

Automatic Pitless Inmotion Electronic Rail Weighbridge

- Compliant with OIML standards
- Compliant with RDSO standards
- Compliant with Legal Metrology Act 2009



Pit less Automatic In-motion Electronic Rail Weighbridge

At Maxim we are consistently working to develop and upgrade for technology for improving the accuracy of our Railway in-motion weighing system with minimum straight rail line and with modest curvature. This is a Pitless Full Draft Rail In-motion Weighing System having rail mountable load sensors with enhanced software capabilities. Our systems are compliant to OIML, BIS and RDSO standards. Government of India has approved our In-motion Automatic Rail Weighbridge under accuracy class 0.2 OIML R106. Our In-motion Rail Weigh bridge is suitable for weighing speed up to 15 kmph on a railway track anywhere on Indian Railways and Where junction Railway or any similar locomotives and / or rolling stock ply for measurement of tare, gross and net weight of goods wagons while in motion both in coupled and uncoupled conditions.

Bill of Material for Pitless automatic In-motion Rail Weighbridge

1	Weigh Rails embedded with two weighing sensors	02 No.	6	Advance Over Speed Warning System(one no. lamp post & two nos. purple Led/ Amb)	01 Set.
2	Track sensors (Track switches)	04 No.	7	Windows based Dynamic Rail weighing software	01 Licence
3	Junction Boxes for load sensors and track switches	01 No.	8	Industrial Control Computer	01 No.
4	Lightening and surge Arrestors	01 Set.	9	Printer	01 No.
5	Digitizer	01 No.	10	UPS for Computer & weighing electronics	01 No.

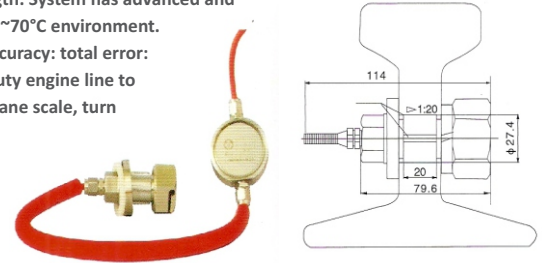
Weigh Rails With Transducer (Load Sensors)

The load sensors are of directly bolt on / stick on strain gauge type and hermitically sealed. The strain gauges conform to OIML. The strain gauges are environmentally insensitive to dampness, polluted environment and are suitably temperature compensated to take care of temperature variations ranging from 0 to 70 degree Celsius. The output signals from the load cells are high enough to make it insensitive to the electrical disturbances.

Products character and performance:

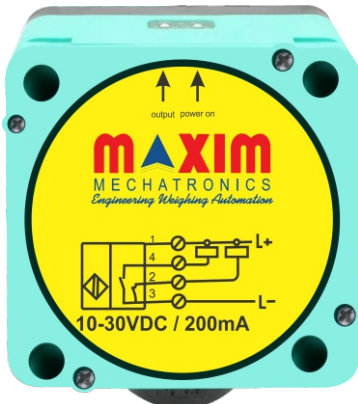
Easy installation: install or calibrate in application spot, no need blockage rail traffic. Shake resistance ≥ 6 million times, safe and reliable suit for national railroad dept request. Suitable in 43kg, 50kg, 60kg rail system; rail length can make 12.5m-25m, meet the request of national and international popular rail length. System has advanced and reliable lightning proof SPD, balance bridge protector equipment. Load Cell waterproof performance is IP68 standard, satisfy 30~70°C environment.

Measuring types: Axle wheel measuring, wheel measuring, directional turned frame measuring or vehicle measuring. Sensor accuracy: total error: 0.05~1% F.S. Application field: railway, steel, metallurgy, port dock, mine, energy source, cement construction material, heavy-duty engine line to make static, dynamic iron water tank vehicle, iron water vehicle, messed iron vehicle, tank vehicle, cargo vehicle, coal vehicle, crane scale, turn over machine, train center of gravity testing, peak value testing, over load testing system for light or heavy rail weighing system.



