		V 3112

OIML Member State Czech Republic	**OIML Certificate No.** R134/2006-A-CZ1-25.04

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Czech Metrology Institute**
Address: Okružní 31
638 00 Brno
Czech Republic

Person responsible: Jan Kalandra

Applicant

Name: **iWIM S.r.l.**
Address: Via Kufstein 1
38121 TRENTO (TN)
Italy

Manufacturer

Name: **iWIM S.r.l.**
Address: Via Kufstein 1
38121 TRENTO (TN)
Italy

Identification of the certified type *(the detailed characteristics will be defined in the additional pages)*

Automatic instrument for weighing road vehicles in motion
type:
BISON_LS

Designation of the module *(if applicable)*

-

This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 134 **Edition (year): 2006**

Český metrologický institut

This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML Certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated reports:

Test report No. 6012-PT-R0050-25 dated 4.12.2025 that includes 38 pages.
Test report No. 6012-PT-R0052-25 dated 4.12.2025 that includes 41 pages.
Test report No. 8551-PT-E0038-24 dated 25.4.2024 that includes 1+28 (Test report + annex) pages.
Test report No. 8551-PT-E0058-24 dated 25.4.2024 that includes 1+43 (Test report + annex) pages.
Test report No. 6011-PT-SW031-25 dated 4.12.2025 that includes 3+3 (Test report + annex) pages.

OIML type evaluation report 0511-ER-W107-23 dated 4.12.2025 that includes 6 pages.

The technical documentation relating to the identified type is contained in documentation file:

0511-UL-W107-23

OIML Certificate History

Revision No.	Date	Description of the modification
-	22 December 2025	Issuing of certificate

The OIML Issuing Authority
RNDr. Pavel Klenovský
Director of Certification Body

Date: 22 December 2025

Český metrologický institut
-3-

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

1 INSTRUMENT NAME AND DESCRIPTION

iWIM is a weighing instrument designed for determining the total weight (gross vehicle weight) of road vehicles.

1.1 Essential parts

Light sources:
Any light source (standalone or integrated into the interrogator) (SLED / ASE) with following requirements:

- Optical power: > 1mW
- Band: covering FBG wavelength +/- 2nm
- Band flatness: < 6dB

Interrogator:
The spectrometer is used. For more details see documentation folder 0511-UL-W107-23.

PC:
x86-64 or compatible PC, with USB 2.0 or better, 8GB RAM, Linux OS

Power supply:
The interrogator is powered up by the PC USB port.

1.2 Weighing area

The installation site must feature a stable, non-deformable apron (concrete, asphalt, or similar) extending upstream and downstream of the weighing platform, with a length of at least 20 m upstream and 15 m downstream. The plates can be installed in a staggered or in-line arrangement. The surface must be rectilinear and coplanar with the weighing platform. There must be no bumps, steps, or offsets between the road pavement and the load receptor. The longitudinal slope must be negligible in any case less than 4%, while the transverse slope should be minimized to strictly what is needed for drainage.

