

# AccuStar® II/DAS 20

## Dual Axis Clinometer

AccuStar® II/DAS-20 combines the function of two clinometers in one package. The unique dome shaped design features a capacitance based sensor which produces output signals directly proportional to the relative tilt in two axes.

Designed for high volume applications, AccuStar® II/DAS-20 is priced to compete with much less capable mercury switches and other low cost level sensors.

There are four output connections providing a choice of ratiometric, pulse width modulation (PWM) digital output. A mating connector (sold separately) provides the user with an easy plug-in connection. Null and scale factor are adjustable.



### Features

- New microprocessor-based electronics**
- Two clinometers in one package**
- Adaptable design DC powered**
- Ratiometric and PW digital output in one model**
- Trimmable outputs**

### Applications

- Platform leveling**
- Measure pitch and roll**
- Tip over protection for manlifts**
- Automatic leveling systems**
- Wheel alignment**

### Performance Specifications

Range .....	±20°
Threshold / Resolution .....	0.01
<b>Linearity</b>	
Null to 10° .....	±0.2°
10° to 12° .....	±2.5%
12° to 15° .....	±3.0%
15 to 20° .....	Monotonic
Null Repeatability .....	±0.1
Frequency Response (-3db) .....	0.25 Hz (0.50 Hz available, consult factory)

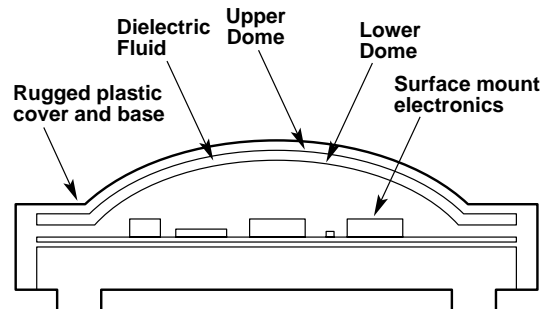
### Environmental

<b>Temperature Range</b>	
Operating .....	-20° to 65°C
Storage .....	-55° to 65°C
<b>Temperature Coefficient of Null</b> .....	
	0.01%/°C
<b>Temperature Coefficient of Scale Factor</b> .....	
	0.10%/°C

