Model A701-2

High-precision Platform Tiltmeter

The model A701-2 Platform mount tiltmeter is our most popular design for high precision tilt measurements. Units come with built in invar leveling legs, for easy installation on any horizontal surface. The A701-2 also includes two switchable gains and two low-pass filter settings. Using an absolute gravity referenced electrolytic sensor, the A701 delivers ultra-high sensitivity to <0.1 µrad with virtually zero long-term drift. Output is a stable ±8 DC voltage (±16 VDC differential). Rugged, reliable, and extremely accurate, the A701-2 is the preferred choice for volcano monitoring, high-precision geotechnical engineering, bridge deflection monitoring, precision metrology, radar platform leveling, and high-accuracy tilt monitoring applications worldwide.

		Model A701-2A (High-gain)	Model A701-2B (Mid-Range)
Angular Range	High-Gain:	±800 µradians (+/-0.046°)	±0.8°
	Low-Gain:	±8000 µradians (±0.46°)	±8.0°
Scale Factor	High-Gain:	0.1 µradian/mV	0.1°/V
	Low-Gain::	1 µradian/mV	1°/V
Non-Linearity	High-Gain:	0.2%	0.2%
	Low-Gain:	2%	1.5%
Resolution		0.1 µradians	1.0 µradians
Repeatability		1 µradians (static)	2 µradians (static)
Time Constant		Filter on: 7.5 sec; Filter off 0.5 sec	Filter on: 7.5 sec; Filter off 0.4 sec
Kz Temp Coefficient (deg/C)		±3 µradians/°C (typical)	±0.001°/°C (typical)
Ks Temp Coefficient (%/°C)		0.05%/°C (typical)	
Output		±8VDC (single ended); ±16VDC (differential)	
Channels		X-tilt, Y-tilt, Temperature	
Output Impedance		270 ohms	
Temperature Output		0.1°C/mV typical (single ended; 0°C = 0mV)	
Power		±11 to ±15 VDC @ +11 and -6mA, 250 mV ripple max, reverse polarity protected	
Environmental		-25 to +70°C operation; -30 to +100°C storage	
Dimensions		6 x 6 x 4 inches (15 x 15 x 10 cm), 3 lb (1.4 kg)	
Materials		Anodized and painted aluminum	
Cable		3m (10 ft) multiconductor cable + overall shield, PVC jacket, connectors included	

Specifications subject to change without notice on account of continued product development

Ordering Code

A701 – 2 ☐

A: High Gain (±0.46°) 2 Gains, 2 Filters
B: Mid Range (±8°) 2 Gains, 2 Filters

Accessories

Part No.	Description
70304	Power/signal cable, 10-conductor (specify total length on order)
62301	Female panel receptacle (mates to 62302 connector included with tiltmeter)
62304	Extra female in-line receptacle (one included with tiltmeter)

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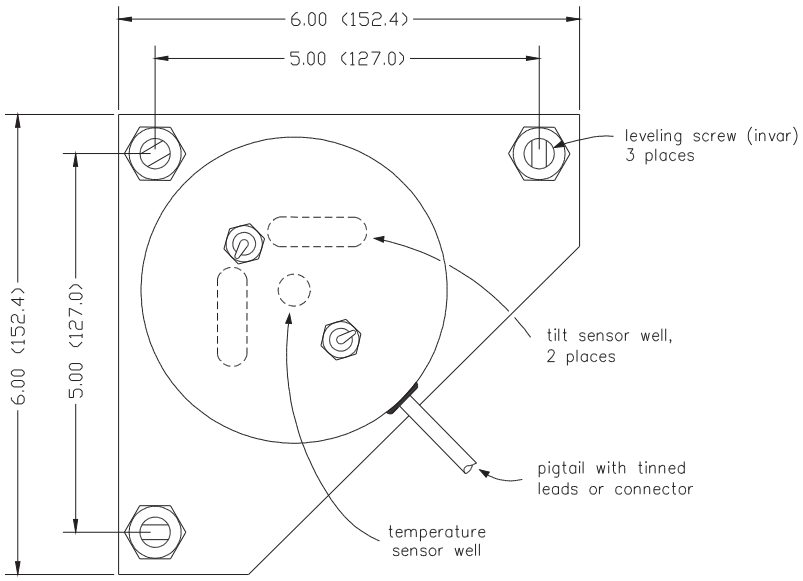
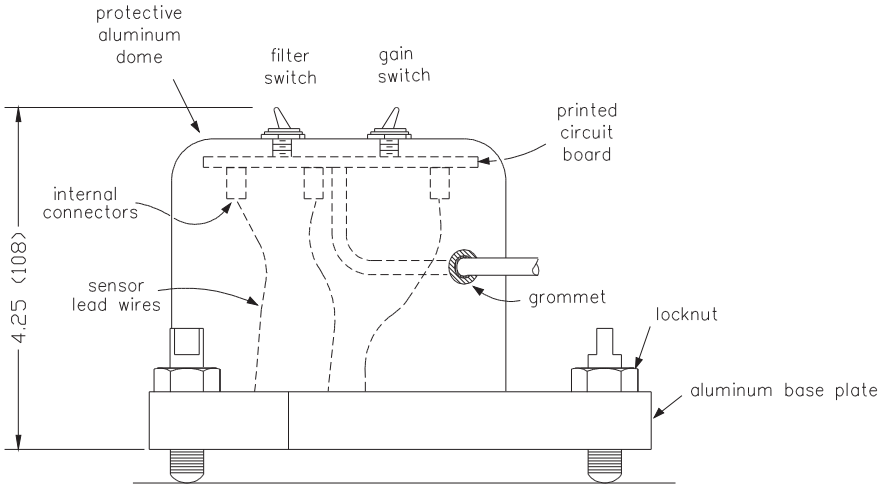
Dimensions:

