulator, and RS-232 communications port. The CXLDK data acquisition includes ACCEL-VIEW graphical evaluation software for immediate evaluation of data in vibration, acceleration, and tilt sensing applications. The CXLDK is shipped complete with the cables, connectors, and power supply necessary to start development immediately.

The host PC or workstation computer communicates with the CXLDK via RS-232 at 38.4 Kbaud. The serial port communication interface is detailed in Tables 2 and 3. The host PC issues a request for a sample by sending an ASCII 'G' (Get Data) to the CXLDK. The CXLDK responds with a packet of voltage data in the format described in Table 1. The maximum sampling rate of the board is 200 Hz.

ACCEL-VIEW evaluation software uses National Instrument's LabVIEW programming language. Writing custom software for the CXLDK is simply a matter of calling the serial I/O routines provided in standard 'C' function libraries. These routines are platform (DOS, Win, UNIX) specific.

The CXLDK ships with a small DC power supply and DB-9 (male-female) RS-232 cable.

Because the maximum sampling rate of the CXLDK is 200 Hz, the CXLDK is not appropriate for high bandwidth sensors such as our HF series accelerometers. But, you can use these sensors if an anti-aliasing filter is added to the output of the HF sensor to limit the bandwidth to below 100 Hz.
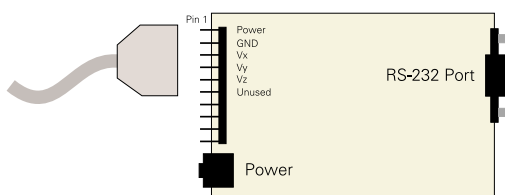
Pin 1
Power
GND
Vx
Vy
Vz
Unused

RS-232 Port

Power

Figure 2. Connection Diagram

Byte Number	Sensor Port Pin Number	Acceleration Axis	Function
0	N/A	N/A	Header
1	N/A	N/A	Header
2	3	X	MSB A/D Channel - 1 (0-15)
3	3	X	LSB A/D Channel - 1 (0-255)
4	4	Y	MSB A/D Channel - 2 (0-15)
5	4	Y	LSB A/D Channel - 2 (0-255)
6	5	Z	MSB A/D Channel - 3 (0-15)
7	5	Z	LSB A/D Channel - 3 (0-255)
8	6	User defined	MSB A/D Channel - 4 (0-15)
9	6	User defined	LSB A/D Channel - 4 (0-255)

Table 1. CXLDK Data Packet Structure

Note

Axis definition shown for 3-axis accelerometers.

CXLDK is not appropriate for high bandwidth sensors such as our HF series accelerometers.

38.4KBaud

8 Data Bits

No Parity

1 Stop Bit

No Start Bits

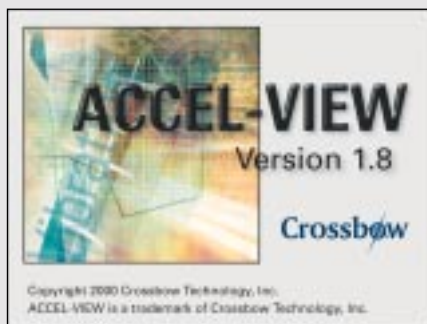No Flow Control

Table 2. Serial Port Settings

How to convert data to volts:

counts (0–4095) = 255 * MSB + LSB

volts = 4/4095 * counts

Table 4. Data Conversion Table

'R' Reset Command: An ASCII 'R' command is sent to the CXLDK in order to reset the firmware. The CXLDK immediately responds with an ASCII 'H' indicating that the CXLDK is functioning properly.

'G' Get Data Command: An ASCII 'G' is sent to the CXLDK in order to request a data record. The board responds with a 10 byte string that contains the voltage data. The meaning of the voltage data depends upon the sensor module connected to the board.

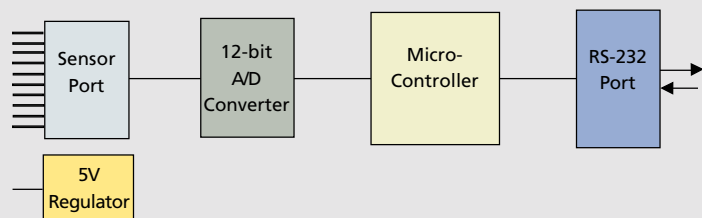**Table 3. CXLDK Serial Interface Commmands**

ACCEL-VIEW

Version 1.8

Crossbøw

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ACCEL-VIEW is free with purchase of CXLDK

Figure 1. Block Diagram

Ordering Information

Model	Description	Channels	Resolution	Range
CXLDK	Digital Interface Card	4	1 mV	0 - 4 V