ENCARDIO RITE
METASENSING FOR MEGA STRUCTURES

CENTER HOLE LOAD CELL HIGH CAPACITY

DATASHEET

MODEL ELC-30S-H

OVERVIEW

The Encardio Rite model ELC-30S-H load cell is is a high-capacity version of model ELC-30S center hole load cell, designed for civil engineering applications requiring precise measurement of **large** tensile or compressive loads. With a capacity range from 3500 kN to 10,000 kN, this load cell is ideal for demanding structural assessments where higher loads are involved.

Featuring a central hole design, this load cell can easily accommodate rock bolts, anchors, tiebacks, foundation anchors, cables or other structural elements. It is also employed in measuring compressive loads between structural members, such as tunnel supports or at the junction between a beam and the top of a pile strut.

The ELC-30S-H load cell uses sixteen high-quality foil strain gauges in a Wheatstone bridge, ensuring exceptional accuracy and reliability even at high load levels. It is constructed from martensitic stainless steel that has excellent mechanical properties, including high strength, toughness, and resistance to wear and corrosion. This makes it ideal for use in challenging civil engineering applications, such as deep excavations, tunnels, dams, and bridges.

FEATURES

- **High capacity measurement:** Designed for large-scale loads, with capacities ranging from 3500 kN to 10,000 kN.
- **High precision**: Utilizes sixteen 350 Ohm foil strain gauges configured in a 1400 Ohm bridge (>5000 kN range), ensuring high accuracy and repeatability with enhanced linearity and reduced hysteresis.
- **Robust construction:** Made from high-stregth martensitic stainless steel, the load cell is highly resistant to corrosion and mechanical stress.
- **Durable design:** Resistant to extraneous forces, enhancing fatigue life and allowing for less stringent mounting alignment, thereby reducing the likelihood of reading errors.
- **Temperature compensated:** Individually temperature compensated to minimize temperature-induced measurement errors.
- **Calibration and Compliance:** Each load cell is calibrated and complies with industry standards, ensuring accuracy and quality.
- **Negligible side and eccentric load effect**: The strain gauges are equally spaced to minimize the effects of uneven and eccentric loading, reduce positioning errors, and provide consistent millivolt output.
- **Versatile datalogging:** Compatible with various readout units for manual data collection. For continuous monitoring, it can be connected to a suitable datalogger, allowing for data acquisition at desired frequencies.

  Encardio Rite offers a range of NexaWave dataloggers equipped with GSM/GPRS or RF communication capabilities, ensuring reliable and efficient data transmission.
- **Infrastructure data intelligence platform**: Integrates with Proqio software to facilitate data processing, analysis, and real-time visualization, and generates instant alarms for critical events to keep all stakeholders informed.
- **Cross-Compatibility:** The load cell can work with any manufacturer's Dataloggers and Data Management Systems.

DESCRIPTION

The ELC-30S-H center hole load cell shares the robust construction of the ELC-30S model, with enhancements for high-capacity measurement. It comprises of a cylinder of high-strength martensitic stainless steel onto which 350 Ohm foil strain gages are bonded, wired to form a Wheatstone bridge circuit.

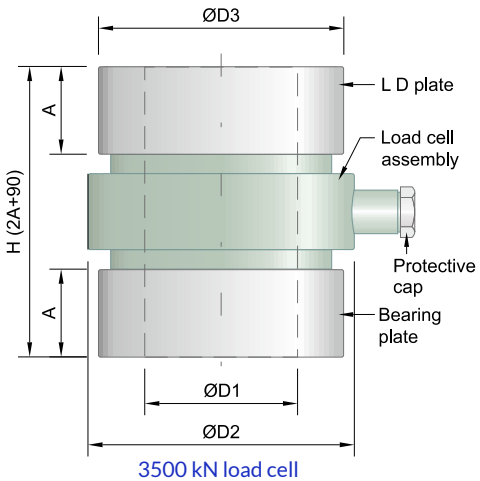
For capacitities 3500 and 5000 kN, eight strain gages are used to form a 700 Ohm bridge configuration, while for 7500 and 10,000 kN capacities, sixteen gauges are used to form a 1400 Ohm bridge configuration. To minimize the effect of uneven and eccentric loading, the strain gages are equally spaced along the circumferences.

The sectional area of the columnar element and the depth of the groove are adjusted in different capacity load cells to deliver consistent mV/V output across the full load range. As force is applied, imbalances within the bridge circuit generate an output, with the resulting electrical signal being directly proportional to the applied force. The load cell provides a full-scale output of approximately 1.5 mV/V when subjected to an excitation voltage of 10 VDC.

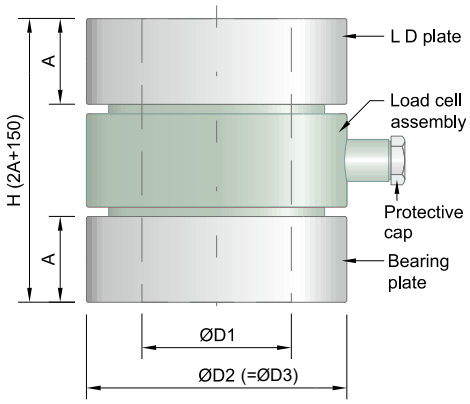
SPECIFICATIONS

Type	Resistive strain gage	
Range (kN)/ID (mm)	3500/185, 5000/202, 7500/225, 10000/208, or as specified	
Over range capacity	120 %	
Non linearity	± 1 % fs	
Output	1.5 mV/V ± 20 %	
Excitation	10 V DC (maximum 20 VDC)	
Terminal resistance	*3500 kN*	*5000-10,000 kN*
Input	770 Ohm ± 5 %	1540 Ohm ± 5 %
Output	700 Ohm ± 1 %	1400 Ohm ± 1 %
Temperature limit	-20 to 80°C	
Cable connection	Four core shielded 5 m long/or as specified; with suitabke connector	

DIMENSIONS



3500 kN load cell



5000, 7500 kN and 10,000 kN load cell

ORDERING INFORMATION

Model ELC-30S- H-**X/Y**

Capacity kN/ID

Centre hole load cell					Load distribution/Bearing plates			
Capacity kN	ID (D1) mm	OD (D2) mm	Ht. mm	Wt. kg	ID (D1) mm	OD (D3) mm	Ht. (A) mm	Wt. kg
3500	185	260	90	11	185	250	60	11
5000	202	295	150	34	202	295	70	20
7500	225	315	150	36	227	315	70	21
10000	208	315	150	42	210	315	80	28

**All specifications are subject to change without prior notice*

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