Installation example
multi-lane configuration

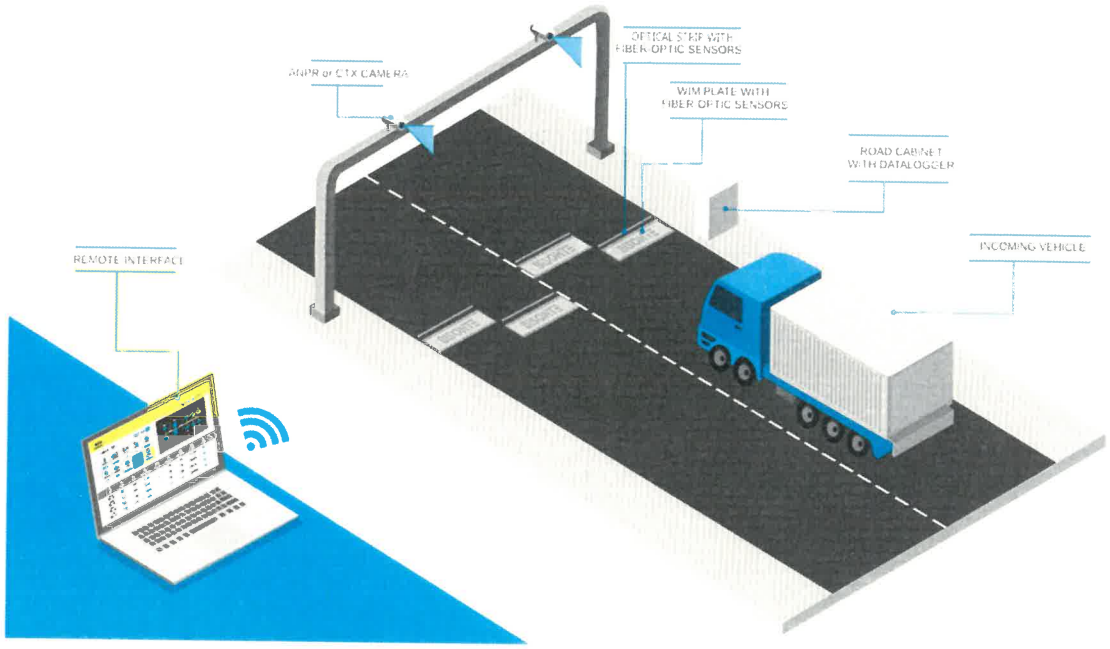

Figure 1 example of instalation

1.3 Mechanical design of bending plate

FBG (fiber Bragg grating) optical sensor on the bottom side of bending plate.

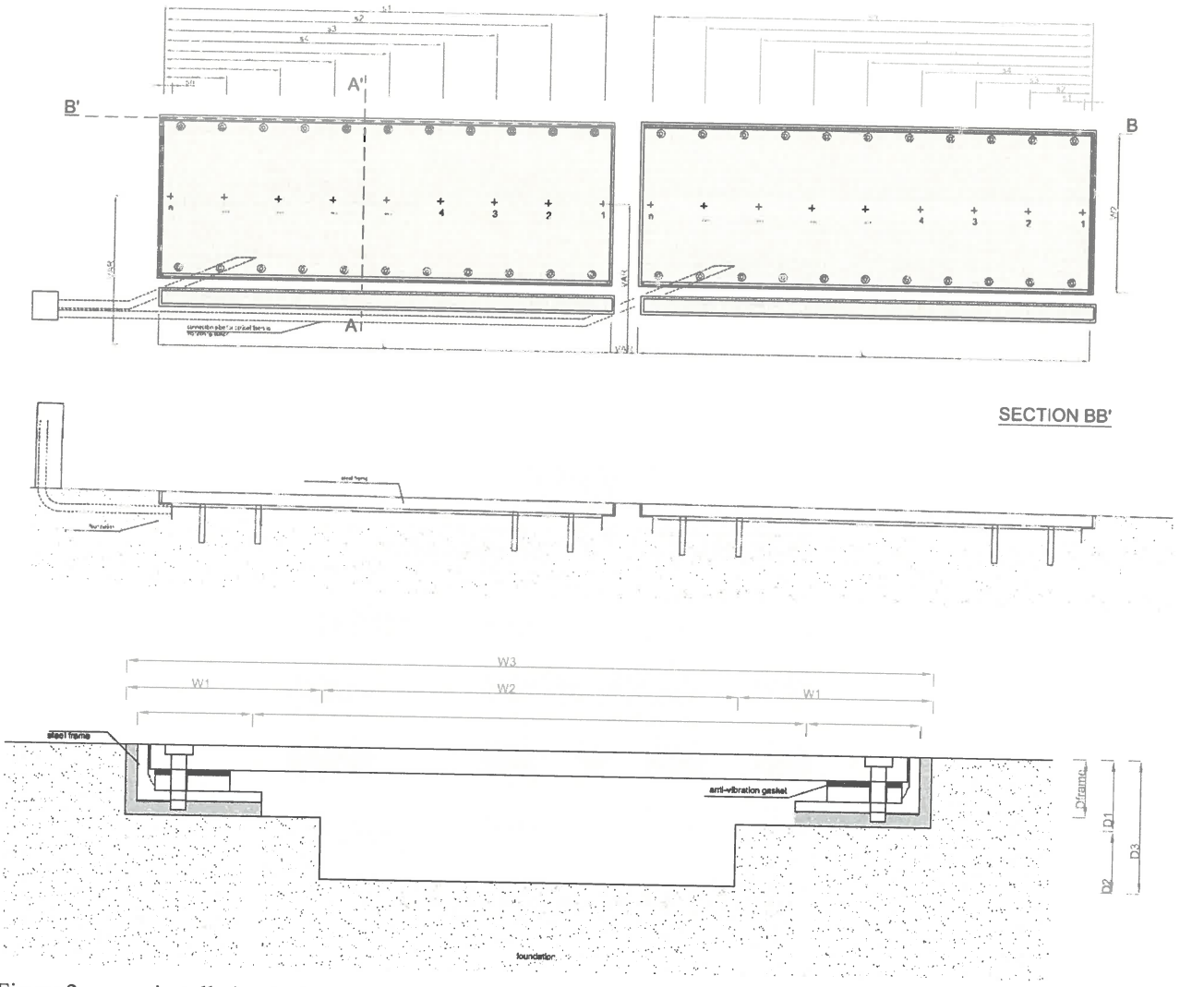

Figure 2 sensor installation in the road surface

The bending plate system is integrated with a second, smaller sensor (in the form of an "optical strip" sensor). This strip element uses the same optical sensor as the larger plate, sharing the same optical technology.

