



Specification of
TRAIN SPEED RECORDER
(Spec. No. - TM/SM/TSR/221dt.16.04.2004)
(FIRST REVISION –01 of 2020)

Track Machines & Monitoring Directorate
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SSRE/SSE/JRE	ARE/DTM/EDTM	PEDTM	Page 1 of 5
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1.0 SCOPE:

- 1.1 This specification covers the functional and material requirements with testing criteria of Train Speed Recorder which is a device for measurement of speed of the passing train in both double and single line track.
- 1.2 The instrument can be preset at any desired speed upto 200kmph and the print out will mark all speeds above the preset speed as ‘excess speed’.

2.0 REFERENNCE:

Following specification / Code of IS has been referred to in this specification. This specification / Code with updated amendments /revision should be available at firm’s Works.

i) IS: 9848-1987(Reaffirmed 2003): Specification of Brief Case – Plastic Body.

3.0 MATERIAL REQUIREMENT:

- 3.1 Casing: The entire device shall be encased within a good quality plastic moulded suitcase conforming to IS: 9848-1987(Reaffirmed 2003). The electronic circuits, display unit and printer with control panel shall be fixed within the suitcase suitably.
- 3.2 Train Speed recorder and its fixing arrangement shall be portable, simple and light in weight (within 20 kg approx.). The track transducer (sensor) shall be electronic and non-infringing type to suit all rail sections. The rail fixtures shall be made of non-ferrous, durable and light metal and shall not be affected by weather.
- 3.3 The electronic circuitry shall consist of medium large scale integrated circuits with micro-controllers for reliable trouble free operation with lowest power consumption. Latest technology shall be employed for manufacture of all electronic circuits/parts and these shall be indigenously available.
- 3.4 Power Source: Durable and good quality re-chargeable battery shall be used as power source. After one full charging the battery shall be able to sustain recording of speeds for at least two days continuously for section having around 100 trains / day. Stand by time shall be at least 1 week. Overall life of battery shall not be less than 2 years.

4.0 FUNCTIONAL REQUIREMENTS:

The device shall fulfill the following minimum requirements:

i.	Range of Speed	01 to 200kmph
ii.	Traffic condition	Bi-directional on double lines.
iii.	Mode of speed Measurement	Repetitive speed measurement on passage of atleast every fourth wheel set
iv.	Tolerance of speed measurement	01% for all speeds
v.	Calendar and time recorder	High stability crystal based real time clock to drive calendar & time shall be provided. Clock shall function even after the external battery is physically removed for a week. The clock shall have an accuracy of atleast 1 micro sec.
vi.	Control Panel	The control panel shall have digital display unit for calendar & time clock, track no., location, train direction (UP & Dn), knobs for setting printer, calendar & time clocks, train speed (in kmph), and power OFF/ON switch. Preferably self-inked paper roll should be used in the printer for recording.
vii.	Installation	The unit should easily be installed with not more than two semi-skilled workmen within 15 to 20 minutes.
viii.	Climatic condition	The device shall work in worst weathering condition as per Indian climate & shall be capable to function smoothly in electrified section.
ix.	Weight of the instrument	Maximum 20 kg (Approx.) including battery, cable etc.

5.0 MARKING & PACKING :

5.1 Each TSR shall be legibly and indelibly marked with following details:

- i) Name, initials and trade-marks of manufacturer.
- ii) Contact details of manufacturer/Supplier.
- iii) Serial number of TSR.
- iv) Month and year of supply.

5.2 The TSR shall be packed in wooden/suitable carton after covering with good quality plastic sheets as per best trade practice to avoid any damage during transshipment.

6.0 TESTING :

6.1 **Type test:** The firm shall offer two prototype samples of the train speed recorder for type tests. Before offering for type test, the firm shall conduct internal tests and produce certificate to the inspecting officials before commencement of type tests.

6.1.1 **Visual test:** The train speed recorder shall be visually checked regarding all components and their locations as per the drawing and design of the manufacturer.

6.1.2 **Operation test:** The operations like functioning of transducers, train simulation, printer, working of calendar and clock etc. shall be checked.

6.1.3 **Field test:**

a) The train speed recorder shall be tested in field in main line/yard line. Recording to be done continuously for at least 20 nos. of trains.

b) After conducting the above test, the speed recording by the recorder shall be checked by testing the speed of an engine / train in station yard / main line for at least five different speeds and compare the same with actual speed of the engine / train during the trial from the speedometer of the engine situated in driver's cabin.

6.2 The supplier/manufacturer shall provide all testing facilities including transportation that are required by the inspecting officials for proper inspection of the unit. In case these facilities are not available at manufacturer/supplier premises, they shall be required to get them arranged in the nearby test house or institution approved by the purchaser.

6.3 **Acceptance test:** The firm shall make all arrangements to conduct following acceptance tests before offering the samples for type test/acceptance test by the inspecting officials.

- i) Visual test as per clause no. 6.1.1
- ii) Operation test as per clause no. 6.1.2
- iii) Field test as per clause no. 6.1.3

The firm shall produce following certificates during acceptance/type tests:

- a) Internal test certificate.
- b) Raw material certificate

7.0 INSPECTIONS:

7.1 The inspection of the train speed recorder shall be carried out as per clause no. 6.3.

7.2 In case of the recorder fails during the test in any of the tests, mentioned in clause 6.3, the device shall be rejected.

7.3 In case of any dispute between the inspecting officials and manufacturer /supplier, the decision of the inspecting team shall be the final.

8.0 WARRANTY & AMC:

i) The equipment shall have warranty for smooth & trouble free working for a period of two years from the date of commissioning of the machine during which all spare parts, services

would be supplied by the firm free of any additional cost. Beyond two years warranty, the firms shall undertake to have AMC with the Railways, rate of which would preferably be agreed upon at the time of supply itself.

- ii) During procurement of the TSR, railways should go post-warranty AMC with the supplier for a pre-determined period as decided by the purchaser railway. This may be incorporated in the tender document as a condition of contract/Tender/Supply. For procurement of TSR with AMC, Comprehensive Guideline on Procurement, Operation, Maintenance and Repair of Small Track Machines (report No.TM-227) may be referred.

9.0 DRAWING AND MANUALS:

- 9.1 A copy of circuit diagram and necessary drawings etc. of the machine shall be supplied with each set.
- 9.2 Detailed Operating manual, safety precautions, maintenance / service manuals and Troubleshooting instructions shall be supplied with every set of the recorder.

10.0 TRAINING & COMMISSIONING:

- 10.1 The manufacturer/supplier shall arrange training (free of cost) of two railway officials for each device, at the time of delivery of the consignment by arranging field demonstration. They shall also train the officials regarding minor repair, maintenance and trouble shooting of the device for smooth working.
- 10.2 After the TSR has been supplied at consignee premises, the supply shall be considered as complete only after field training is provided by the supplier as stated above.
- 11.0 All the provisions contained in RDSO’s ISO procedures laid down in Document No. QO-D-8.1-11 dated 01.07.2020 (titled Vendor – Changes in approved status”), subsequent versions / amendments thereof shall be binding, and applicable on the successful manufacturers/suppliers in the contracts floated by Railways to maintain quality of products supplied to Railways.
- 12.0 **Preference to Make in India:**
The Government of India policy on ‘Make in India` shall be applicable for this specification.

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