

GENERAL DESCRIPTION

The Atmodule AT3510-75 is a two axis precision digital-output angle sensor. The module incorporates a two-axis electrolytic tilt sensor, sensor interface electronics, and a sensor signal processor. Smart drive techniques are used to eliminate warm-up drift and long term drift which are normally seen with electrolytic sensors. Operating from a standard five-volt power supply, the module is designed for board mounting with 6-pin header connection. An acrylic coating protects the electronic circuitry. The module is intended for cost sensitive OEM applications that require good null accuracy and repeatability. Atmos also offers the AT3520 and AT3530 series modules which incorporate digital calibration and compensation for null (offset) linearity and x-axis y-axis crosstalk.

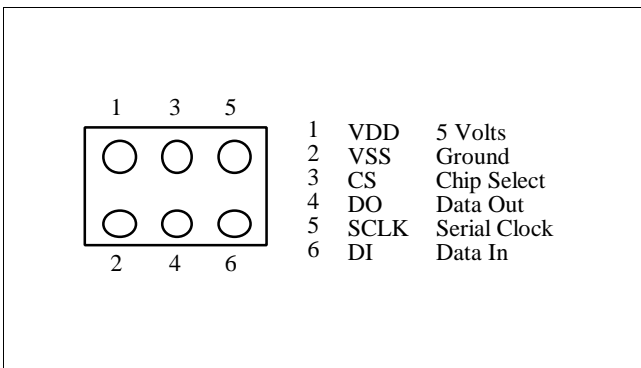
FEATURES

- ± 75 degrees measurement range
- 0.02 degree resolution
- 0.05 degree repeatability
- 120 mS conversion time
- 1 mS data access time
- Digital temperature compensation and calibration of null(zero)
- Single supply operation 4.75 to 5.25 volts
- 14-bit A/D conversion
- Setup and calibration data is stored in non-volatile EEPROM memory, with hardware write protection
- Electronic serial number and calibration date

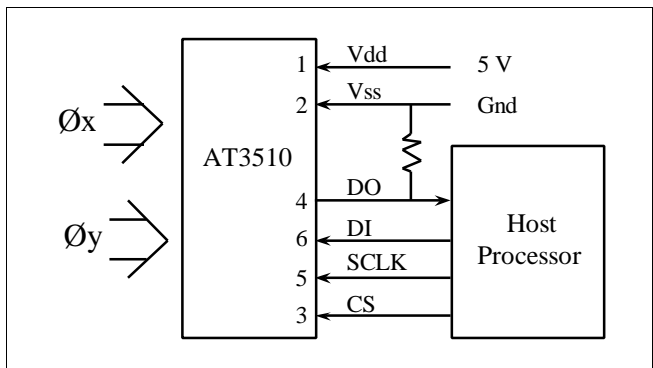
APPLICATIONS

- OEM tilt measurement
- Robotics
- Strap down angle measurement

Pin Configuration Top View



4-Wire Connection



AT3510 - 75

Performance

Parameter	Minimum	Typical	Maximum	Units
Angle measurement range	-75		+75	degree
Resolution		0.02		degree
Repeatability		0.04		degree
Linearity ± 30 degrees range	-4		+4	degree
± 75 degree range	-20		+20	degree
X axis to Y axis crosstalk	-10		+10	degree
Null accuracy		0.1		degree
Output noise pk-pk		0.05		degrees
Output noise pk-pk (average angle output)		0.02		degree
Time constant for the average		10		Samples
Output scaling Counts/degree		100		Counts
Digital output range	-16,382		16,382	Counts
Over range output count		16,383		Counts
Under range output count		-16,383		Counts
Measurement time (CS high to end of conversion)		110	150	mS

