

Product Description

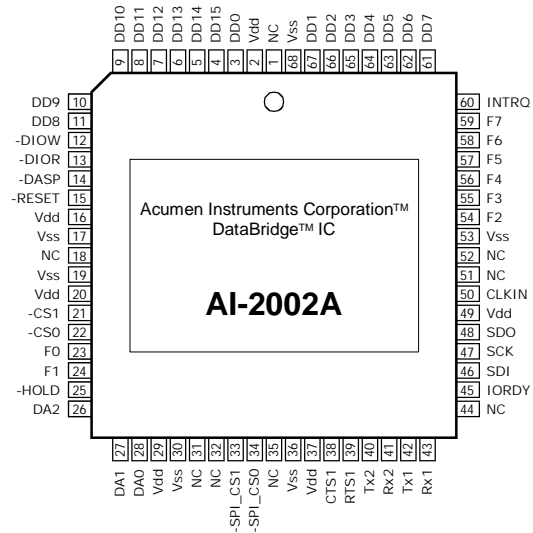
The AI-2002A is an intelligent mass storage interface for adding data storage to sensors and instrumentation. It provides a high-level serial interface to mass storage devices and includes all functions needed to read and write PC-compatible disk files.

The AI-2002A features dual high-speed communication ports. The configuration port is used to change operating modes and device settings. The file data is transferred via the data port. The AI-2002A's ports are suitable for use in RS-232, RS-422, and RS-485 systems.

The AI-2002A is compatible with ATA/ATAPI hard drives, solid-state disks, and removable media, providing access to inexpensive industry-standard storage media.

The AI-2002A requires minimal support components and is suited to highly integrated circuit designs. Its low-power design makes it ideal for remote data collection applications.

Product Configuration (PLCC-68)



Standard Functions

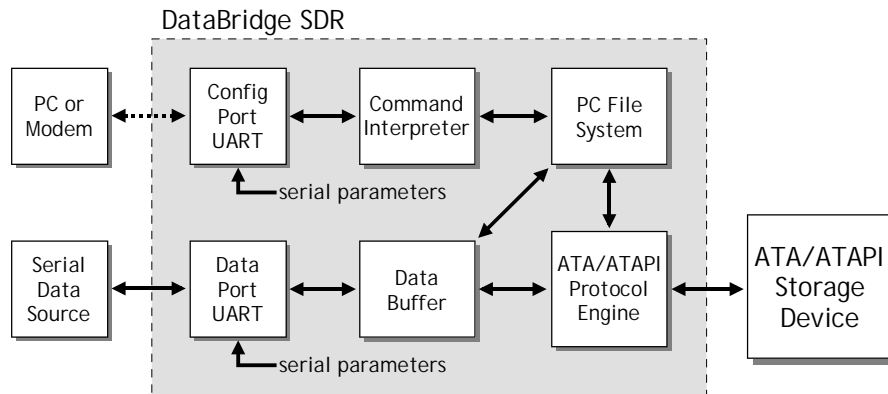
- FAT16 File System Engine
- ATA/ATAPI Protocol Engine with On-Chip Block Buffer
- Filename Generator
- Dual Asynchronous Serial Ports
- SPI-Compatible Synchronous Serial Port
- Nonvolatile Configuration Storage Interface
- Menu-driven configuration via serial
- Configurable query messages

Additional Custom Functions

- Analog-to-Digital Converter Interface
- On-Chip Analog-to-Digital Converter
- Data Formatter
- Custom Configuration Routines
- Custom Control Routines
- Self-Testing Routines

The AI-2002A's firmware can be modified for custom applications. Contact Acumen Instruments Corporation for details about custom functions.

Functional Diagram



Selected Technical Specifications

Configuration Port	5V async. serial, 2400-230.4k bps, 8 data bits, no parity, 1 stop bit
Data Port	5V async. serial, 2400-230.4k bps, 8 data bits, no parity, 1 stop bit
Handshaking Modes	RTS/CTS, DTR/DSR handshaking options
Buffers	512-byte block buffer, 224-byte data buffer
Mass Storage Interface	ATA/ATAPI-4, NCITS 317-1998
File System	DOS/Windows-compatible FAT16
Max. Operating Frequency	33 MHz
Electrical Requirements	$V_{DD} = 5.0VDC \pm 5\%$, 50mA
Serial Download Protocols	XMODEM checksum XMODEM CRC ASCII
Query Messages	Up to ten 256-byte strings on start, stop, or at 1 second to 194 day intervals
Device control	Serial passthrough mode (buffers and converts baud rates when needed)
On-Chip ADC	2 channels, 10-bit resolution (1 LSB=4.88mV w/ $V_{ref}=5.0V$)

