ENGINEERED SENSOR SOLUTIONS

Geotechnical & Structural Engineering

Tilt monitoring is a low cost, high accuracy monitoring method for geotechnical and structural engineering. Using tiltmeters, geotechnical engineers can directly monitor tilt deflection on structural components, sag on bridge decks and girders, settlement on building foundations, landslide slope stability, pitwall failures, and many other modes of structural movement. Because tiltmeters measure absolute position with respect to gravity, engineers can directly monitor and evaluate structural movement and performance over time. Tilts are also easily converted to mm/m displacement to create linear movement profiles. With no internal moving parts to break or wear-out, tiltmeters maintain excellent repeatability over time, and many Jewell tiltmeters have been in service for over 15 years! Jewell's high precision tilt sensors deliver reliable, high accuracy performance for geotechnical monitoring projects worldwide; contact us today about your engineering project.

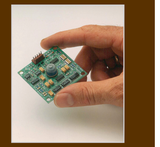
Specialized Research

For over 30 years, Jewell tilt sensors have delivered high performance for scientific research applications. Our 500- Series products deliver unrivaled performance in the fields of geophysical and geodetic research, with up to 5 nanoradian resolution, while our 700 Series is the instrument of choice for volcanology research. Jewell's miniature tilt sensor packages offer similar precision for high-energy physics applications on synchrotrons and linear accelerator labs, where small size and peak performance are key. When precision and accuracy are essential, scientists choose Jewell Instruments.

Jewell's high precision tiltmeters and inclinometers are preferred by volcanologists, seismologists, geophysicists, high-energy physics researchers, synchrotron laboratories and radio telescope engineers worldwide.

OEM & Industrial

Jewell Instruments offers a variety of low cost, high performance tilt sensors, ideal for OEM and industrial applications. With analog, digital, and 4-20mA output options you can customize Jewell sensors to your specific application requirements. Small and lightweight, Jewell's OEM sensor packages mount directly to critical system components without affecting performance. Our digital sensors also come with advanced, built-in firmware features including sample/hold, null-set, and high/low tilt switch & trigger functions. Jewell sensors are the instruments of choice for OEM providers worldwide; applications include robotics, industrial milling machinery, 4-20mA PLC systems, hydropower & dam gate equipment, and specialized scientific instrument packages.



Custom Sensor Solutions

Jewell Instruments designs and manufactures a large selection of custom tilt sensor solutions for customers worldwide. From the enclosure to the electronics, our skilled engineering and sales staff can customize the ideal tilt sensor for your application. Jewell Instruments has provided custom sensor setups for deep-ocean research, offshore oil platforms, aerospace equipment, satellite testing facilities, radar positioning and control and more. No matter the requirements Jewell Instruments can design a sensor package to meet all your needs. Call us and see how our precision sensor solutions can help you make sense out of motion!

Other Product Groups Available:

Rail Transportation Selector Guide

Force-Balanced Precision Inclinometer Selector Guide

Force-Balanced Precision Accelerometer Selector Guide

Jewell Instruments is a world leader in the manufacture and distribution of panel meters, avionics components, inertial sensors, and precision solenoids. From sales and design, manufacturing and testing, and delivery and support, Jewell Instruments offers complete customer care and engineering expertise. We also offer two, fully modernized manufacturing facilities, one in Manchester, New Hampshire and one in Barbados, West Indies to handle the most stringent manufacturing requirements with a cost-competitive advantage.

Distributed By:

Jewell Instruments

Making Sense Out of Motion...

ISO9001 CERTIFIED

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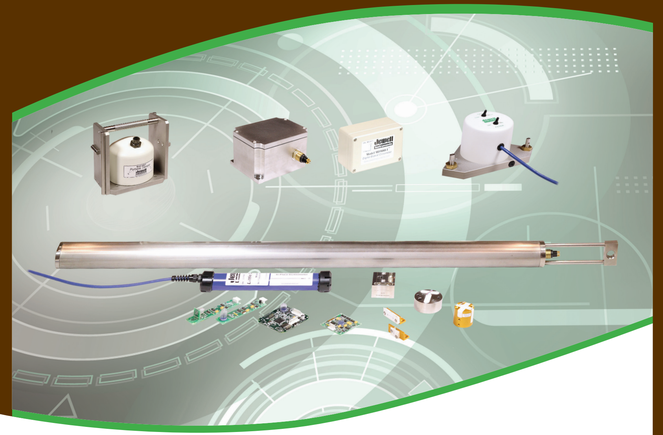
Electrolytic Tilt Sensors and Accessories
Selector Guide



