



Member State of OIML
United Kingdom of Great Britain
and Northern Ireland

OIML Certificate No
R106/1997-GB1-07.01
Revision 4

OIML CERTIFICATE OF CONFORMITY

Issuing authority: **National Measurement Office**

Person responsible: **Paul Dixon – Director, Product Certification**

Applicant: **Avery Weigh-Tronix
Foundry Lane
Smethwick
West Midlands B66 2LP
United Kingdom**

Manufacturer: **The applicant**

Identification of the certified pattern: **Railweight TSR4000**

This certificate attests the conformity of the above-mentioned pattern (represented by the samples identified in the associated test report) with the requirements of the following Recommendation of the International Organisation of Legal Metrology (OIML):

OIML R 106 - Edition 1997(E)
for **accuracy class**: 0.5 (coupled wagons) or 0.2 (total train)

This certificate relates only to the metrological and technical characteristics of the pattern of the instrument concerned, as covered by the relevant OIML International Recommendation.

This certificate does not bestow any form of legal international approval.

This revision replaces earlier versions of the certificate.

Issue Date: 24 March 2015
Reference No: T1106/0017

**Signatory: G Stones
for Chief Executive**



Important note: Apart from the mention of the certificates reference number and the name of the OIML Member State in which the certificate was issued, partial quotation of the certificate or of the associated test report is not permitted, though they may be reproduced in full.

The conformity was established by tests and examination described in the associated pattern evaluation report P01585 which includes 11 pages.

Characteristics of the instrument:

Accuracy class	≥ 0.5 (coupled wagon weighing)
	≥ 0.2 (total train weighing)
Maximum operating speed	≤ 10 km/h
Minimum operating speed	≥ 0.1 km/h
Maximum wagon weight	≤ 120,000 kg
Minimum wagon weight	≥ 6000 kg
Scale interval	≥ 20 kg
Maximum capacity	≤ 33,000 kg (per axle)
Minimum capacity	≥ 3,000 kg (per axle)
Transducer type	Weighline, E _{max} = 15,000 kg
Max. no. of weighline transducers	16 (8 pairs)
Max. number and type of wagons per train	Determined at verification
Direction of weighing	Bi-directional (train pushed/pulled)
Power supply	90/230 VAC, 50 Hz 115/230 VAC, 47-63 Hz (with Advantech PCI-6873 motherboard and an Enhance 200W Micro ATX power supply unit)
Operating temperature range	- 10 °C to + 40 °C

Alternatively, any compatible load cell(s) may be used providing the following conditions are met:

- There is a respective OIML Certificate of Conformity (R60) for the load cell.
- The certificate contains the load cell types and the necessary load cell data required for the manufacturer’s declaration of compatibility of modules, and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to R106 has been conducted on this load cell.
- The compatibility of the load cells and indicator is established by the manufacturer by means of a compatibility of modules calculation.
- A standard load transmission device must be used.

The following technical characteristics shall then be considered:

Excitation voltage:	17.5 V DC
Minimum input impedance (per channel):	93.75 Ω
Minimum input signal per scale interval:	17.5 μ V

Alternatives:

1. Having the instrument remotely operated via a permanently installed standard PC. The PC is connected to the instrument using the serial connection and runs a Railweight program allowing the following operations using mouse-operated buttons: Start Weigh, Abort Weigh and End Weigh. The program should not allow any other commands once the instrument has been sealed.
2. Having the instrument with a maximum capacity of 16,500 kg per wheel (33,000 kg per axle), in which case the Weighline transducers have a maximum capacity of 16,500 kg.
3. Having the instrument fitted with an alternative Advantech PCI-6873 motherboard and an Enhance 200W Micro ATX power supply unit.

In this variant the Weighline TSR4000 has the following revised technical characteristics:

Power supply: 115V/230 VAC, 47-63 Hz

4. Having the instrument fitted with an alternative processor board (Single Board Computer) type SBC-5539-VL2, manufactured by Modular Industrial Systems Inc. and a power supply unit type SFX-0525H manufactured by Enhance Electronics UK.
5. Having the section 3.3.2 modified as follows:

The software identification is "TSR4000 CIMW" and the approved software version number is 5.xxx/yy, where xxx denotes updates & bug fixes that do not affect the metrological characteristics of the software, and yy denotes an optional alphanumeric suffix, that may be used by the manufacturer for installation identification purposes. The version number can be found on the 'System Identification' screen.

6. Having the instrument used in "twin track" mode

The controller functions as a single weighing instrument which dynamically selects a sub-set of active transducers. Wheel sensors are present on both tracks and are used for vehicle identification (as normal) and also to select which sub-set of transducers will be processed to provide the weights. The dynamic biasing has entries for both tracks and is set independently for each track.

When the instrument is "Ready To Weigh" it will monitor both tracks for an incoming train. When it detects a train it will lock out the other track for the duration of the train weighing. All weights from the "other track" will be discarded.

Identification of the track being used for weighing is given on the TSR4000 display and weigh-bills.

Both lines must have the same metrological characteristics, and the rating plate shall bear the wording "Dual track" with the track's designation as shown on the display and weigh bills.

The dual track configuration is set up when the system is configured.

7. The instrument may be used to weigh rail wagons containing liquids. The technical characteristics are as follows:

Accuracy class	Total train weighing	Coupled wagon weighing
	≥ 1	≥ 1
Maximum operating speed	Determined at initial verification	Determined at initial verification
Minimum operating speed	≥ 0.1 km/h	≥ 1 km/h
Maximum wagon weight	≤ 120,000 kg	≤ 100,000 kg
Minimum wagon weight	≥ 6000 kg	≥ 6000 kg
Scale interval	≥ 100 kg	≥ 100 kg
Maximum capacity	≤ 30,000 kg (per axle)	≤ 30,000 kg (per axle)
Minimum capacity	≥ 3,000 kg (per axle)	≥ 3,000 kg (per axle)
Max. no. of weighline transducers	16 (8 pairs)	16 (8 pairs)
Max. number and type of wagons per train	Number determined at initial verification Type: 2 and 4-axle	Number determined at initial verification Type: 4-axle
Direction of weighing	Bi-directional (train pushed/pulled)	Bi-directional (train pushed/pulled)

8. Using a modified pre-amplifier circuit, drawing A3-06-2643 revision 3.

Certificate History

ISSUE NO.	DATE	DESCRIPTION
R106/1997-GB1-07.01	28 October 2010	Certificate first issued.
R106/1997-GB1-07.01 Revision 1	13 April 2010	Capacity increased to 16,500 kg per wheel.
R106/1997-GB1-07.01 Revision 2	24 February 2011	Alternative motherboard and power supply unit.
R106/1997-GB1-07.01 Revision 3	26 July 2011	General acceptance of load cells criteria added.
R106/1997-GB1-07.01 Revision 4	24 March 2015	Applicant's name changed from Avery Weigh-Tronix Ltd. Test reports list and checklist F20221 replaced by Evaluation report P05185. Alternatives section added (1 to 8).