Load Sensors Parameters & Performance Table

Rated Load	200KN	Insulation resistance	$\geq 5000M\Omega$
Sensitivity	2.0mV/V	Operating Temperature Range	-30°~+70c
Total error	0.05,0.3,1%F.S	Safe load limit	150%F.S
Creep	0.1%F.S	Lateral load limit	300% F.S
Zero balance	1% F.S	Recommended excitation	10~12VDC
TCO	0.5%F.S/10C	Imaximum excitation	<u>15VDC</u>
TC SPAN	0.5%F.S/10C	Protection class	Ip68
Input resistance	35010 Ω	Material/Construction	Alloy steel



Track sensors (Track switches)

Sensing will be through Track Switches. Track Switches are rugged and weatherproof. They are of non-contact type proximity sensors. These Non-contact type Track Switches are provided to sense approach of the train from either direction, for speed measurement, to discriminate type of axle combination, to define weighing zone, to start & stop " Weighing cycle "

Junction Boxes

IP 66 certified weather proof Junction Boxes are provided to house summation cards for summing the signals received from the different sensors and switches of the weighing system. Airtight cable glands for routing of cables are provided to ensure prevention of moisture and dust ingress which prevents the possibility of signal distortion.



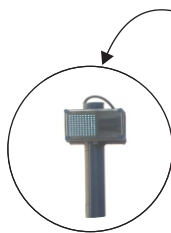
Digitizer

Each Weigh Bridge has independent Digitizer for processing the signal generated by the strain gauges and that by track switch logic. The DS 505 Digitizer is housed in a sheet metal fabricated panel suitably reinforced. The panel is dust and vermin proof and conforms to IP 55 protection class. A block diagram of the processor is enclosed. The Digitizer has microprocessor based circuitry with solid state integrated circuits to effect fast and reliable operation. The Digitizer is constructed to the highest international standards, embodies the latest techniques and utilizes the best components to ensure highest possible reliability and integrity, even when used in harsh industrial environment. The system can operate over a wide temperature range without affecting the accuracy and reliability the multiprocessor technology of the system allows independent processing of weight, rack logic and communication ensuring fast and accurate weighment. The system automatically monitor movement of wagon to initiate weigh cycle Wagon movement on the Weigh Bridge is identified by Track Switch, placed on either side of the track switch to detect direction, type of wagon, start and stop weighment. Power Supply to the Digitizer will be 230V, (+) / (-) 10 %, 50 Hz, Single phase AC. A Voltage stabilizer / Line Conditioner will also be provided. The other features, facilities are detailed below.

·Modular construction ·Analog digital converter with filter ·RFI /EMI signal protection to provide high level of signal integrity even in harsh Industrial environment ·Automatic zero maintenance ·Diagnostic facility ·Auto calibration ·Built in surge arrester for protection electronic circuits ·25 mm digital display and real time clock to display date and time ·RS 232 interfaces and Centronics parallel interface to the printer 10 RS 485 ·Option for operation of Weighing System with the help of Digitizer without the help of PC (in case of failure of PC) ·Pass Word Protection ·Auto / manual mode of operation of the system. ·System will ignore Locos ·All the control logic in the system will be achieved through semi conductor devices and will be free of relay logic.

Lightening and Surge Arrestors

Adequate protection against electrical surges arising from high voltage traction system, line transients and lightening are provided through coordinated type lightening and surge arrestors to avoid damage/malfunctioning in the equipment, which includes all the sub-systems like rail transducers, track sensors, weighing system electronics, power equipment & battery backup, etc.



Advance over speed warning system

An audio visual warning is provided for guiding the driver for controlling the speed before the train approaches the weigh bridge. The advance over speed warning system is installed at a suitable height and location to provide visibility from both sides to train crew approaching the weighbridge and during course of weighment of rake.