Top view



Side view



Wiring/Pin-out:

Wire Color	Function	Bendix Connector
Red	+12 to +15V Power	H
Black	Power Ground	A
Violet	-12 to -15V Power	B
Blue	+Y-tilt out	G
Brown	-Y-tilt out	K
Gray	-X-tilt out	J
Green	+X-tilt out	C
White	Signal ground	E
Yellow	Temperature out	D

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Model A701-2-4X

IP65 Weatherproof Platform Tiltmeter

The model A701-2(4X) Weatherproof Platform Tiltmeter is a precision analog tiltmeter with resolution to 1 µradian or better. Units are rated IP65 waterproof for use in wet, humid, and corrosive environments, and easily install on any horizontal surface via three built-in invar leveling legs. Output is a stable ±8 DC voltage (±16 VDC differential), and the powerful internal electronics will drive cables over 1000m. Use this precision tiltmeter for volcano monitoring, geotechnical engineering, structural monitoring, platform leveling, and any application where advanced protection from weather is required.

	A701-2A(4X) (High-gain)	A701-2B(4X) (Mid-Range)
Angular Range	±8000 µradians (±0.46°)	±4.0
Scale Factor	1 µradian/mV	0.5°/V
Resolution	<1 µradian	1 µradian
Repeatability	2 µradians (static)	2 µradians (static)
Non-Linearity	1%	2%
Time Constant	0.15 sec	
Kz Temp Coefficient (bias/°C)	±4 µradians/°C (typical)	
Ks Temp Coefficient (%/°C)	0.04%/°C (typical)	
Output	±8VDC (single ended); ±16VDC (differential)	
Channels	X-tilt, Y-tilt, Temperature	
Output Impedance	270 ohms	
Temperature Output	0.1°C/mV typical (single ended; 0°C = 0mV)	
Power	±11 to ±15 VDC @ +11 and -6mA, 250 mV ripple max, reverse polarity protected	
Environmental	-25 to +70°C operation; -30 to +100°C storage, IP65 (NEMA 4X)	
Dimensions	6 x 6 x 4 inches (15 x 15 x 10 cm), 3 lb (1.4 kg)	
Materials	Anodized and painted aluminum	
Cable	3m (10 ft) multiconductor cable + overall shield, PVC Jacket, connectors included	

Specifications subject to change without notice on account of continued product development

Ordering Code

A701 – 2 ☐ (4X)

- A: High Gain (±0.46°)
- B: Mid Range (±4°)

Accessories

Part No.	Description
70304	Power/signal cable, 10-conductor (specify total length on order)
62301	Female panel receptacle (mates to 62302 connector included with tiltmeter)
62304	Extra female in-line receptacle (one included with tiltmeter)

