

The **MHT5200** tilt position sensor is a high performance design, with a robust aluminium case for applications where it is necessary to monitor the angle of inclination during operation.

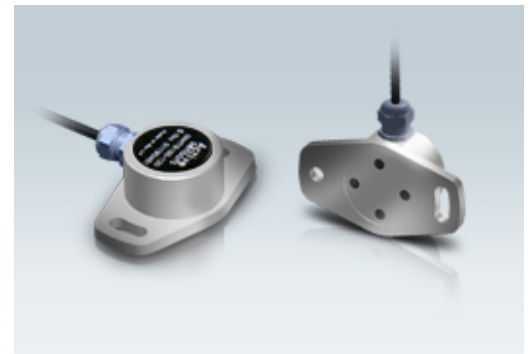
Available with five different measurement ranges between  $\pm 10^\circ$  and  $\pm 90^\circ$ , they are specified in industrial and automotive control measurement systems, such as road construction equipment, cranes and booms, scissor lifts, agricultural vehicles, container handling and hydraulic lifts.

With an advantage of fully encapsulated electronics, they operate in a variety of fluid conditions and are environmentally protected against the ingress of dust and water to IP68/IP69K.

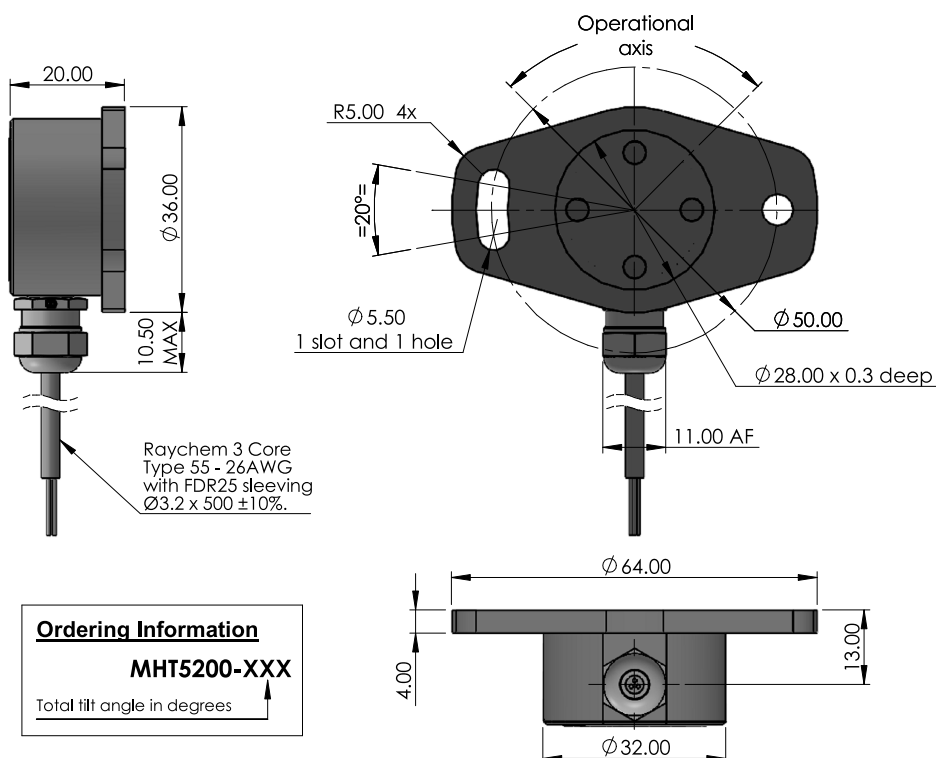
The sensor will operate with either a 5VDC regulated or 8 to 30VDC unregulated supply and provide an analogue voltage output. The maximum operational temperature is  $125^\circ\text{C}$  ( $257^\circ\text{F}$ ).

### Key features and benefits

- Robust aluminium case
- Measurement ranges  $\pm 10^\circ$ ,  $\pm 20^\circ$ ,  $\pm 30^\circ$ ,  $\pm 60^\circ$  and  $\pm 90^\circ$
- Resolution  $\pm 0.07^\circ$
- Easy set-up slot and hole mounting
- Maximum operating temperature  $125^\circ\text{C}$  ( $257^\circ\text{F}$ )
- Suitable for vibration and fluid applications
- Sensor operates from either 5 VDC or 8 to 30 VDC
- Sealed to IP68/IP69K



