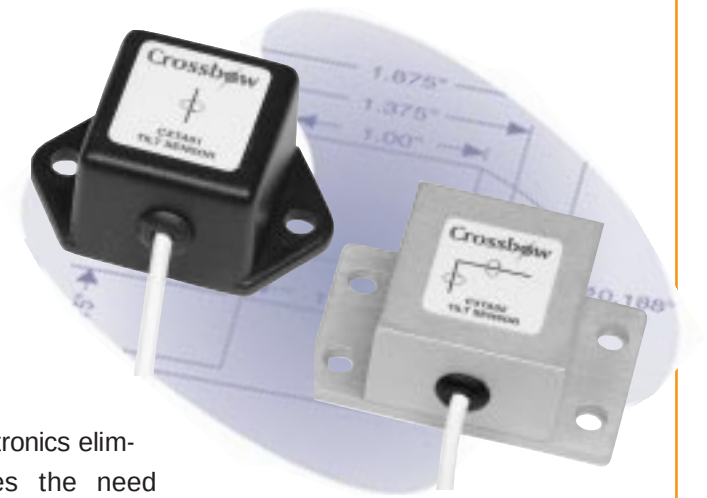
- **Small, Low-Cost, Rugged**
- **Rapid Response**
- **± 75° Range**
- **Fully Conditioned; No External Components**



The CXTA single and dual axis analog tilt sensors offer resolution, accuracy, and fast response in an inexpensive, easy-to-use package. The CXTA series designs centers on a highly stable silicon micromachined capacitive inclination sensor element. The CXTA series is fully signal conditioned with a high level analog output(s), and optional analog temperature output.

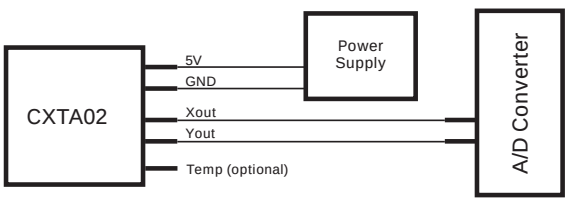


Figure 1. Typical CXTA02 Application

Micromachined devices, perfected in automotive safety applications, offer several distinct advantages over fluid, electrolytic, and pendulum-based sensors. Like other solid-state devices, they are more reliable than their mechanical counterparts.

Unwanted vibration is filtered out without causing oscillations or foaming. Finally, completely integrated electronics eliminates the need for external components, in a package smaller than many pendulum or fluid raw sensing elements.

Unlike other micromachined devices, the CXTA Series maintains its accuracy and stability over temperature: <2° of arc over the range 0° to 70° C. The accuracy is linear and can be corrected for temperature, yielding accuracy to within ±0.05° over the angular range.

Typical configurations using CXTA Sensors are shown in Figure 1. Each module is factory calibrated and tested. The module can be securely attached using screws or adhesive. The CXTA is available in two packages, a plastic P1 and a high temperature package A1. See page 20.

A calibration sheet is provided with each CXTA sensor. The sensor provides the exact null voltage and sensitivity in volts per degree. However, for many applications the use of this data is not required due to the accuracy of the initial sensor bias.

ORDERING INFORMATION

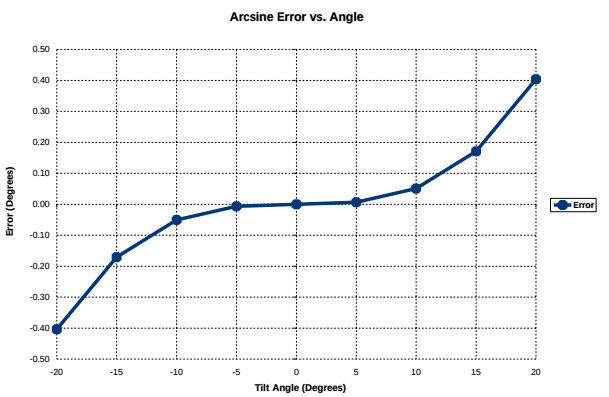
Part#	Axes	Linear Range	Full Range	Resolution (°rms)
BASE PART				
CXTA01	X	±20°	±75°	0.05°
CXTA02	X,Y	±20°	±75°	0.05°
OPTIONS				
-AL	High Temperature Casing (see package drawing A1, pg. 20)			
-T	Temperature Sensor Internal			