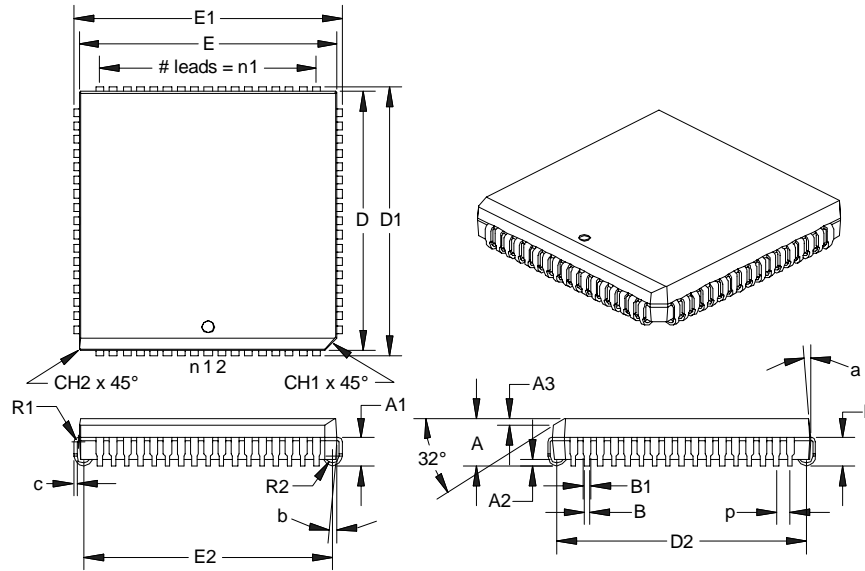
Additional References

DataBridge SDR User's Manual, Acumen Instruments Corporation, © 2000

DataBridge SDR-OEM Data Sheet, Acumen Instruments Corporation, © 2000

Package Dimensions

Package Type: K04-049 68-Lead Plastic Leaded Chip Carrier (L) - Square



Units	Dimension Limits	INCHES*			MILLIMETERS		
		MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
Number of Pins	n		68			68	
Pitch	e1		0.050			1.27	
Overall Pack. Height	A	0.165	0.175	0.185	4.19	4.45	4.70
Shoulder Height	A1	0.095	0.103	0.110	2.41	2.60	2.79
Standoff	A2	0.017	0.025	0.032	0.43	0.62	0.81
Side 1 Chamfer Dim.	A3	0.021	0.026	0.031	0.53	0.66	0.79
Corner Chamfer (1)	CH1	0.035	0.045	0.055	0.89	1.14	1.40
Corner Chamfer (other)	CH2	0.000	0.005	0.010	0.00	0.13	0.25
Overall Pack. Width	E1	0.985	0.990	0.995	25.02	25.15	25.27
Overall Pack. Length	D1	0.985	0.990	0.995	25.02	25.15	25.27
Molded Pack. Width	E [†]	0.950	0.954	0.958	24.13	24.23	24.33
Molded Pack. Length	D [‡]	0.950	0.954	0.958	24.13	24.23	24.33
Footprint Width	E2	0.910	0.920	0.930	23.11	23.37	23.62
Footprint Length	D2	0.910	0.920	0.930	23.11	23.37	23.62
Pins along Width	n1		17			17	
Lead Thickness	c	0.008	0.010	0.012	0.20	0.25	0.03
Upper Lead Width	B1 [†]	0.026	0.029	0.031	0.66	0.72	0.79
Lower Lead Width	B	0.015	0.018	0.021	0.38	0.46	0.53
Upper Lead Length	L	0.050	0.058	0.065	1.27	1.46	1.65
Shoulder Inside Radius	R1	0.003	0.005	0.010	0.08	0.13	0.25
J-Bend Inside Radius	R2	0.015	0.025	0.035	0.38	0.64	0.89
Mold Draft Angle Top	α	0	5	10	0	5	10
Mold Draft Angle Bottom	β	0	5	10	0	5	10

* Controlling Parameter


[†] Dimension "B1" does not include dam-bar protrusions. Dam bar protrusions shall not exceed 0.003" (0.076 mm) per side or 0.006" (0.152 mm) more than dimension "B1".

[‡] Dimensions "D" and "E" do not include mold flash or protrusions. Mold flash or protrusions shall not exceed 0.010" (0.254 mm) per side or 0.020" (0.508 mm) more than dimensions "D" or "E".

Ordering Information

Part #	Freq. Range	Temp. Range	Package
AI-2002A-SNAP-33/L	33 MHz	0°C to +70°C	68-pin PLCC
AI-2002A-SNAP-33/PT	33 MHz	0°C to +70°C	64-pin TQFP
AI-2002A-SNAP-33/P	33 MHz	0°C to +70°C	64-pin Y-Shrink DIP
AI-2002A-SNAP-33/L	33 MHz	-40°C to +85°C	68-pin PLCC
AI-2002A-SNAP-33/PT	33 MHz	-40°C to +85°C	64-pin TQFP
AI-2002A-SNAP-33/P	33 MHz	-40°C to +85°C	64-pin Y-Shrink DIP
AI-2002A-SNAP-16/L	16 MHz	0°C to +70°C	68-pin PLCC
AI-2002A-SNAP-16/PT	16 MHz	0°C to +70°C	64-pin TQFP
AI-2002A-SNAP-16/P	16 MHz	0°C to +70°C	64-pin Y-Shrink DIP
AI-2002A-SNAP-16/L	16 MHz	-40°C to +85°C	68-pin PLCC
AI-2002A-SNAP-16/PT	16 MHz	-40°C to +85°C	64-pin TQFP
AI-2002A-SNAP-16/P	16 MHz	-40°C to +85°C	64-pin Y-Shrink DIP

For price and availability contact:

 Acumen Instruments Corporation™
2501 N. Loop Drive Suite 1613
Ames, IA 50010

(515) 296-5366
(515) 233-0078 fax

info@acumeninstruments.com
www.acumeninstruments.com