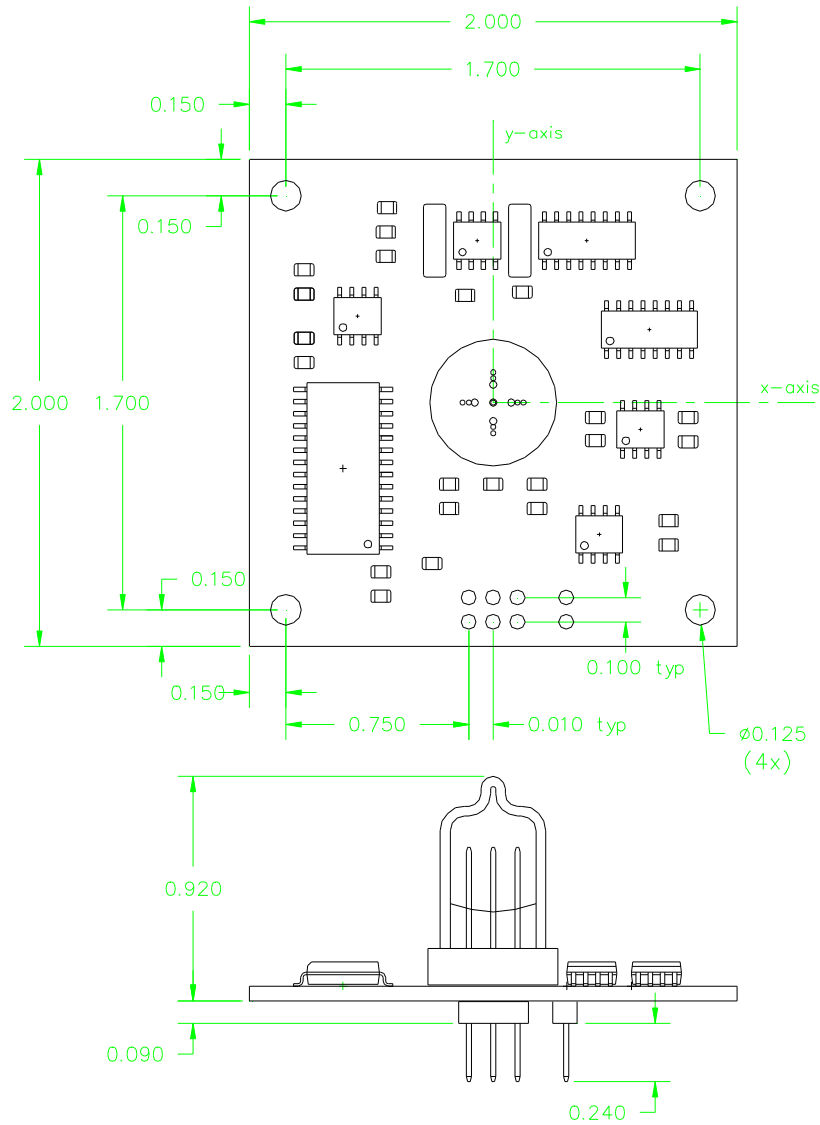
AT3510 Angle Sensor Module Commands

	Command	Command Option	Binary Command Word
Measure the x and y angle and return the module status	0	0	(00000000)(00000000)
Return the x axis angle value	1	0	(00000001)(00000000)
Return the y axis angle value	2	0	(00000010)(00000000)
Return the module serial number	6	0	(00000110)(00000000)

Electrical Parameters

Parameter	Description	Minimum	Typical	Maximum
Vdd	Supply voltage operating	4.75	5.0	5.25
	Supply voltage maximum limit			7.5
	Supply voltage during calibration		5.0	
Isupply	Supply current		4.0 mA	9 mA
	Typical at Vdd of 4.5 volts		3.5	
	Typical at Vdd of 5.5 volts		4.5	
Vih	Input high voltage CS, SCLK, DI	2.0		Vdd
Vil	Input low voltage CS, SCLK, DI	Vss		0.2 Vdd
Iil	Input leakage current CS, SCLK, DI	-3 µA		+3 µA
Voh	Output low voltage DO (Iol = 10 mA)	0.5 Volts		
Voh	Output high voltage DO (Ioh = -4.0 mA)	Vdd - 0.5		

AT3510 - 75
Outline Drawing



Dimensions are in inches