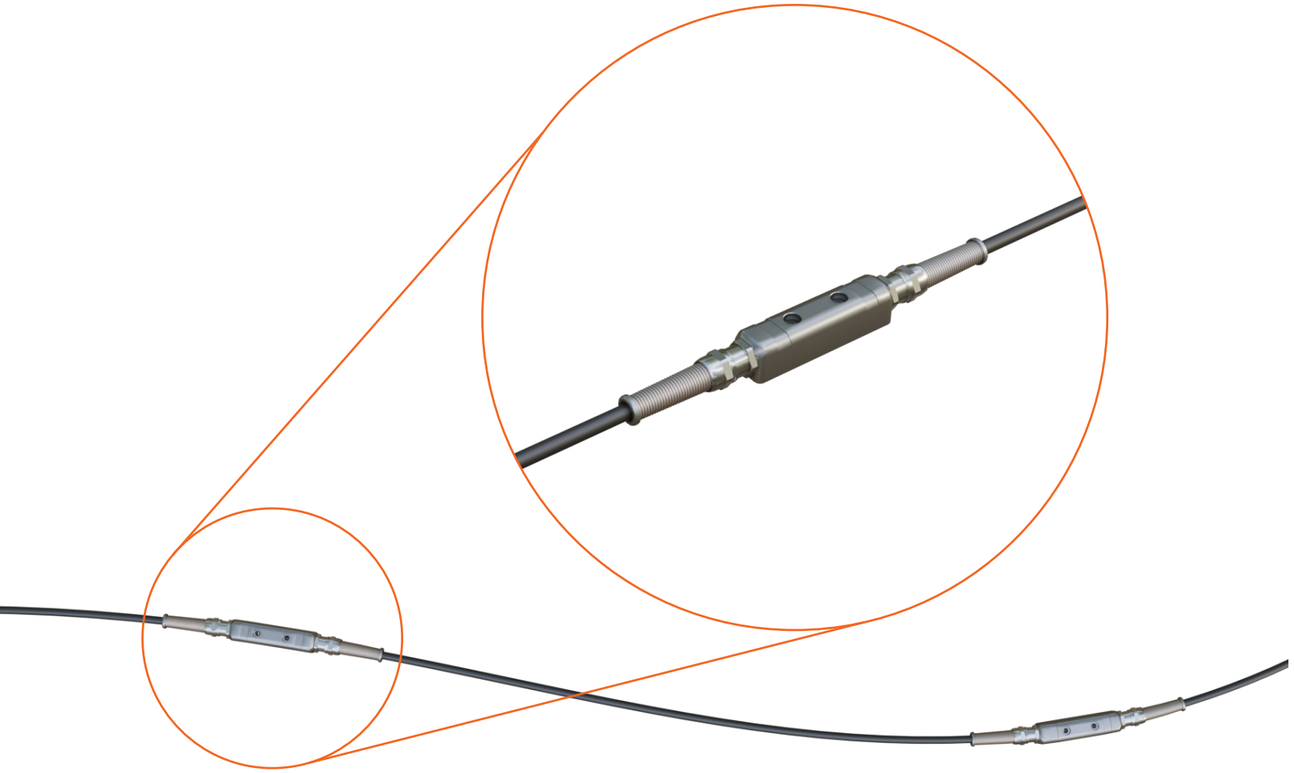
OSPREY MEASUREMENT

The Osprey Tilt String (OTS)
Product Data Sheet

GKM Consultants

Distributed tilt sensing array designed for versatility and ease of use.



The Osprey Tilt String (OTS)

DESCRIPTION

The Osprey Tilt String (OTS) is a distributed tilt sensing array designed for versatility and ease of use. The system comprises a series of tilt sensors, regularly spaced along a single cable bus.

Each tilt sensor utilises a high precision triaxial accelerometer to provide rotational measurement in any orientation to a high degree of accuracy.

The system is designed to be well suited to a broad range of structural and geotechnical applications, either surface mounted on steel, concrete, wood, or masonry, or directly embedded in concrete, grout, or soil.

