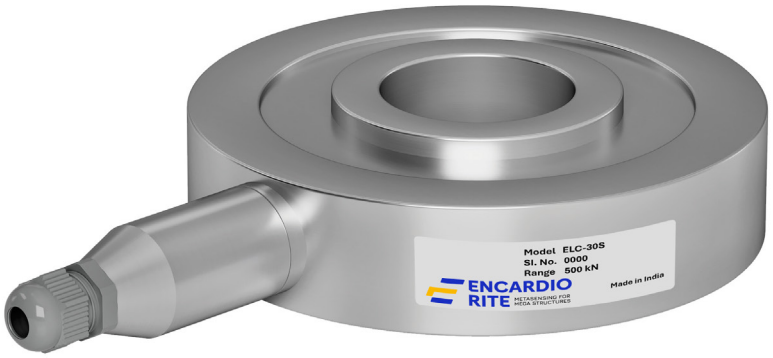
ENCARDIO RITE
METASENSING FOR MEGA STRUCTURES

CENTER HOLE LOAD CELL

DATASHEET

MODEL ELC-30S



OVERVIEW

The Encardio Rite model ELC-30S anchor bolt (center hole) load cell is a highly reliable and precise instrument designed for monitoring tensile and compressive loads in various structural applications. It is available in capacities ranging from 200 kN to 2000 kN, making it versatile for various load measurement requirements.

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 load cell utilizes high-quality foil strain gauges arranged in a Wheatstone bridge configuration, ensuring precise and stable measurements. The load-bearing element is constructed from martensitic stainless steel that has excellent mechanical properties, including high strength, toughness, and resistance to wear and corrosion. To further enhance its longevity and performance, the load cell is hermetically sealed using electron beam welding, making it ideal for use in challenging civil engineering applications, such as deep excavations, tunnels, dams, and bridges.

FEATURES

- **High precision:** Deliver exceptional accuracy and repeatability with enhanced linearity and reduced hysteresis, ensuring reliable data for critical structural assessments
- **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.
- **Hermetically sealed**: Sealed under a vacuum of 0.001 Torr, providing superior protection against environmental elements and ensuring long-term reliable performance.
- **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**: Eight strain gauges are mounted at 45° intervals 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 center hole load cell is constructed from high-strength martensitic stainless steel and incorporates eight 350 Ohm resistance strain gauges arranged to form a 700 Ohm bridge. To minimize the effects of uneven and eccentric loading, the strain gauges are precisely mounted at 45° intervals in a groove at the base of the stainless steel columnar element.

A stainless steel diaphragm, electron beam welded to the element, seals the groove, creating a vacuum of approximately 0.001 Torr inside the sensor. 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 2 mV/V when subjected to an excitation voltage of 10 VDC.

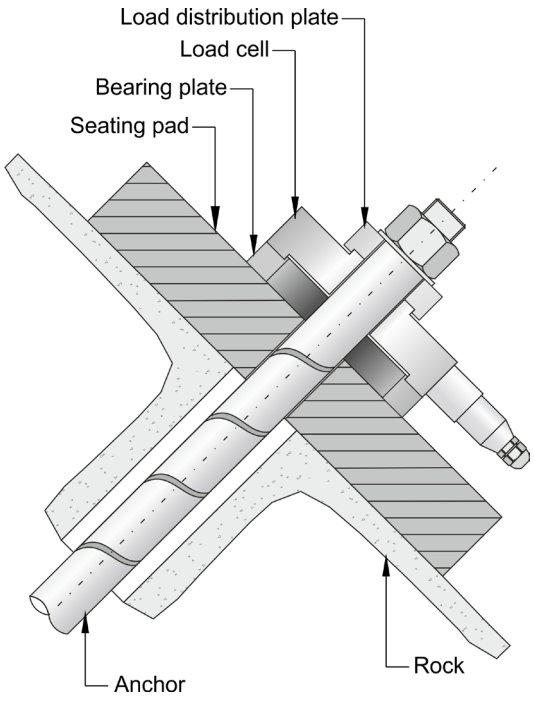
SPECIFICATIONS

Type	Resistive strain gage
Range (kN)/ID (mm)	200/40, 500/52, 1000/78, 1000/105, 1500/85, 1500/130, 2000/105, 2000/155 or as specified
Over range capacity	150 %
Calibration accuracy	± 0.25 % fs
Non linearity	± 1 % fs
Output	2 mV/V ± 10 %
Excitation	10 V DC (maximum 20 VDC)
Terminal resistance Input Output	 770 Ohm ± 5 % 700 Ohm ± 1 %
Temperature limit	-20 to 80°C
Cable connection	Six pin glass to metal seal

ORDERING INFORMATION

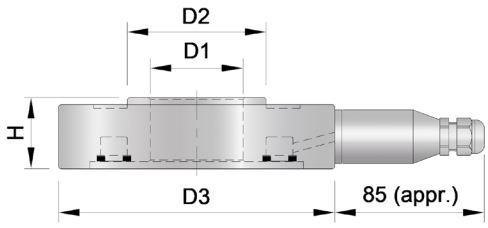
Model ELC-30S- **X/Y**

Capacity kN/ID



Typical installation scheme

DIMENSIONS



Centre hole load cell						Bearing plate			Load distribution plate			B & LD Plates
Capacity kN	ID (D1) mm	D2 mm	OD (D3) mm	H (Ht.) mm	Wt. kg	ID mm	OD (D3) mm	Wt. kg	ID (D1) mm	OD mm	Wt. kg	Ht. mm
200	40	60	155	40	5	116	155	2	40	75	1	23
500	52	78	155	40	5	116	155	2.5	52	98	1.5	35
1000	78	116	200	40	7	150	200	5	78	135	3.5	45
1000	105	138	225	40	8	172	225	6	105	155	4	45
1500	85	130	225	55	12	165	225	8	85	150	5.5	55
1500	130	165	260	55	14.5	200	260	9.5	130	180	5.5	55
2000	105	160	260	55	16	195	260	12	105	180	9	65
2000	155	192	260	55	12.5	226	260	7	155	210	8.5	65

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

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Encardio-Rite Electronics Pvt. Ltd. A-7, Industrial Estate, Talkatora Road, Lucknow, UP-226011, India | info@encardio.com | T: +91 522 2661039-320