Jewell Instruments

RELIABLE, HIGH PERFORMANCE PRODUCTS — EXCEPTIONAL SERVICE

FEATURING: Electrolytic Tilt Sensors and Accessories

Jewell's electrolytic tiltmeters and inclinometers are high performance, rugged tilt transducers designed to measure angle and deflection using an absolute gravity reference. Our precision electrolytic sensors respond to changes in slope as small as 5 nanoradians (0.01 arcsec), delivering exceptional performance for scientists, geotechnical engineers, measurement and control equipment, and industrial machinery. All Jewell tiltmeter packages also come with available DC analog , 4-20mA, or digital ASCII output, for peak signal performance.

Custom Application-Specific Solutions

Jewell Instruments provides both standard and custom solutions for a diverse group of industries, such as aerospace, medical, industrial, telecommunications, and rail markets. We manufacture our components completely in-house and work directly with our clients, maintaining control over the entire development processes. Our legacy of experience and success, and the expertise of our engineering team, mean customers benefit from extensive resources at their disposal.

Connecting Experience, Quality & Expertise

For over 60 years, Jewell Instruments has provided commercial and industrial sensors and controls, meters and avionics, and industrial test equipment solutions to a range of global markets. Our ISO 9001:2008 certification ensures that our customers receive products and systems with the dependability and reliability that their applications demand. Jewell Instruments' experienced engineering team works with customers to produce high quality, reliable products that meet or exceed their requirements.

Exceptional Customer Service

We specialize in reliability, value and responsiveness. Cooperation and joint planning between our engineering groups and our clients drive our customer care experience. We work as an extension of our customers' engineering and manufacturing teams to solve problems, improve applications, shorten lead-times and bring more value to their products and services. Superb customer support is the cornerstone of our many successful, long-term customer relationships.

Jewell Facilities

Jewell offers two, fully modernized manufacturing facilities, one in Manchester, New Hampshire and one in Barbados, West Indies.

Manchester Facility

Barbados Facility

900 Series

A900 — *Analog Clinometer*

Features & Benefits

Small modular design
User programmable sampling features
Analog, digital, or 4-20mA output available
Convenient OEM package

Applications

Machine control systems
ROV's, Robotics, Autonomous vehicle control
Scientific instrument packages
Data buoy pitch and roll measurement

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.005°	0.01°	0.02°
Repeatability	0.02°	0.02°	0.02°
Scale Factor	4.0	10.0	25.0
Scale Factor Unit		°/V	
Non-Linearity, Half span (%)[2]	1	2.5	7
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		10-20	

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	±2.5V DC, 0-5V DC
Power Requirements	8-24V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	-

Mechanical

Weight	0.5 oz. (15 g)
Dimensions in cm (LxWxH)	5.1 x 5.1 x 1.6 11 x 2.3 x 2.3
Enclosure	OEM

C900 — *Tulip 420*

Features & Benefits

Small modular design
User programmable sampling features
Analog, digital, or 4-20mA output available
Convenient OEM package

Applications

Machine control systems
ROV's, Robotics, Autonomous vehicle control
Scientific instrument packages
Data buoy pitch and roll measurement

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.005°	0.01°	0.02°
Repeatability	0.01°	0.02°	0.04°
Scale Factor	1.25	3.125	6.25
Scale Factor Unit		°/mA	
Non-Linearity, Half span (%)[2]	1	2.5	7
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		10-20	

Electrical

Available Channels	X-tilt, °C
Sensor Output	4-20mA
Power Requirements	112-29V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	-

Mechanical

Weight	0.5 oz. (15 g)
Dimensions in cm (LxWxH)	11 x 2.3 x 2.3
Enclosure	OEM

MD908 — *IRIS Tilt-switch & Controller*

Features & Benefits

Small modular design
User programmable sampling features
Analog, digital, or 4-20mA output available
Convenient OEM package