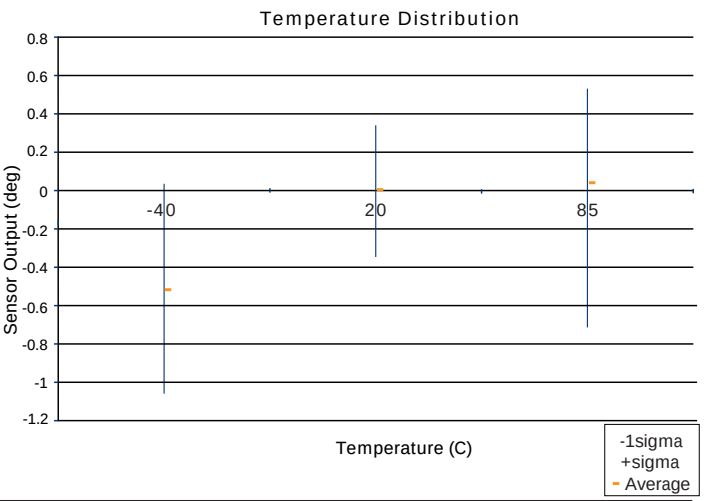
TILT Sensors:
CXTA Analog Tilt Family

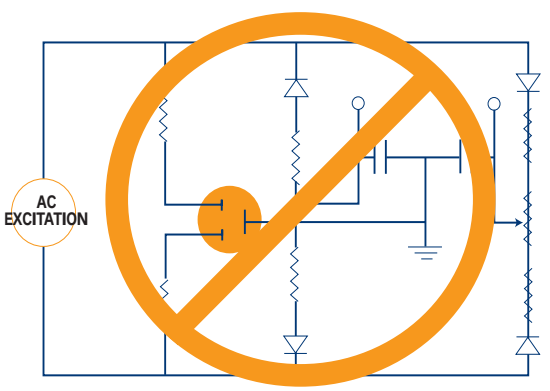
Specifications

Parameter	CXTA01	CXTA02	Units	Remarks
Linear Angular Range	± 20°	± 20°		
Full Angular Range	±75°	±75°		
Angular Resolution	0.05°	0.05°	rms	
Sensitivity	35	35	mV/°	Provided with sensor
Scale Factor Drift	0.01	0.01	%/°C	
Zero Angle Voltage	2.5±0.15	2.5±0.15	Volts	Provided with sensor
Zero Angle Drift	1.0	1.0	mV/°C	Typical
Zero Angle Drift	0.20	0.20	°/°C	Typical
Non-Linearity	0.4°	0.4°		Over ±20° not including Arcsine Error
Bandwidth	125	125	Hz	
Settling Time	0.2	0.2	Sec.	Contact factory for faster response
Alignment	± 1°	± 1°		Typical
Crossaxis Sensitivity	5	5	%	MAX, inclusive of alignment error
Storage Temperature	-55 to 85	-55 to 85	°C	Plastic Package
Operating Temperature	-40 to 85	-40 to 85	°C	Plastic Package
Storage Temperature	-55 to 105	-40 to 105	°C	-AL High Temperature Package
Operating Temperature	-40 to 105	-40 to 105	°C	-AL High Temperature Package
Vibration	10	10	Grms	20–2KHz random
Shock	2000	2000	G	1ms, half sine
Supply Voltage	8-30	8-30	VDC	Unregulated
Current	4	8	mA	

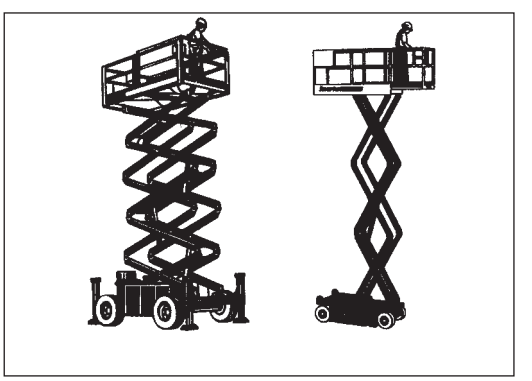
Notes
Specifications subject to change without notice







Costly and imprecise signal conditioning eliminated



CXTA01 Example Application