L00234-A701-24X-Rev-B.pdf

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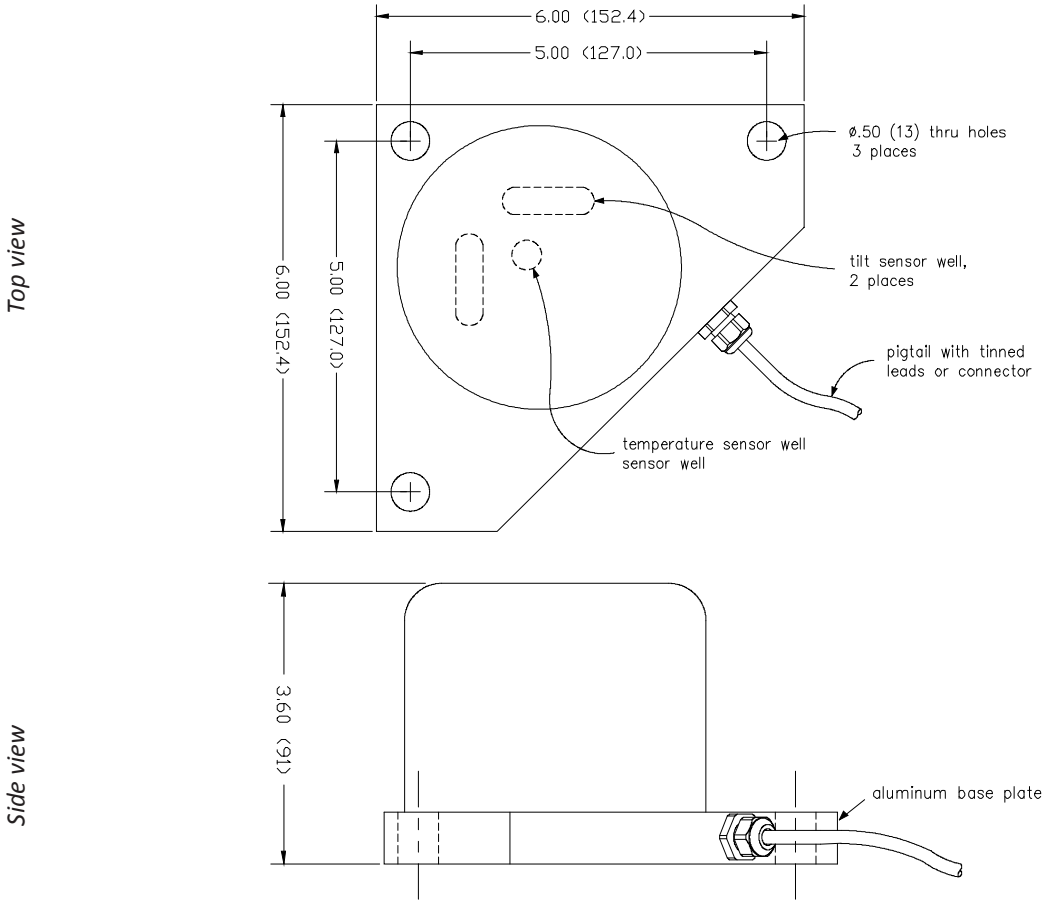
Dimensions:



Dimensions in inches (mm)

Wiring/Pin-out:

Wire Color	Function	Bendix Connector
Red	+12 to +15V Power	H
Black	Power Ground	A
Violet	-12 to -15V Power	B
Blue	+Y-tilt out	G
Brown	-Y-tilt out	K
Gray	-X-tilt out	J
Green	+X-tilt out	C
White	Signal ground	E
Yellow	Temperature out	D

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Model D701

Digital Platform Tiltmeter

The model D701 Digital Platform Tiltmeter is a high-precision instrument with advanced firmware features. Output is RS232 or RS422 (RS485 full duplex). The D701 also includes invar leveling feet for easy installation on any horizontal surface. Using a high-precision electrolytic sensor element, units deliver up to 1 µradian resolution with virtually zero long-term drift. Programmable firmware controls include sample averaging, auto-zero (tare), baud/output rate, temperature compensation* and more. The D701 also has on-board memory, with storage capacity up to 22,000 samples. Use the D711 for volcano monitoring, geotechnical engineering, structural monitoring, platform leveling, and more.

	D701-A (High-gain)	D701-B (Mid-Range)
Angular Range	±0.5°	±5.0°
Resolution	1 µradian	10 µradian
Repeatability	4 µradians (static)	10 µradians (static)
Non-Linearity	0.4%	0.1%
Time Constant	0.15 sec	2 sec
Kz Temp Coefficient (bias/°C)	±3.5 µradians/°C (typical)	
Ks Temp Coefficient (%/°C)	±0.02%/°C (typical)	
Output	RS232, RS422 (RS485 full duplex)	
Output Format	NMEA XDR, Trimble TCM, Ashtec compatible, Simple (default: X, Y, Temp., S/N)	
Baud Rate	9600 (default), 19200, 28800, 57600, 115200, 230400	
Channels	X-tilt, Y-tilt, Temperature, Serial No.	
Power	7-28 VDC @ 30mA, 250 mV ripple max, reverse polarity protected	
Environmental	-40 to +85 C operation and storage; IP65	
Dimensions	6 x 6 x 4 inches (15 x 15 x 10 cm), 3 lb (1.4 kg)	
Materials	Anodized and painted aluminum	
Cable	10 ft. (3m) multiconductor cable + overall shield, PVC jacket, connectors included	