Applications

Machine control systems
ROV's, Robotics, Autonomous vehicle control
Scientific instrument packages
Data buoy pitch and roll measurement

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.002°	0.004°	0.01°
Repeatability	0.01°	0.01°	0.02°
Scale Factor		-	
Scale Factor Unit		-	
Non-Linearity, Half span (%)[2]		1.0	
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		10	

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +85°C
Seal/Depth Rating	-

Mechanical

Weight	1.1 oz. (31 g)
Dimensions in cm (LxWxH)	6.7 x 6.7 x 2.5
Enclosure	OEM

A904-T — *Clinometer*

Features & Benefits

GPS Compatible – Trimble, NMEA XDR
Robust IP65 housing
Precision meets affordability
Analog, 4-20mA, or digital output available

Applications

Platform leveling & positioning
Machine/construction equipment, position & guidance
Construction monitoring
PLC control systems

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.005°	0.01°	0.02°
Repeatability		0.02°	
Scale Factor	4.0	10.0	25.0
Scale Factor Unit		°/V	
Non-Linearity, Half span (%)[2]	1	2.5	7
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		±10	

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	±2.5V DC, 0-5V DC
Power Requirements	8-24V DC

Environmental

Operating Temperature Range	-40° to +80°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	16 oz. (400 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

C904 — *Clinometer 420*

Features & Benefits

GPS Compatible – Trimble, NMEA XDR
Robust IP65 housing
Precision meets affordability
Analog, 4-20mA, or digital output available

Applications

Platform leveling & positioning
Machine/construction equipment, position & guidance
Construction monitoring
PLC control systems

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.005°	0.01°	0.02°
Repeatability	0.01°	0.02°	0.04°
Scale Factor	1.25	3.125	6.25
Scale Factor Unit		°/mA	
Non-Linearity, Half span (%)[2]	1	2.5	7
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		10-20	

Electrical

Available Channels	X-tilt, °C
Sensor Output	4-20mA
Power Requirements	12-29V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	16 oz. (400 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

MD900-T — *Digital Clinometer*

Features & Benefits

GPS Compatible – Trimble, NMEA XDR
Robust IP65 housing
Precision meets affordability
Analog, 4-20mA, or digital output available

Applications

Platform leveling & positioning
Machine/construction equipment, position & guidance
Construction monitoring
PLC control systems

Performance Specs

	±10°	±25°	±50°
Angular Range[1]			
Resolution	0.002°	0.004°	0.01°
Repeatability	0.01°	0.01°	0.02°
Scale Factor		-	
Scale Factor Unit		-	
Non-Linearity, Half span (%)[2]		1.0	
Time Constant (sec)		0.15	
Ks Temp Coefficient (%/°C)[3]		±0.03	
Kz Temp Coefficient (bias/°C)[4] (arc sec)		<10	

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	19 oz. (550 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

A906 — *Little Dipper*

Features & Benefits

Waterproof to 72 psi
High accuracy, low drift
Embeds directly into soil, concrete, or slurry walls

Applications

Slope stability studies
Landslide monitoring
Pit-wall and excavation stability
Building foundation monitoring

Performance Specs

	±12°	±30°
Angular Range[1]		
Resolution	<0.005°	<0.01°
Repeatability	0.01°	0.02°
Scale Factor	4.0	10.0
Scale Factor Unit		°/V
Non-Linearity, Half span (%)[2]	0.8	1; 4
Time Constant (sec)		0.15
Ks Temp Coefficient (%/°C)[3]		±0.03
Kz Temp Coefficient (bias/°C)[4] (arc sec)		±5

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	±3V DC
Power Requirements	8-24V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-25° to +70°C
Seal/Depth Rating	72 psi, Waterproof

Mechanical

Weight	12 oz. (350 g)
Dimensions in cm (LxWxH)	23 x 3.9 O.D.
Enclosure	ABS Plastic

800 Series

A801 — *Tuff Tilt*

Features & Benefits

Highly repeatable – up to 0.0002° or better
Rugged IP65 waterproof design
Excellent linearity over total range