A variety of mounting options enables rapid deployment in any application, and the system's single cable bus and low power consumption allows simple connection of large numbers of sensors with a single battery powered digital datalogger. This minimises maintenance requirements and simplifies data management.

FEATURES

- Full 360 degree range on all axes.
- Miniature design for low profile installations.
- Reinforced thru-holes for bolting direct to structures or secondary mounting brackets.
- Banding strap recesses for secure fixing to reinforcement bars, support rods or inclinometer casing/access pipe.
- Rugged stainless steel housing fit for the construction environment.
- Corrosion resistant and ingress protected to 12 Bar.
- Option for Kevlar reinforced cable or flexible steel conduit for ultimate cable protection.
- Available at 0.5m, 1m, 3m or 5m intervals.
- Wide range of mounting bracket options available.

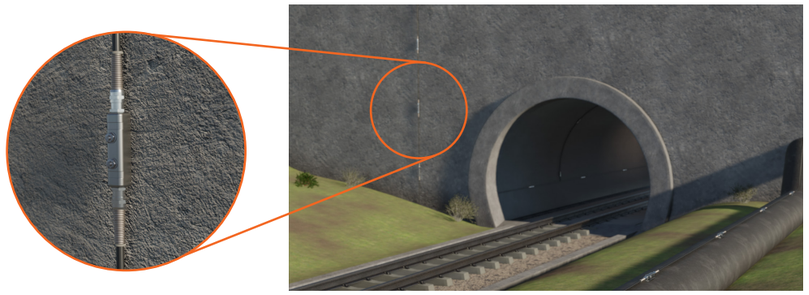
APPLICATIONS

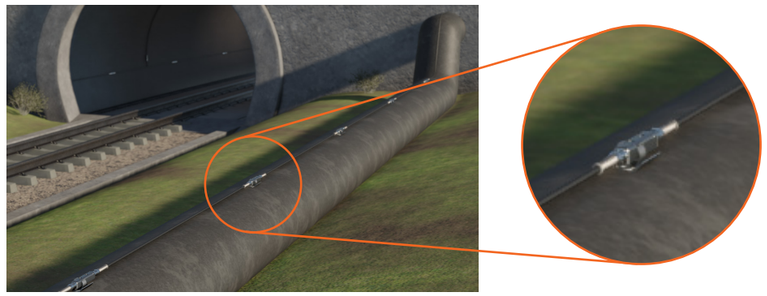
Rail

- Track mounted for longitudinal settlement profile.
- Sleeper mounted for transverse rotation (cant/ twist).

Retaining Walls

- Aligned vertically for lateral deformation profile.
- Aligned horizontally for distributed rotational monitoring.





Pipelines

- Affixed with magnets or welding plates.
- Suitable for either above or below ground applications.

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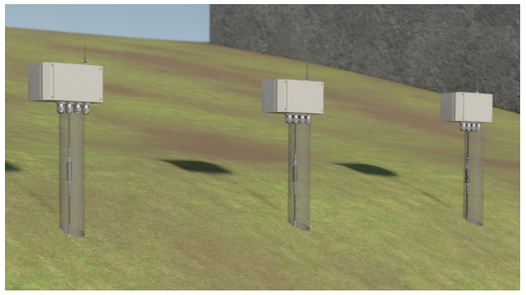
APPLICATIONS

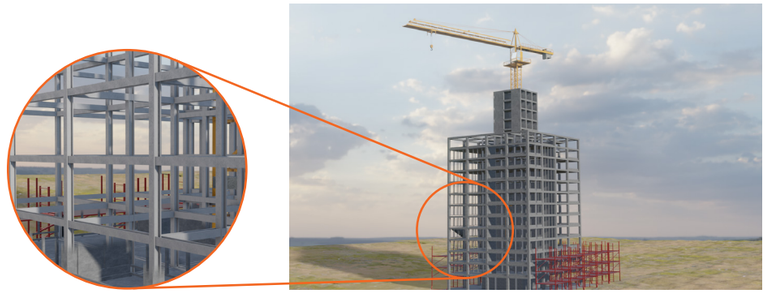
Deep Excavation

- Embedded within diaphragm walls or floor slabs.
- Magnetically attached to sheet pile walls.