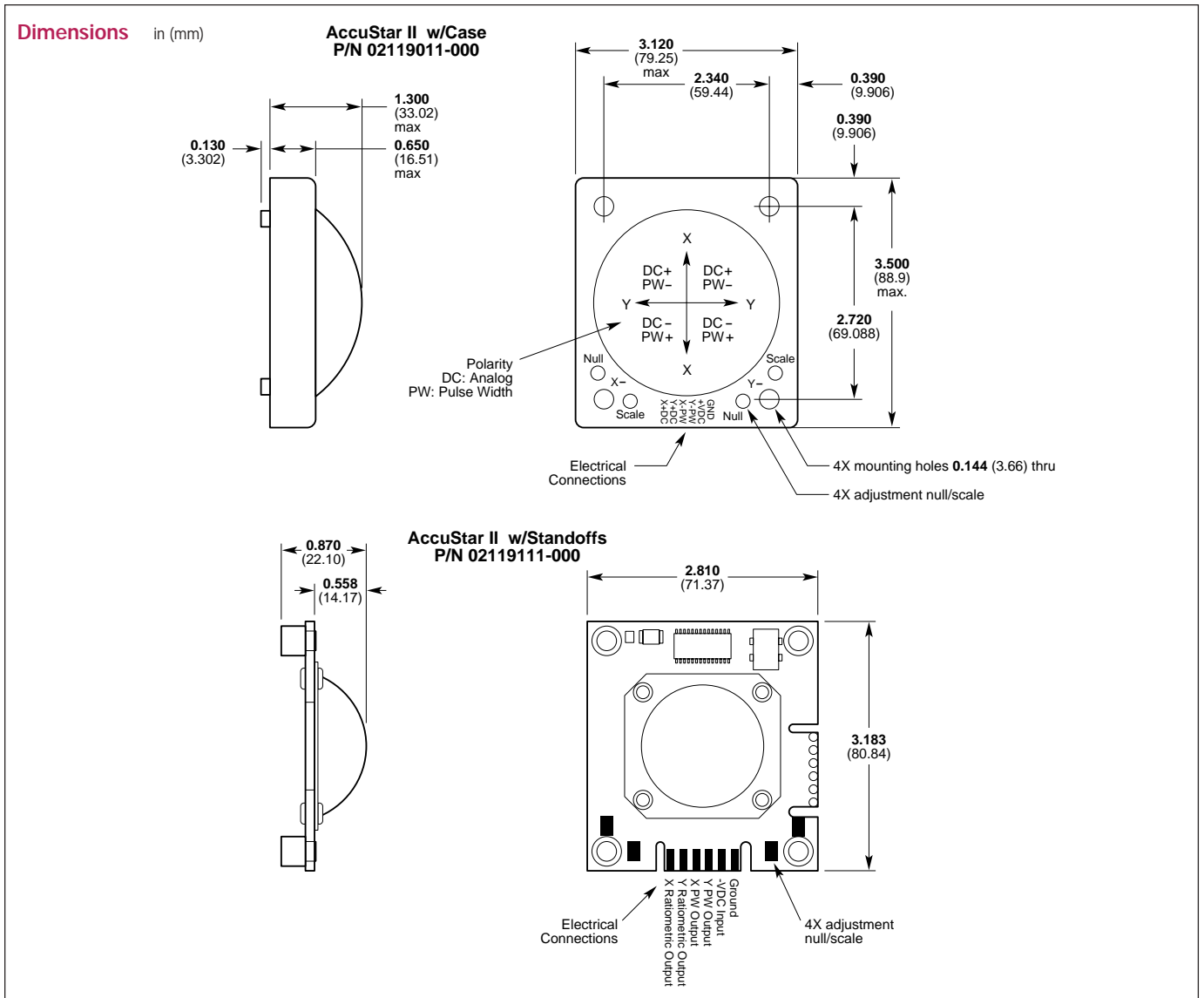
### Electrical

<b>Voltage Supply (nominal)</b>	9 VDC
<b>Voltage Supply Range</b> .....	Regulated 5.0 to 15.0 VDC
<b>Current</b> .....	10 mA
<b>Analog Output</b>	
Scale Factor* @ 9 VDC	100 mV/degree ±10%
Load Resistance (min) ..	10K Ohms
Null Output .....	1/2 supply voltage ±10%
<b>Pulse Width Output</b>	
Null .....	50% (duty cycle)
Scale Factor .....	0.7% / degree (nominal)
Duty Cycle .....	$t_2 / (t_1 + t_2)$ $t_1$ and $t_2$ varies from 0.2 to 0.7 msec
<b>Frequency</b> .....	100 Hz nominal

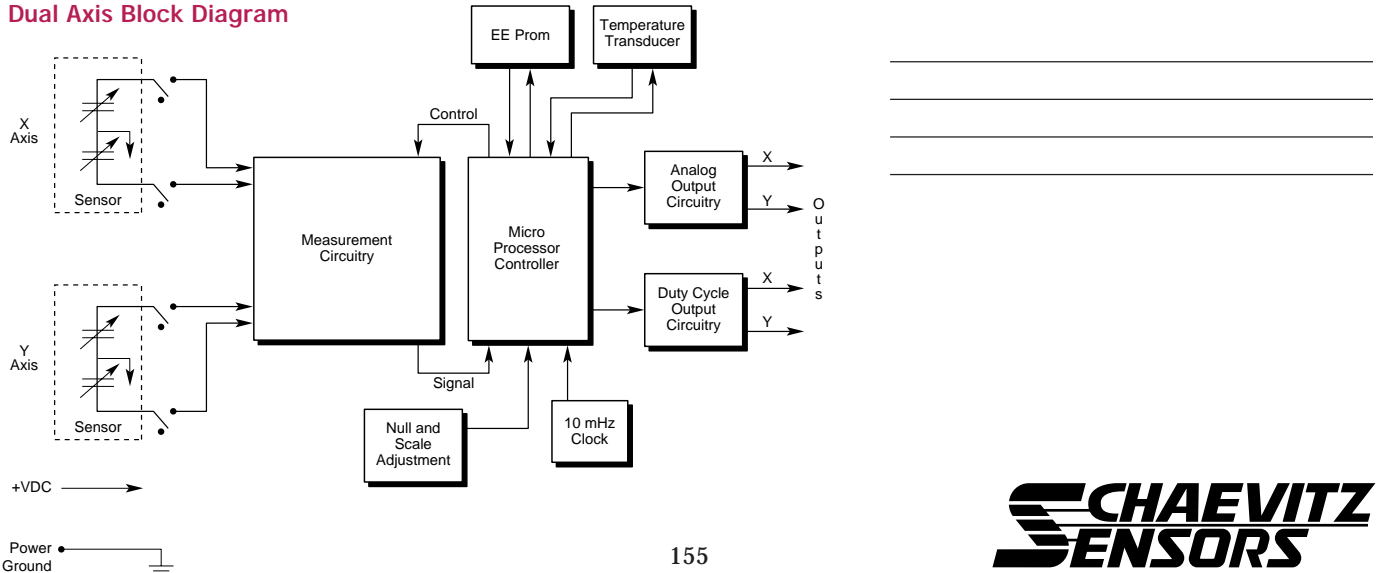
Physically the sensor is composed of two hermetically sealed domes spaced about 1/8" apart. The lower, polyester plastic dome has 4 capacitive plates while the aluminum, upper dome acts as a ground. A fluid with a high dielectric constant is sealed within the dome sandwich, leaving an air bubble space about the size of a quarter. The bubble is centered at level position and will move from one side to the other as the device is tilted.



**AccuStar® II/DAS-20**  
 Range:  $\pm 20^\circ$   
 Resolution:  $0.01^\circ$   
 Ratiometric or PWM output



**Dual Axis Block Diagram**



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