Applications

High precision measurement and control
Radial gate, radar platform, & industrial machinery positioning
Geotechnical & structural engineering
(building, bridge, & construction monitoring)

Performance Specs

	±0.5°	±3°	±50°
Angular Range[1]			
Resolution	.0001°	0.0006°	0.01°
Repeatability	0.0002°	0.001°	0.02°
Scale Factor	0.1	0.6°	10.0°
Scale Factor Unit		°/V	
Non-Linearity, Half span (%)[2]	< 1.0	1.0	0.5
Time Constant (sec)	1.75	1.75	0.15
Ks Temp Coefficient (%/°C)[3]	±0.02	±0.02	±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)		±0.0002	

Electrical

Available Channels	X-tilt, °C
Sensor Output	±5 or ±10V DC
Power Requirements	8-18V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	IP65

Mechanical

Weight	24 oz. (600 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

C801 — *Tuff Tilt 420*

Features & Benefits

Highly repeatable – up to 0.0002° or better
Rugged IP65 waterproof design
Excellent linearity over total range

Applications

High precision measurement and control
Radial gate, radar platform, & industrial machinery positioning
Geotechnical & structural engineering
(building, bridge, & construction monitoring)

Performance Specs

	±0.5°	±3°	±50°
Angular Range[1]			
Resolution	0.0001°	0.0006°	0.01°
Repeatability	0.0002°	0.001°	0.02°
Scale Factor	.0625°	0.375°	6.25°
Scale Factor Unit		°/mA	
Non-Linearity, Half span (%)[2]	< 1.0	2.0	0.5
Time Constant (sec)	0.15	0.15	0.15
Ks Temp Coefficient (%/°C)[3]	±0.04	±0.04	±0.1
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.0002	±0.0002	±0.002

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	4-20mA
Power Requirements	12-29V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	17.6 oz. (500 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

D801 — *Tuff Tilt Digital*

Features & Benefits

Highly repeatable – up to 0.0002° or better
Rugged IP65 waterproof design
Excellent linearity over total range

Applications

High precision measurement and control
Radial gate, radar platform, & industrial machinery positioning
Geotechnical & structural engineering
(building, bridge, & construction monitoring)

Performance Specs

	±3°	±50°
Angular Range[1]		
Resolution	0.0001°	0.002°
Repeatability	0.0003°	0.004°
Scale Factor	-	-
Scale Factor Unit	-	
Non-Linearity, Half span (%)[2]	<0.1	<0.1
Time Constant (sec)	0.15	0.15
Ks Temp Coefficient (%/°C)[3]		
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.0002	±0.004

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	24 oz. (600 g)
Dimensions in cm (LxWxH)	12 x 8 x 6
Enclosure	Powder Coated, Die-cast Al

A802 — *DeepWater*

Features & Benefits

+3500 psi pressure rating
Heavy duty 316 SS enclosure (6Al-4V Ti available)
Highly corrosion resistant, excellent for marine applications

Applications

Critical position/leveling on dry docks, offshore platforms, & marine equipment
Subsea trenching and equipment positioning
Deep ocean research
Marine construction equipment guidance systems

Performance Specs

	±3°	±50°
Angular Range[1]		
Resolution	0.0006°	0.01°
Repeatability	0.001°	0.02°
Scale Factor	0.6	10.0
Scale Factor Unit		°/V
Non-Linearity, Half span (%)[2]	1.0	0.5
Time Constant (sec)	1.75	0.15
Ks Temp Coefficient (%/°C)[3]	±0.02	±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.7	±7.2

Electrical

Available Channels	X-tilt, °C
Sensor Output	±5V DC
Power Requirements	9-24V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	3500 psi, Submersible

Mechanical

Weight	11 lb. (5 kg)
Dimensions in cm (LxWxH)	15.2 x 10.2 x 8.9
Enclosure	316 SS 6Al-4V Ti

C802 — *DeepWater 420*

Features & Benefits

+3500 psi pressure rating
Heavy duty 316 SS enclosure (6Al-4V Ti available)
Highly corrosion resistant, excellent for marine applications