## MHT5200 – Industrial sensor



**Ordering Information**  
**MHT5200-XXX**  
 Total tilt angle in degrees

### Electrical and mechanical specification for MHT5200

Electrical and Mechanical Specification ±10, ±20, ±30°			
<b>Input Specification</b>			
Supply voltage (Vs)	5.0±10% regulated	8 to 30 unregulated	VDC
Over voltage protection	Up to 50		VDC
Supply current	<7		mA
Reverse polarity protection	Up to -10		VDC
Power on settlement time	<500		ms
<b>Output Specification</b>			
Output type	Analogue voltage		
Voltage output (Vout)	10-90% Vin	0.5 -4.5 VDC	
Linearisation function	VMID = Vs/2	VMID = 2.5	
Sensor angle = arc sin(Vout-Vmid/S)	\$ for ±10 = 11.51756	\$ for ±10 = 11.51756	
	\$ for ±20 = 5.8476	\$ for ±20 = 5.8476	
	\$ for ±30 = 4	\$ for ±30 = 4	
Line regulation	Ratiometric with Vs	<0.01	%FS
Load resistance	>10K		Ohms
Output noise	<1		mV RMS
<b>Performance Specification</b>			
Measurement range (±)	±10, 20 and 30		°
Resolution	±10 = 0.0072 ±20 = 0.0037 ±30 = 0.0025		°
Non-Linearity (see note 3)	<±0.5%		%FS
Temperature coefficient (Vout)	-25 to 85 offset = 0.023 sensitivity = 0.04 +40 to 125 offset = X sensitivity = X.XXX		%FS/°C
Bandwidth	2 (-3dB)		Hz
Cross axis sensitivity	4%		Max
<b>General Specification</b>			
Weight (approx.)	50.0		grams
Protection/sealing	IP68 and IP69K		
Operational temperature	-40 to +105	See de-rating graph	°C
Storage temperature	-55 to +105		°C
Shock	1 metre on to concrete (Max 20,000g)		
Materials	Case - Anodised aluminium 6082 T6 Module - Thermoplastic Cable gland - Nickel plated brass		



<b>Electrical and Mechanical Specification ±60 and ±90°</b>				
<b>Input Specification</b>				
Supply voltage (Vs)	5.0±10% regulated	8 to 30 unregulated	VDC	
Over voltage protection	Up to 50		VDC	
Supply current	<7		mA	
Reverse polarity protection	Up to -10		VDC	
Power on settlement time	<500		ms	
<b>Output Specification</b>				
Output type	Analogue voltage			
Voltage output (Vout)	10 - 90% Vs	0.5 - 4.5 VDC		
Linearisation function	VMID = Vs/2	VMID = 2.5		
Sensor angle = arc sin(Vout-Vmid/S)	S for ±60 = 2.3094	S for ±60 = 2.3094		
	S for ±90 = 2	S for ±90 = 2		
Line regulation	Ratiometric with Vs	<0.01	%FS	
Load resistance	>10K		Ohms	
Output noise	<1		mV RMS	
<b>Performance Specification</b>				
Measurement range	±60 and ±90		°	
Resolution	±60 = 0.0029	0.0025	±90 =	°
Non-Linearity (see note 3)	<±1.0%		%FS	
Temperature coefficient (Vout)	TBD	TBD	%FS/°C	
Bandwidth	2 (-3dB)		Hz	
Cross axis sensitivity	4%		Max	
<b>General Specification</b>				
Weight (approx.)	50.0		grams	
Protection/sealing	IP68 and IP69K			
Operational temperature	-40 to +105	See de-rating graph		°C
Storage temperature	-55 to +105		°C	
Shock	1 metre on to concrete (Max 20,000g)			
Materials	Case - Anodised aluminium 6082 T6 Cap - Thermoplastic Cable gland - Nickel plated brass			

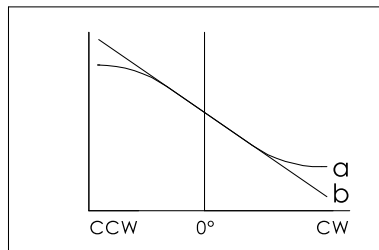
Notes:

1. Incorrect wiring may cause internal damage.
2. Do not operate between 5.5V and 8V.
3. Non-linearity is calculated from least squares best fit method over the Linear Range after linearisation.
4. When positioned as shown sensor is mid travel.
5. General dimension tolerance is ±0.25mm.

**Electrical Connection (see note 1)**

Wire Colour	Function
Red	Supply Voltage (Vs)
White	Output Voltage (Vout)
Black	Ground

**Typical output when viewed on top (label) with slot on right.**



a - before linearisation  
b - after linearisation

**Input voltage de-rating graph**