The color of visual indication will be Purple, with provision of LED's as the light source & it has two aspects:

- Steady - When the speed of the train is within specified limits.
- Pulsating - When the train is over-speeding.

SOFTWARE & REPORT

As Per System requirement, the software are interactive in nature and capable of creating files for each rake received at the siding with the information about wagon serial number and its weight for each empty rake and loaded rake separately with rake identification. The software package provide is window based and through the software communication with weighing system is possible. The software will have password security to prevent unauthorized access to the data.

The weighing ticket format will as follows:

- Wagon No · Wagon ID · Product · Suppliers Name · Speed of Wagon
- Date, Time in / Time out · Customer Name · Gross Weight · Tare Weight · Net Weight
- Weighment Status

The software system is capable of generating the following reports:

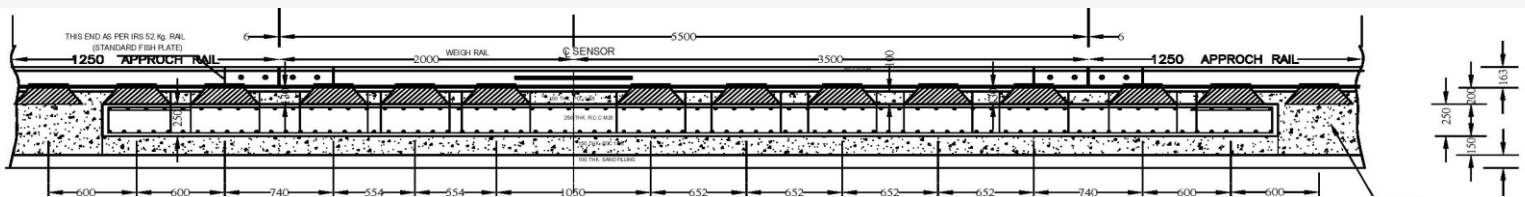
- Rake wise report · Daily Report · Monthly Report · Customer wise Report

Track requirement: A minimum of 100 meter straight rail track length should be made available with a gradient of not more than 1:400 on either side of Electronic In-Motion Rail Weighbridge. This portion of the track should be on ballast cushion, well maintained and well drained so that there is no water accumulation. The level, twist and alignment shall be maintained to main line track standard of Indian Railways. Slab type of foundation shall be provided underneath the weigh rail with concrete sleepers

Rake Information				
Select Gross Rake No	Rake No	R.R.No	Invoice No	Indent No
G1	01.03	1234	2345	03/01
From	Product	TO	PCC +	
CHENNAI	COAL	VTPS	4	
Please Select Gross Rake No and Fill all Entries.				Back

TECHNICAL SPECIFICATIONS OF INMOTION RAILWAY SCALE

Design	Pitless Type In-motion Rail Weighbridge
Type of Weighing	Axle Weighing
No. of Axles	2 and 4 axles wagons
Maximum Axle Load	45 MT
Sensor	Strain gauge based Rail mounted Bolt-on / Fix -on type
Type of Wagon	All types of standard Wagons of Indian Railways.
Weighing Capacity	100MT / 120MT / 150MT/ 200MT For Standard Wagons
Resolution / Increment	Selectable 20 kg / 50 kg / 100 kg
Maximum Weighing Speed	15 km/h , Non Weighing upto 40 km/h
System Accuracy	$\pm 0.5\%$ Individual Wagon, $\pm 0.2\%$ For Unit Train / Rake
Wagon And Loco Identification	Fully Automatic
Direction Of Weighing	Bi- Directional
Track Switch	Non Contact Type
Anti Roll Back	Inbuilt Upto 65000 Axles
Power Supply	230 V, + /- 10 %, single phase 50 Hz
Interface	IBM Compatible Keyboard, RS 232 / RS 485
Software	Windows Based Software



Pitless Inmotion Rail Weighbridge - 5.5 m

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