Slopes

- Installed within a trench or on ground stakes for wide area coverage and early failure warning.
- Mounted on inclinometer casing for automated alerts with optional manual surveys.

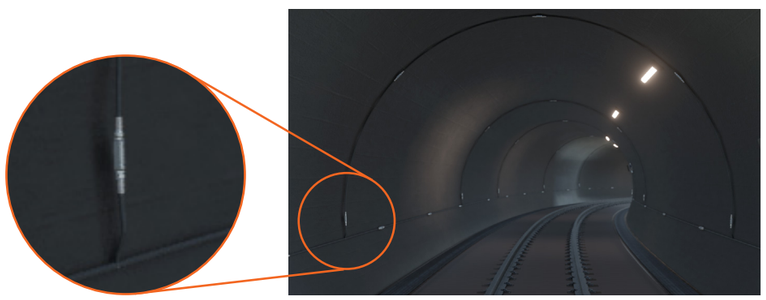


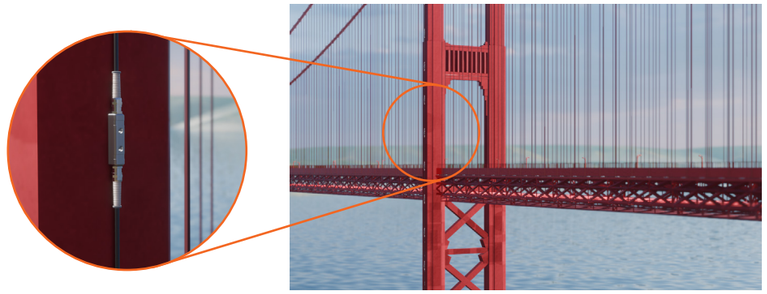
High Rise Towers

- Embedded within lift cores, columns or floor slabs during construction.
- Surface mounted on existing columns, facades or tower core.

Tunnels

- Longitudinal settlement profile or convergence.
- Mounting options include wall anchors or adhesives for concrete or masonry, magnets for steel supports, or direct embedment within shotcrete lining.





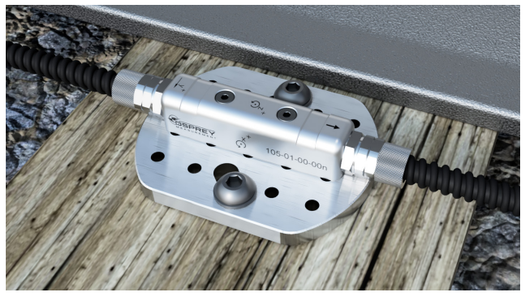
Bridges

- Capture full profile of bridge piers, towers, or decks.
- Synchronous setting allows simultaneous measurement at all points to capture a complete snapshot of dynamic structures.

MOUNTING OPTIONS

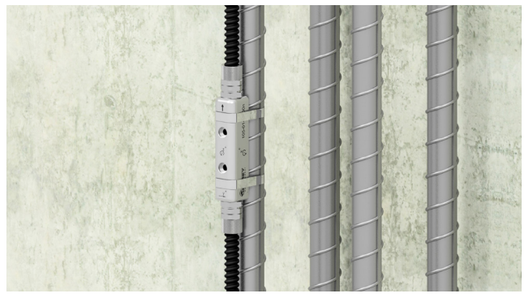
Rail Clip

For low profile longitudinal settlement profile of rails. Mounted in the web of the rail, safe from rail maintenance operations.



Mounting Bracket

For concrete, masonry, steel or wood using anchors, screws or adhesives. Arc weldable for robust mounting option for steel, while allowing easy retrieval of the devices.



