



## TILT METER AND BEAM SENSOR ELECTROLYTIC LEVEL TYPE MODEL EAN-31EL/EAN-31EL-B



### OVERVIEW

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Encardio-rite model EAN-31EL/EAN-31EL-B Electrolytic level type tilt meter/beam sensor is designed for measuring very small tilt. EAN-31EL tilt meter is suitable for monitoring small changes in inclination and vertical rotation of structure at a point. It is a high resolution tilt meter/beam sensor with a rugged construction.

### FEATURES

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- Provides reliable and high resolution readings.
- Rugged & robust construction.
- Easy to install and take readings.
- Readings can be taken by remote datalogger.

### APPLICATION

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- Monitoring vertical rotation, deflection & deformation of diaphragm & retaining walls.
- Monitoring inclination and rotation of dams, piers and piles, etc.
- Monitoring structures for effects of tunneling and excavation.
- Monitoring stability of structures in landslide areas.
- Monitoring tunnels for convergence and other movements.
- To evaluate performance of bridges & struts under load.

The tilt meter and beam sensor can also be used for monitoring of deflection and deformation of structures such as high rise buildings, retaining and diaphragm walls, etc. Tilt changes in structures may be caused due to construction activities such as excavation; tunneling and de-watering that affect the surrounding ground that supports the structure. Changes in tilt may also result from loading of a structure, such as loading of a dam during impoundment, loading of a diaphragm wall during excavation or loading of a bridge deck due to wind and traffic.

Data from model EAN-31EL tilt meter, EAN-31EL-B beam sensor provides early warning of threatening deformation, allowing time for corrective action to be taken or if necessary, for safe evacuation of the area.

## DESCRIPTION

### Model EAN-31EL tilt meter

Model EAN-31EL tilt meter is housed in a compact, weatherproof, aluminium die cast enclosure and is generally used as a stand-alone unit for measuring tilt. The tilt sensor is a precision ceramic encapsulated electrolytic bubble-level sensor that acts as a resistance bridge when sensed electrically.

The tilt meter is attached directly to the structure whose tilt is to be monitoring using suitable mounting brackets. Movement of the structure causes change in tilt of the tilt sensor, which results in change in output of the sensor.



### Model EAN-31EL-B beam sensor

Model EAN-31EL-B is a beam sensor in which EAN-31EL tilt meter is mounted on top of an aluminum metal beam, which can be 1 m, 2 m, or 3 m long.

EAN-31EL-B beam sensor is designed for monitoring differential movement and rotation in a structure. The EL beam sensors can also be used in linked form (end to end). The displacement in such case is calculated for each sensor and then the readings are accumulated to give a profile of differential movement/settlement.

## OUTPUT

The output from resistance bridge of the EL tilt sensor is in form of voltage. The sensor has a precision signal conditioner that provides a nominal  $\pm 1$  V dc full scale voltage output, proportional to the measured tilt.

The sensor can be used with virtually any available indicator or datalogger that can measure differential voltage output. It needs a nominal 12 V dc excitation supply generally available in most dataloggers. Polynomial linearization coefficients are provided with each sensor.

The readings can also be read or logged at a remote location by an automatic data acquisition system like Encardio-rite model EDAS-10 or automatic compact datalogger like model ESDL-30 with a SDI-12 digital interface.

## SPECIFICATION

Sensor	Electrolytic level type Uniaxial
Measuring range**	$\pm 1^\circ$ (60 arc minute)
Linear range	$\pm 0.5^\circ$ (30 arc minute)
Output (nominal)	$\pm 1$ Volt (nominal) at $0.5^\circ$
Resolution	1 arc second
Zero adjustment	Each sensor is provided with a thumb screw arrangement for fine adjustment of mechanical sensor zero. Available adjustment range is approximately $\pm 4$ degree.
Repeatability	$\pm 3$ arc second -
Temperature limit	20 to $50^\circ\text{C}$
Sensor dimension	125 x 80 x 57 mm (EAN-31EL)
Beam dimension	38 x 38 mm, aluminium
Beam length	1, 2, 3 m; specify
Output cable	6 core PU shielded cable.

\*\* Polynomial linearization co-efficients are provided for utilizing full measurement range of  $\pm 1^\circ$ .

## ORDERING CODE

**EAN-31EL-B-X**—Length of beam