

**FRI**

Prosperity through research

Fire Research Institute

22/44, Ganganagar P. O., ICHALKARANJI - 416 116.

(Dist.Kolhapur) Maharashtra State, INDIA.

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Accreditation No. NABL C0066

CALIBRATION CERTIFICATE OF FORCE MEASURING DEVICE

Date of calibration : 12/01/2014 Certificate No. : FRI/01/14/6608
Next calibration due on : 12/03/2016 Page No. : 1/2

Calibrated for : Krutam Techno Solutions Pvt.Ltd.
64/B, G.I.D.C, Makarpura Industrial Estate,
Behind Fire Brigade Station, Vadodara 390 010

Customer Reference No. : D.C.No. 01 Dated on 10/01/2014

Identification : Load cell make : ADI Artech
Model : 20210
Sr. No. : 624120 (Id.No. KTPL/F/006)
Capacity : 200 kN
Readout : Nisan
Model : LC-0204
Sr. No. : 624120
Resolution : 0.05 kN

Date of receipt : 11/01/2014

Mode of Calibration : Compression

Machine used for calibration : Hydraulic Multiplication System (NPL-FIE-001)


Traceability : NPL,Cert.No.12031657/D5.05/C-085 valid up to 07/07/14


Read out setting : NIL

Temperature : 24°C

Note : 1) Compression test were made out by using self-aligning Compression pads provided with the force - measuring device.
2) Readout with load cell warmed up for 30 min. before calibration.
3) Calibration is done as per IS:4169-1988.
4) The reported uncertainty is at coverage factor k=2 which corresponds to a Coverage probability of approximately 95% for normal distribution, considering the relative error of different components such as zero, Resolution, Repeatability, Interpolation and combining the uncertainty of applied force.


U. V. Patil
(Sc. Assistant)


R. V. Tambad
(Sr. Engineer)


Dr. J. C. Padte
(Director)

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Identification : Load cell make : ADI Artech
Sr. No. : 624120 (Id.No. KTPL/F/006)

Calibration method : The Load cell is calibrated in Compression as per FRI Calibration procedure
No. FRICAL/CAL/02 based on IS:4169-1988


Results : The calibration results are valid for specific force steps/ interpolation

Applied force (kN)	Deflection (kN)			
	Series 1 at 0°	Series 2 at 180°	Series 3 at 360°	Average
20	20.05	20.10	20.05	20.07
40	40.05	40.10	40.05	40.07
60	60.05	60.05	60.05	60.05
80	80.05	80.05	80.05	80.05
100	100.00	100.05	100.05	100.03
120	120.05	120.00	120.00	120.02
140	140.00	140.00	140.00	140.00
160	160.00	160.00	160.00	160.00
180	180.00	180.00	180.00	180.00
200	199.95	200.00	199.95	199.97

Polynomial Used : $Y = 0.075 + 0.9997709466 * X - 0.000002501 * X * X + 0.0000000057 * X * X * X$
Where X = Force in kN, Y = Average reading in kN

Class	Mode	From	To	Uncertainty of measurement
Class 0	Compression	200 kN	100 kN	± 0.080%
Class 1	Compression	200 kN	60 kN	± 0.120%
Class 2	Compression	200 kN	20 kN	± 0.240%


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