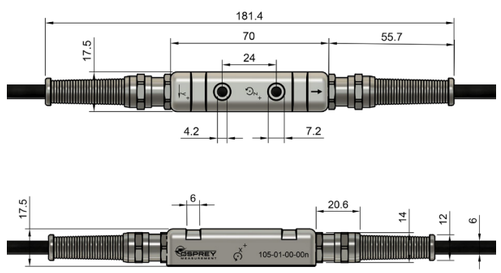
Fixing Straps

For fixing to reinforcement cages, inclinometer casing, access tube etc. for direct embedment applications.

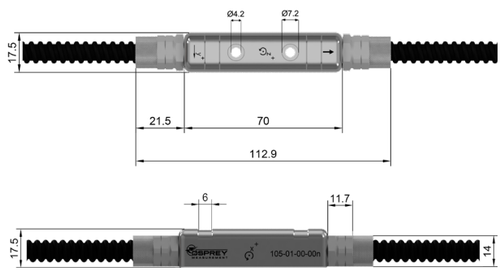
Magnets

For rapid deployment on steel: rail, pipelines, gantries, bridges, tunnels, struts, girders etc.

COMPONENTS



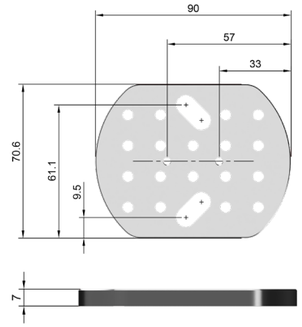
Osprey Tilt String with Kevlar Reinforced Cable



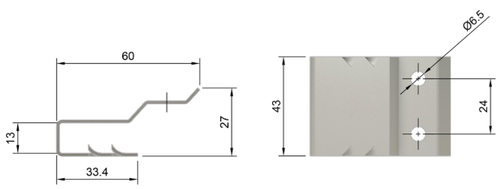
Osprey Tilt String with Flexible Conduit

ACCESSORIES

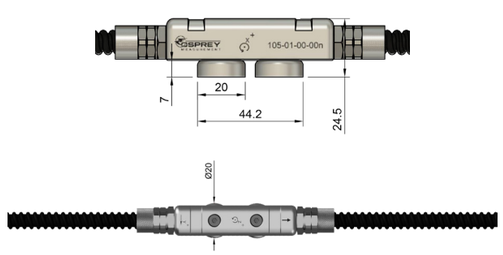
End Connection



Mounting Bracket



Track Clip



Magnets

SPECIFICATIONS – PERFORMANCE

Dimensions	60 x 16 x 16mm		
Housing Material	Stainless Steel 316L		
Range	360°		
Resolution	±0.001mrad		
Repeatability	0.07mrad		
Accuracy (offset from vertical)[1]	±5°	±10°	±90°
	0.3mRad	0.5mRad	1mRad
Power Supply	4-24VDC		
Power Consumption (12V)[2]	Boot	Idle	Measure
	210ms@30mA	0.5A to 0.5mA	200mS@20mA
Communication	RS485, Modbus RTU Compatible		

[1] Stated to 2 sigma

[2] Boot and measure are user configurable to be parallel or sequential

SPECIFICATIONS – PHYSICAL

Node Body Material	Stainless steel 316L
Node Dimensions	70 x 17.5 x 17.5mm
Node Weight	123g
Cable – Kevlar	4 x 0.28mm², 7mm jacket 51g/m
Cable – Standard	4 x 0.5mm², 6mm R-118 compliant PUR Jacket, 40g/m
Armoured Conduit	10 x 6.8mm, galvanized steel coated in black LSZH 125g/m
Flexible Conduit	10 x 6.3mm corrugated black FPAS10B, flame retardant LSZH PA6, 18g/m

SPECIFICATIONS – ACCESSORIES

	Dimensions	Weight	Materials
Rail Clip - BS110, BS113	43 x 60 x 27mm	45g per clip	Passivated spring steel
Mounting Bracket	90 x 70.6 x 7mm	276g	Stainless steel 316
Fixing Straps	6.4 x 0.5 x adjustable	25g per meter	Stainless steel 201
Magnets	20 x 20 x 24.5mm	15g ea, 15kg total pull force	N42 Neodymium

Osprey Measurement Systems
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