

### Rugged ALL-weather Inclinometer Providing Analog Voltage (0...5VDC) or Digital Serial (RS232) Output.



#### Description

The H4 Series of inclinometers provide single axis inclination sensing in a rugged environmentally protected metal housing. The sensing package incorporates a liquid capacitive sensing element and integrated temperature compensation over the industrial operating range of  $-40^{\circ}$  to  $+85^{\circ}$  C.

These sensors are available with a choice of two output configurations, analog voltage or digital serial outputs. These outputs are linear with respect to the input angle directly.

#### Digital Serial (RS232) Output

The Serial output (RS232) transmits the degree of angle in a decimal format. This output provides a continuous stream of readings - one reading per line at approximately 250msec per reading. The H4 transmits the output to a computer through its serial port, using HyperTerminal as the interface. The unit is configured for 9600 baud, 8 data bits, no parity, 1 stop bit.

#### Features

- Single Axis Angle Measurement
- 3 Ranges:  $\pm 30^{\circ}$ ,  $\pm 45^{\circ}$ ,  $\pm 70^{\circ}$
- Temperature Compensated
- Analog Voltage 0...5V Output
- Serial Digital RS232 Output
- Vibration and shock resistant
- Environmentally sealed to IP67
- Rugged die-cast Zinc housing
- EMC protected
- Mechanical Zero adjustment
- Common footprint for easy field install

#### Applications

- Platform Leveling
- Vehicle Tilt Monitoring
- Antenna Positioning
- Boom Angle Indicating
- Process Machinery



# H4 Series

## General Information Brochure

### Technical Specifications

INPUT PARAMETERS	
MEASURING RANGES	$\pm 30^\circ$ , $\pm 45^\circ$ , $\pm 70^\circ$
MEASUREMENT AXIS	Single
POWER SUPPLY	8...30 VDC Non-Regulated optional 5VDC Regulated
OUTPUT PARAMETERS	
NON-LINEARITY <sup>1</sup>	< 0.5% Full Range for $\pm 30^\circ$ model < 0.2% Full Range for $\pm 45^\circ$ , $\pm 70^\circ$ models
NULL REPEATABILITY	< 0.05°
TRANSVERSE SENSITIVITY	< 1.0% at 30° Tilt
SENSOR ELEMENT RESPONSE TIME	< 0.3 seconds (<300mSec)
BANDWIDTH	3 Hz
OPTIONAL TEMPERATURE COMPENSATION OUTPUT DRIFT	< $\pm 1.0^\circ$ (over full operating temperature range)
TEMPERATURE RANGE	
OPERATING TEMPERATURE	-40°F to +185°F (-40°C to +85°C)
STORAGE TEMPERATURE	-49°F to +194°F (-45°C to +90°C)

ANALOG (0...5V) OUTPUT		Temperature Compensation
		Over full operating temperature range
ZERO OFFSET		2.5VDC typical
ANALOG VOLTAGE OUTPUT (Linear Range)		0.5...4.5VDC
OUTPUT VOLTAGE SENSITIVITY		
	$\pm 30^\circ$	66.7mV/°
	$\pm 45^\circ$	44.4mV/°
	$\pm 70^\circ$	28.6mV/°
ACCURACY OVER TEMPERATURE		
	$\pm 30^\circ$	< $\pm 0.5^\circ$
	$\pm 45^\circ$	< $\pm 0.5^\circ$
	$\pm 70^\circ$	< $\pm 1.0^\circ$
RESOLUTION		
	$\pm 30^\circ$	< 0.02°
	$\pm 45^\circ$	< 0.03°
	$\pm 70^\circ$	< 0.04°
CURRENT CONSUMPTION		10mA typical
OUTPUT IMPEDANCE		< 100 OHMS
DIGITAL (RS232) OUTPUT		Temperature Compensation
		Over full operating temperature range
	$\pm 30^\circ$	< $\pm 0.5^\circ$
	$\pm 45^\circ$	< $\pm 0.5^\circ$
	$\pm 70^\circ$	< $\pm 1.0^\circ$
CURRENT CONSUMPTION		10mA typical
RS232 OUTPUT FORMAT		ASCII Decimal
	BAUD RATE	9600
	DATA BITS	8
	PARITY	None
	STOP BITS	1
TRANSMISSION RATE		Continuously updated every 25mSEC

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 FORM NUMBER: H40001\_02/05 UPDATED: 7/25/14





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**TABLE 1:** Part Number for Ordering Information

PART NUMBER MATRIX CHART	
	H 4 A 1 - 30 - -
	OPTION CODE
<b>HOUSING</b>	
MACHINED ZINC METAL (Default)	4
ALTERNATIVE HOUSING	N/A
<b>OUTPUT</b>	
ANALOG	A
DIGITAL SERIAL (RS232)	S
<b>TEMPERATURE COMPENSATION</b>	
LEVEL 1	1
<b>ANGLE RANGES</b>	
"XX" = $\pm 30^\circ$ , $\pm 45^\circ$ , $\pm 70^\circ$	"XX"
SPECIAL SCALING	N/A
<b>INPUT POWER</b>	
8 TO 30VDC (Default)	BLANK
5VDC	V
<b>MODEL NUMBER</b>	
STANDARD (or stock) CONFIGURATION (Default)	BLANK
CUSTOM SPECIAL: "-X" = LETTER ASSIGNED AT TIME OF ORDER	"-X"

As shown above the part number H4A1-30 represents a single axis unit with a  $\pm 30^\circ$  measuring range, Analog output, Level 1 Temperature Compensation, 8 to 30VDC supply power.

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