



# EL (ELECTROLYTIC LEVEL) BEAM SENSORS

## MODEL EAN-40EL

### OVERVIEW

The Encardio-rite model EAN-40EL EL (Electrolytic Level) beam sensor is suitable for monitoring of differential movement and rotation in structures. This sensor can also be used for monitoring deflection and deformation of retaining walls.



Tilt changes may be caused due to construction activities such as excavation, tunneling and de-watering that affect the 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-40EL EL beam sensor provides early warning of threatening deformations, allowing time for corrective action to be taken or if necessary, for safe evacuation of the area.

Encardio-rite model EAN-40EL EL beam sensor is rugged in construction and has excellent temperature stability. It consists of an electrolytic tilt sensor housed in a metal beam, which is 1 or 2 m long. The tilt sensor is a precision bubble-level that acts



### FEATURES

- ♦ Suitable for hostile & severe environment.
- ♦ Rugged & robust construction and excellent temperature stability.
- ♦ Easy to install and take readings.
- ♦ Reliable readings.
- ♦ Readings can be taken by remote datalogger.

### APPLICATIONS

- ♦ Monitoring deflection and deformation of retaining walls.
- ♦ Monitoring structures for effects of tunneling and excavating.
- ♦ Monitoring stability of structures in landslide areas.
- ♦ Monitoring tunnels for convergence and other movements.
- ♦ To evaluate performance of bridges and struts under load.

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as resistance bridge when sensed electrically.

Movement of the structure, on which the beam is mounted by bolts, causes change in tilt of the beam, which results in change in output of the sensor. The voltage output from the resistance bridge of tilt sensor is proportional to the tilt of the EL beam sensor. This voltage output can be

converted to get tilt readings in mm per meter. Displacement can be calculated by subtracting initial tilt reading from the current one and multiplying by the gage length of the sensor. Gage length is the distance between anchors.

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 OPTIONS

The EL beam sensor is available with two output options; raw output or voltage output.

#### Raw output

In the raw output option, the electrolytic level sensor is directly connected to the output terminals without any signal conditioning. This sensor behaves as a half bridge and can be sensed using ac excitation. Polynomial linearisation coefficients are provided for use with Campbell Scientific's CR-10X datalogger. Up to 32 beam sensors can be connected to a CR-10X using an AM-416 multiplexer. This is an economical sensor but is recommended for use with CR-10X datalogger only.

#### Voltage output

Voltage output sensor has a precision signal conditioner that provides a nominally 1 V dc full scale voltage output, proportional to the measured tilt. It can be used with virtually any available indicator or datalogger that can measure differential voltage output. It needs an auxiliary 5 V to 12 V dc excitation supply generally available in most dataloggers. Polynomial linearisation coefficients are provided with each sensor.

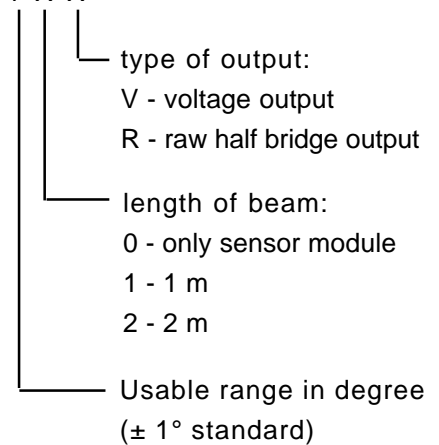
### SPECIFICATIONS

Sensor	Electrolytic level type, uniaxial
Measuring range**	$\pm 1^\circ$ (60 arc minutes)
Linear range	$\pm 0.5^\circ$ (30 arc minutes)
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 $\pm 4$ degrees.
Repeatability	$\pm 3$ arc second
Temperature range	- 20°C to 55°C
Beam	38 x 38 mm aluminium beam with sensor compartment and cover

\*\* Note: Polynomial-linearisation co-efficients are provided for utilising full measurement range of  $\pm 1^\circ$

### ORDERING INFORMATION CODE

Model: EAN-40EL-1-X-X



All specifications are subject to change without prior notice

## ENCARDIO-RITE ELECTRONICS PVT. LTD.

A-7 Industrial Estate, Talkatora Road, Lucknow, UP 226011, India

Tel +91 (522) 2661044, 2661040 Fax +91 (522) 2661043 E-mail sales@encardio.com

Visit us at: [www.encardio.com](http://www.encardio.com)

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