Applications

Critical position/leveling on dry docks, offshore platforms, & marine equipment
Subsea trenching and equipment positioning
Deep ocean research
Marine construction equipment guidance systems

Performance Specs

	±3°	±50°
Angular Range[1]		
Resolution	0.0006°	0.01°
Repeatability	0.001°	0.02°
Scale Factor	0.375	6.25
Scale Factor Unit		°/mA
Non-Linearity, Half span (%)[2]	1.0	0.5
Time Constant (sec)	0.15	0.15
Ks Temp Coefficient (%/°C)[3]	±0.04	±0.01
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.7	±7.2

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	4-20mA
Power Requirements	12-29V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	3500 psi, Submersible

Mechanical

Weight	11 lb. (5 kg)
Dimensions in cm (LxWxH)	15.2 x 10.2 x 8.9
Enclosure	316 SS 6Al-4V Ti

D802 — *DeepWater Digital*

Features & Benefits

+3500 psi pressure rating
Heavy duty 316 SS enclosure (6Al-4V Ti available)
Highly corrosion resistant, excellent for marine applications

Applications

Critical position/leveling on dry docks, offshore platforms, & marine equipment
Subsea trenching and equipment positioning
Deep ocean research
Marine construction equipment guidance systems

Performance Specs

	±5°	±50°
Angular Range[1]		
Resolution	0.002°	0.02°
Repeatability	0.002°	0.02°
Scale Factor	-	-
Scale Factor Unit	-	
Non-Linearity, Half span (%)[2]	.2	.2
Time Constant (sec)	0.15	0.15
Ks Temp Coefficient (%/°C)[3]	±0.02	±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.07	±14.4

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	ASCII, RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	3500 psi, Submersible

Mechanical

Weight	11 lb. (5 kg)
Dimensions in cm (LxWxH)	15.2 x 10.2 x 8.9
Enclosure	316 SS 6Al-4V Ti

800P — *Portable Tiltmeter*

Features & Benefits

<0.0002 mm/m sensitivity in a handheld package
Out of the box "plug and play" operation
Robust 304 SS, waterproof design

Applications

Construction monitoring
Tilt surveying
Excavation & pit-wall deflection/stress
Structure monitoring

Performance Specs

	±5°
Angular Range[1]	
Resolution	0.0001°
Repeatability	0.004°
Scale Factor	-
Scale Factor Unit	-
Non-Linearity, Half span (%)[2]	1.0
Time Constant (sec)	0.40
Ks Temp Coefficient (%/°C)[3]	±0.05
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±3.6 arc sec

Electrical

Available Channels	X-tilt, °C
Sensor Output	±5V DC
Power Requirements	9-24V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	IP65, Waterproof

Mechanical

Weight	6 lb. (2.7 kg)
Dimensions in cm (LxWxH)	11.1 x 6.2 x 3.2
Enclosure	304 SS, Powder Coated Plastic

700 Series

A701-2 — *Platform Mount*

D701 — *Digital Platform Mount*

Features & Benefits

High precision, to <0.000005° or better
Powerful electronics drive cables to 1000m in length
Available in floor and wall mount configurations
IP65 waterproof versions available

Applications

Radio telescope & radar antenna/platform leveling and positioning
Advanced physics, astronomy, and geophysical research
High accuracy geotechnical engineering; bridge deflection, sag, and pier monitoring
Precision component alignment and metrology applications

Performance Specs

	±0.46°	±8°	±0.5°	±5°
Angular Range[1]				
Resolution	.000005°	.00005°	0.00005°	0.0005°
Repeatability	.000057°	.00011°	<0.0002°	0.0005°
Scale Factor	.000057	1.0	-	-
Scale Factor Unit		°/V	-	-
Non-Linearity, Half span (%)[2]	2	1.5	0.4	0.1
Time Constant (sec)	7.5, 0.5	7.5, 0.4	0.15	0.15
Ks Temp Coefficient (%/°C)[3]		±0.05		±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.00017	±0.001		±0.0002

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	±8V DC
Power Requirements	±11 to ±15V DC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	Waterproof Epoxy

