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Fie Research Institute

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Accreditation No. NABL C0066

CALIBRATION CERTIFICATE

OF FORCE MEASURING DEVICE

Date of calibration	: 28/08/2014	Certificate No.	: FRI/08/14/7120
Next calibration due on	: 28/10/2016	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.	: Request Letter Dated 20/08/2014
Identification	: Load cell make : ADI Artech Model : 20210 Sr. No. : 699038 Capacity : 10 kN Readout : ADI Model : LI - 5000 Sr. No. : 2201 Resolution : 1 N
Date of receipt	: 20/08/2014
Mode of Calibration	: Tension
Machine used for calibration	: Dead Weight Force Calibration Machine (FIE-DWP-003)
Traceability	: NPL,Cert.No.14070367/D5.05/C-253 valid up to 22/07/16
Read out setting	: Nil
Temperature	: 24°C
Note	: 1) Tension test were made out by using self-aligning Tension shackles 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. : 699038

Calibration method : The Load cell is calibrated in Tension 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 (N)			
	Series 1 at 0°	Series 2 at 180°	Series 3 at 360°	Average
0.5	498	498	498	498
1.0	997	997	997	997
2.0	1998	1999	1999	1999
3.0	2996	2996	2996	2996
4.0	3996	3995	3995	3995
5.0	4993	4994	4994	4994
6.0	5992	5993	5993	5993
7.0	6992	6992	6992	6992
8.0	7991	7991	7991	7991
10.0	9987	9987	9987	9987

Polynomial Used : Y = -1.7615901727+999.6165873137*X-0.0910705635*X*X+0.0019537891*X*X*X
Where X = Force in kN, Y = Average reading in N

Class	Mode	From	To	Uncertainty of measurement
Class 0	Tension	10.0 kN	3.0 kN	± 0.060%
Class 1	Tension	10.0 kN	2.0 kN	± 0.120%
Class 2	Tension	10.0 kN	0.5 kN	± 0.240%

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