1.4 Principle of operation

The optical signal is generated by sensors located under the weighing plate and transmitted via optical fiber to a specific optical interrogator. Optional passive optical elements such as circulators, splitters, or attenuators could be used.

The interrogator and the computation PC are housed together in a sealed, tamper-proof box. Inside, legally relevant software processes and calculates the weight data. To ensure the authenticity of the data sent to optional interoperable devices (e.g., remote displays, tablets, printers, or the cloud), the software applies a digital signature to the output. This guarantees data integrity regardless of the transmission channel, making a physical primary display on the datalogger non-mandatory, as it can be effectively replaced by a secure virtual or remote display. Furthermore, thanks to the digital signature applied to metrologically relevant data, extra functionalities (which are not metrologically relevant) can safely operate on the same PC, as the signature guarantees that the critical measurement data remains unaltered and uncompromised.

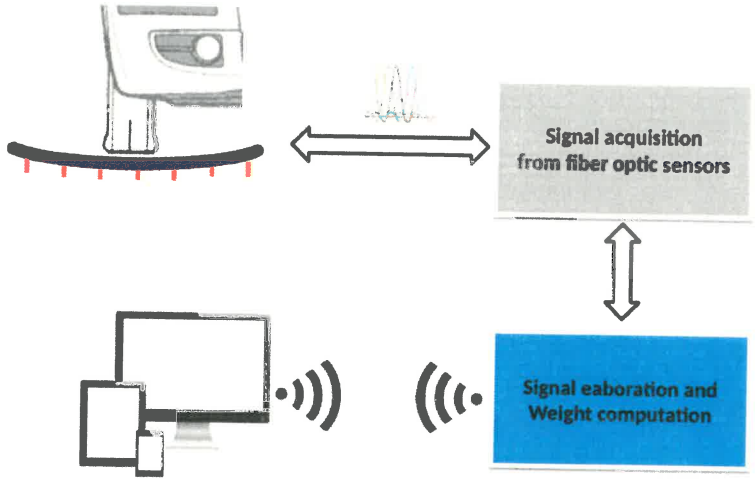

Figure 3 Principle of operation

1.5 Block diagram

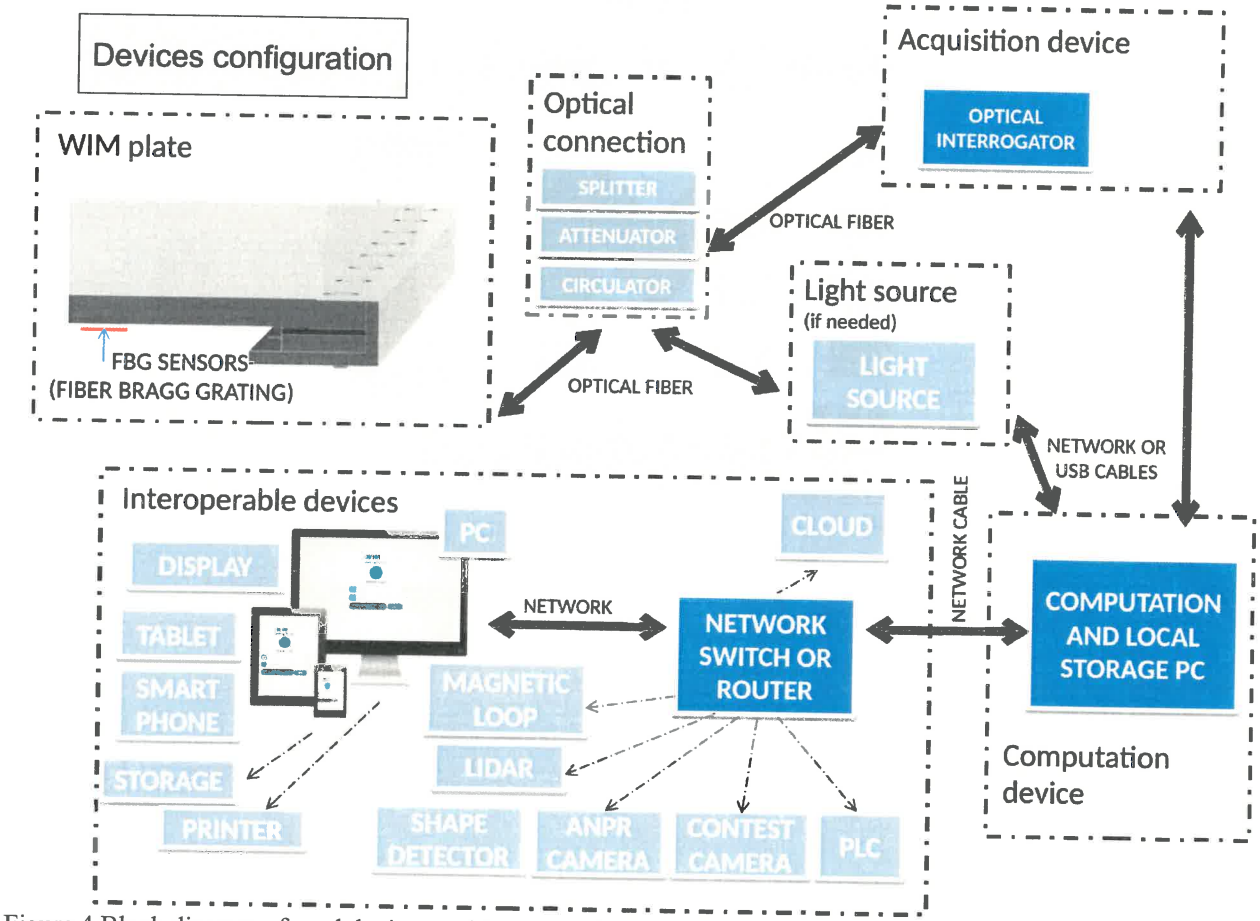

Figure 4 Block diagram of used devices and its connection

2 MAIN METROLOGICAL CHARACTERISTICS

Type	BISON_LS
Accuracy class for Vehicle mass	5
Max_{GVW}	1 980 000 kg
Min_{GVW}	2 000 kg
Verification scale interval *d*	100 kg
Max_{axle}	20 000 kg
Min_{axle}	1 000 kg
Maximum number of axles a_{max}	99
Operating speed range	5 – 20 km/h
Load receptor configuration	2 or more pairs (1 bending plate + 1 strip) of load receptors
Temperature range (load receptors)	-30°C - +70°C
Temperature range (cabinet equipment)	-10°C - +70°C
Vehicle position detection	automatic (cross) lane detection and identification
Software identification	v2.0 SHA-256 hash: e6447c408d1e252bb4a9f1ef879c7d5589c48db e3be65f03d5188470fed249b4

Table 1: iWIM metrological characteristics

When instrument is installed in a region where temperatures in cabinet could be lower than -10°C, it's prescribed to install heating, alternatively the system stops working.