Specifications subject to change without notice on account of continued product development

Ordering Code

D701 – ☐ – ☐

- S: RS232 (Serial)
- D: RS422 (Differential Serial)

- A: High Gain (±0.5°)
- B: Mid Range (±5°)

Accessories

Part No.	Description
70304	Power/signal cable, 10-conductor (specify total length on order)
62401	Extra female panel receptacle (one included with tiltmeter)
719-AL	Vertical mounting bracket (L-bracket)
718-AL	Horizontal mounting plate

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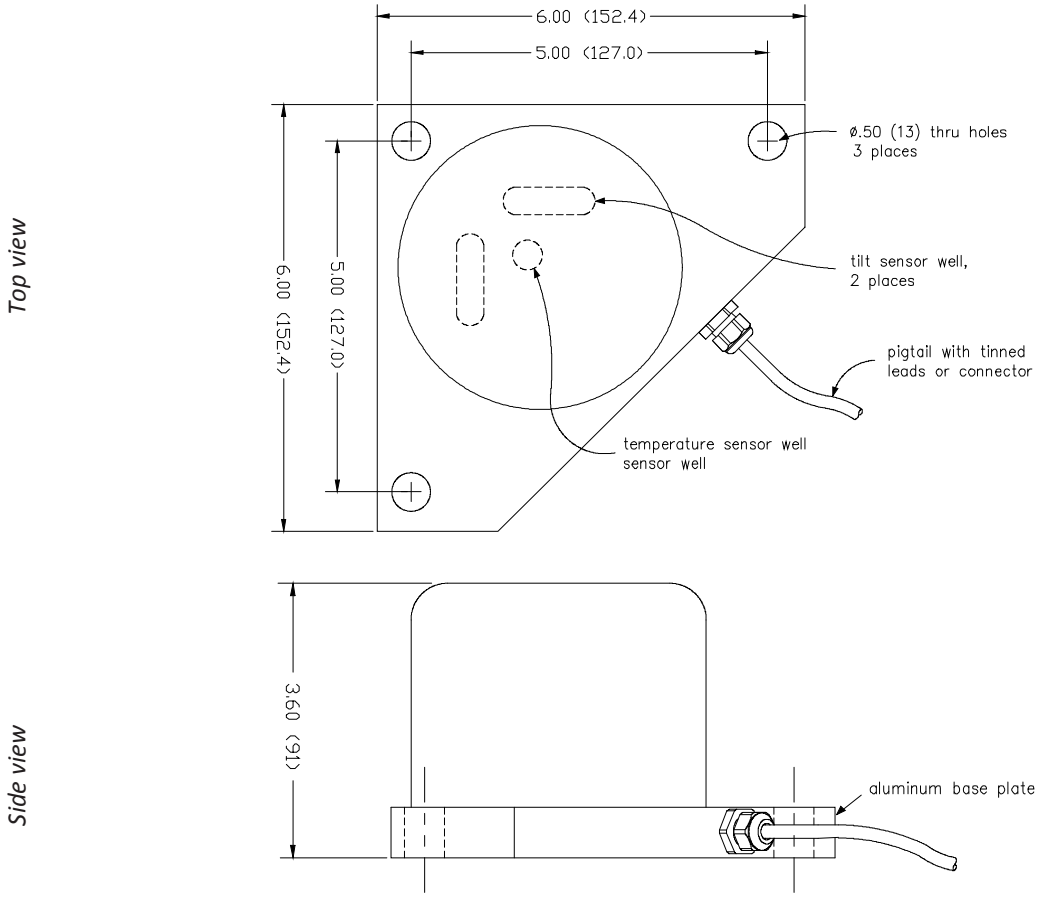
Dimensions:



Dimensions in inches (mm)

Wiring/Pin-out:

Tiltmeter End			Mating Cable (Computer End)	
Wire Color	Function	Connector Pin	DB9 Pin (RS422)	DB9 Pin (RS232)
Red	Power	H	---	---
Black	Ground	A	1	5
Blue	TX (RS232)	E	---	2
Green	RX (RS232)	G	---	3
Orange	TX+ (RS485)	D	4	---
Gray	TX- (RS485)	J	5	---
Yellow	RX- (RS485)	C	9	---
Brown	RX+ (RS485)	B	8	---
Drain Wire	Cable Shield	F	---	---

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