



**PRODUCT MANUAL FOR  
ELECTRONIC WEIGHING SYSTEMS  
ACCORDING TO IS 9281 (Part 3): 1981**

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	IS 9281 (PART 3): 1981
	<b>Title</b>	:	ELECTRONIC WEIGHING SYSTEMS
	<b>No. of Amendments</b>	:	1
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Not Applicable
b)	<b>Grouping guidelines</b>	:	Please refer <a href="#">ANNEX – A</a>
c)	<b>Sample Size</b>	:	One sample of Electronic Weighing System
3.	<b>List of Test Equipment</b>	:	Please refer <a href="#">ANNEX – B</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer <a href="#">ANNEX – C</a>
5.	<b>Possible tests in a day</b>	:	Please refer <a href="#">ANNEX – D</a>
6.	<b>Scope of the Licence :</b>	:	Please refer <a href="#">ANNEX – E</a>

**ANNEX A**

**Grouping Guidelines**

1. Electronic weighing systems are manufactured with different class of accuracy and each accuracy class may have a number of capacities of weighing systems. Different capacities of weighing systems of each accuracy class are manufactured with:
  - i. Similar type of load cell with same sensitivity,
  - ii. Same type of electronic indicator and
  - iii. Same design and material platform.
2. For the purpose of GoL/CSoL of additional class of accuracy weighing systems and various capacities in a particular class of accuracy weighing systems, one sample of one capacity from each accuracy class weighing system shall be tested for all the requirements of ISS to cover that particular class of accuracy weighing systems with all capacities.
3. The Firm shall declare the varieties of Electronic Weighing Systems they intend to cover in the Licence.
4. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

**ANNEX B****List of Test Equipment***Major test equipment required to test as per the Indian Standard*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1.	Rated Load as per Cl. 3.2 & Table 2	a) Digital Multimeter/ Oscilloscope b) Standard Weights
2.	Accuracy, Non-linearity, Resolution as per Cl. 3.2 & Table 2	a) Digital Multimeter/ Oscilloscope b) Standard Weights
3.	Drift of no load output with temperature, Drift of no load output with time after 1 hr, Drift of full scale output with time after 1 hr as per Cl. 3.2 & Table 2	a) Digital Multimeter/ Oscilloscope b) Standard Weights c) Temperature and Humidity Chamber d) Stop Watch
4.	Transducer excitation & distortion/regulation, Tolerance on Operating Voltage as per Cl. 3.2 & Table 2	Voltage Variac with Digital Meter

*The above list is indicative only and may not be treated as exhaustive.*

**ANNEX C**

**Scheme of Inspection And Testing**

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipments.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirement of IS 9281 (Part 3): 1981.

**4. CONTROL UNIT** – All the electronic weighing systems of same class and rating manufactured in a week shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

**TABLE 1**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3.1	Electrical Load Cells	3.1 & Table 1	IS 9281 (Part 3): 1981	S	One	Each Consignment	No further testing is required if accompanied with test certificate.
3.2	<b>Total Electronic Weighing Systems</b>						
	Rated Load	3.2 & Table 2	IS 9281 (Part 3): 1981	R	Each weighing machine		—
	Accuracy						
	Transducer excitation & distortion/ regulation						
	Non-linearity						
	Number of scale division						
	Resolution						
	Tare Provision						
	Display						

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
	Overload Indication	3.2 & Table 2	IS 9281 (Part 3): 1981	R	One	Every 4 <sup>th</sup> control unit or once in a month whichever is earlier	In case of failure, one sample from each control unit shall be tested & marking done only if the samples meet the requirements of test. After 5 consecutive samples have been found passing, the original frequency shall be restored.
	Response to full scale						
	Warm up periods						
	Weight						
	Dimensions						
	Operating voltage & frequency						
	Tolerance on Operating Voltage						
	Operating temperature						
3.2	Drift of no load output with temperature	3.2 & Table 2	IS 9281 (Part 3): 1981	S	One	Once in 6 months	In case of failure, one sample from each control unit shall be tested & marking done only if the samples meet the requirements of test. After 5 consecutive samples have been found passing, the original frequency shall be restored.
	Drift of no load output with time after 1 hr.						
	Drift of full scale output with time after 1 hr.						
	Internal Calibration						
	Recording						
	Speed of measurement						

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
3.2	Environmental condition	3.2 & Table 2	IS 9281 (Part 3): 1981	S	One	Once in a year	—

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

**ANNEX D**

**Possible Tests in a Day**

- Rated Load
- Accuracy
- Non-linearity
- Resolution



**ANNEX E**

Licence is granted to use Standard Mark as per IS 9281 (Part 3): 1981 with the following scope:

Name of the product	:	Electronic Weighing Systems
Model	:	Platform/ Table/ Bench
Electrical Load Cells/ Electronic Weighing System	:	Class 1/Class 2/ Class 3
Non-linearity	:	$\pm x.xxx\%$
Operating Voltage	:	
Frequency	:	
Rated Range(s) (In kg or grams)	:	
Resolution (In percentage w.r.t. rated output)	:	