The weighing range for *the total vehicle weight* (Gross vehicle weight - GVW) is determined as the product of the weighing range of one axle and the maximum number of weighable axles (A_{max}).

$$Max_{GVW} = Max_{axle} * A_{max}$$

2.1.1 Main instrument label

Manufacturer		iWIM S.r.l. Italy
Type designation		BISON_LS
Serial number		#xxx
Maximum transit speed		250 km/h
Direction of weighing		bi-directional
Power supply voltage		110-240 V AC 50/60 Hz
Temperature range (load receptors)		-30°C - +70°C
Temperature range (cabinet equipment)		-10°C - +70°C
Software version		v2.0 SHA-256 hash: e6447c408d1e252bb4a9f1ef879c7d5589c48dbe3be65f03d5188470fed249b4
Accuracy class vehicle mass		5
Maximum capacity (GVW):	Max =	1 980 000 kg
Minimum capacity (GVW):	Min =	2 000 kg
Maximum capacity (axle):	Max =	20 000 kg
Minimum capacity(axle):	Min =	1 000 kg
Scale interval:	*d* =	100 kg
Maximum operating speed:	v_{max} =	20 km/h
Minimum operating speed:	v_{min} =	5 km/h
Maximum number of axles per vehicle:	a_{max} =	99
Type approval sign in accordance with national regulations		

Table 2 example of main label of the weighing instrument

The main label is secured with a verification mark.

3 SOFTWARE

The legally relevant software of the scales and its security meet the requirements of the WELMEC 7.2:2023 software guide.

The legally relevant software is monolithic C++ architecture running on a secure Linux operating system. The integrity of this element is guaranteed by checking its checksum SHA-256 hash.

The core metrological integrity is maintained through a combination of Physical Sealing (tamper-evident labels on the Datalogger Box) and Electronic Sealing (SHA-256 software signatures and blockchain-linked audit trails).

The metrological integrity of each record is guaranteed by digital signing of each record, preventing any data corruption and/or intentional manipulation.

4 VERIFICATION AND SECURING OF THE WEIGHING INSTRUMENT

The metrological tests must be carried out according to national applicable regulations.

4.1 Securing components and verification marks

All hardware components are protected with anti-tamper stickers. Figures 5 a,b,c show the positions of the 6 seals (2 on front screws, 4 on side corners) on the Datalogger Box.

Figures 5 a,b,c example of sealing