Mechanical

Weight	3 lb. (1.4 kg)
Dimensions in cm (LxWxH)	15 x 15 x 10
Enclosure	Anodized, Painted Al

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	3 lb. (1.4 kg)
Dimensions in cm (LxWxH)	15 x 15 x 10
Enclosure	Anodized, Painted Al

A711-2 — *Floor Mount*

D711 — *Digital Floor Mount*

Performance Specs

	±0.46°	±8°	±0.5°	±5°	±70°
Angular Range[1]					
Resolution	.000005°	.00005°	0.00005°	0.0005°	0.001°
Repeatability	.000057°	.00011°	<0.0002°	0.00057°	0.001°
Scale Factor	.000057	1.0	-	-	-
Scale Factor Unit		°/V	-	-	-
Non-Linearity, Half span (%)[2]	1.0	1.0	0.4	0.1	0.1
Time Constant (sec)	7.5, 0.5	7.5, 0.5	0.15	0.15	0.15
Ks Temp Coefficient (%/°C)[3]		±0.05		±0.02	
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±0.00017	±0.001	±0.002	±0.002	±0.004

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-40° to +85°C
Storage Temperature Range	-40° to +85°C
Seal/Depth Rating	IP65

Mechanical

Weight	3 lb. (1.4 kg)
Dimensions in cm (LxWxH)	15 x 15 x 10
Enclosure	Anodized, Painted Al

600 Series

A601-2 — *Platform Tiltmeter*

Features & Benefits

Built in micrometer leveling legs, two switchable gains and two low-pass filter settings, <25 nrad resolution, zero long-term drift. Output is a stable ±8 DC voltage (±16 VDC differential).

Applications

Volcano monitoring, high-precision geotechnical engineering, bridge deflection monitoring, precision metrology, radar platform leveling

Performance Specs

	±0.115°	±0.235
Angular Range[1]		
Resolution	<0.025 µrad	<0.05 µrad
Repeatability	.000057°	.00011°
Scale Factor	0.25	0.5
Scale Factor Unit	µrad/mV	
Non-Linearity, Half span (%)[2]	1.0	0.2
Time Constant (sec)	7.5, 0.5	0.50
Ks Temp Coefficient (%/°C)[3]	0.05	±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±3.0 µrad	±3.0 µrad/°C

Electrical

Available Channels	X-tilt, Y-tilt, °C
Sensor Output	±8VDC; ±16VDC
Power Requirements	±11 to ±15 VDC

Environmental

Operating Temperature Range	-25° to +70°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	IP50

Mechanical

Weight	3 lb. (1.4 kg)
Dimensions in cm (LxWxH)	15 x 15 x 10
Enclosure	Anodized & painted aluminum

500 Series

LILY — *Self-Leveling Borehole Tiltmeter*

Features & Benefits

Ultra-high 5 nanoradian resolution
+/-10 Self-Leveling range
Powerful firmware: selectable sample/hold, on-board memory, and power mode features

Applications

Geodetic, Volcano, and Geophysical Research
Micro-deformation monitoring, fracture engineering
Ground subsidence

Performance Specs

	±330 µrad
Angular Range[1]	
Resolution	0.005 µrad
Repeatability	0.005 µrad
Scale Factor	-
Scale Factor Unit	-
Non-Linearity, Half span (%)[2]	0.2
Time Constant (sec)	0.50
Ks Temp Coefficient (%/°C)[3]	±0.02
Kz Temp Coefficient (bias/°C)[4] (arc sec)	±3.0 µrad/°C

Electrical

Available Channels	X-tilt, Y-tilt, °C, S/N Compass, Timestamp
Sensor Output	RS232/RS422
Power Requirements	7-28V DC

Environmental

Operating Temperature Range	-25° to +85°C
Storage Temperature Range	-30° to +100°C
Seal/Depth Rating	3000 psi, Submersible

NOTE: Specifications are subject to change without notice. For complete specifications, instrument capabilities, and ordering information please visit www.jewellinstruments.com 1 - Custom Ranges also available on request 2 - Linearity represents maximum deviation from linear regression line, typical; <.05% linearity or better achievable using a 5th order polynomial 3 - Ks = % change in scale factor per °C 4 - Kz = bias shift per °C .