



OIML Member State

Czech Republic

OIML Certificate No.

R134/2006-A-CZ1-26.01

Revision 1

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: **Czech Metrology Institute**

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Applicant

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Manufacturer

Name: **CROSS Zlín, a.s.**

Address: Průmyslová 1395

763 02 Zlín-Malenovice

Czech Republic

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

Automatic instrument for weighing road vehicles in motion and measuring axle loads

type: CrossWIM

Designation of the module *(if applicable)*

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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



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-R0007-26 dated 26.5.2026 that includes 57 pages.

Test report No. 6012-PT-R0008-26 dated 26.5.2026 that includes 39 pages.

Test report No. 6012-PT-R0009-26 dated 27.7.2026 that includes 39 pages.

Test report No. 8551-PT-E0136-24 dated 8.7.2024 that includes 1+9+38 (Test report + annexes) pages.

Test report No. 6011-PT-SW010-26 dated 22.5.2026 that includes 3+3 (Test report + annex) pages.

Test report No. 800 dated 31.7.2019 that includes 31 pages.

Test report No. 133-06799 dated 7.11.2013 that includes 20+2 (Test report + annex) pages.

OIML type evaluation report 0511-ER-W105-26 dated 4.8.2026 that includes 8 pages.

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

0511-UL-W105-26

OIML Certificate History

Revision No.	Date	Description of the modification
-	5 August 2026	Issuing of certificate

The OIML Issuing Authority

RNDr. Pavel Klenovský

Director of Certification Body

Date: 5 August 2026



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

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

1.1 Essential parts

Weighing sensors:

Kistler: The Lineas 9195GC is a quartz sensor to measure the wheel and axle loads and to determine the vehicle gross weight under rolling traffic conditions. The sensor is installed in the road pavement and provides highly accurate measurement signals.

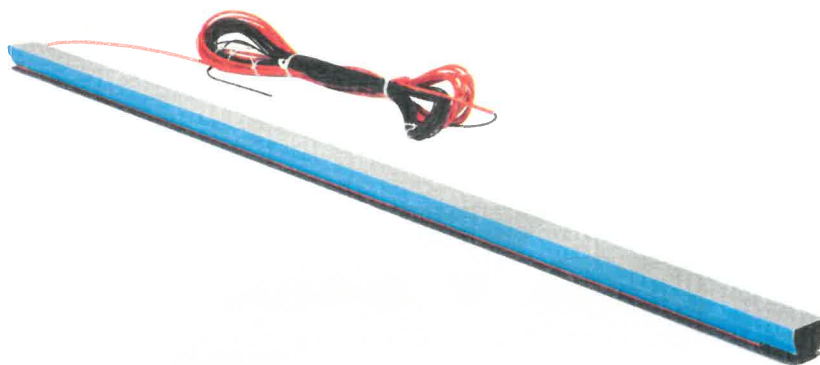


Figure 1 Lineas 9195GC sensor

Intercomp sensors:

The Strip Sensor is a strain gauge sensor for measuring wheel and axle loads and determining the total weight of a vehicle while in motion. The sensor is installed in the roadway and provides highly accurate measurement signals.

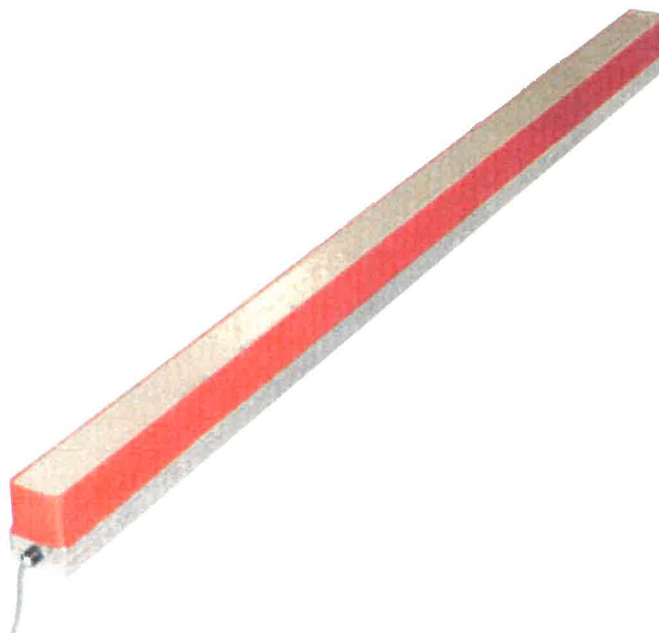


Figure 2 Strip Sensor

Charge amplifiers for weighing sensors:

The charge amplifier provides well-conditioned voltage output signals for further processing by a data acquisition system. The charge amplifiers are available in different versions with 2, 4 and 8 channels. To measure wheel loads, all sensors are connected to a separate input channel.

WIM AD cards:

The WIM AD electronics consist of a motherboard connected to the CrossWIM backplane using a connector located on the edge of the card. On the front of the board there is a panel with signalling diodes and a reset button. Sensor variants from Kistler and piezo sensors can be connected to this card. The WIM AD card is used to measure up to 8 analogue signals output from a charge amplifier.

WIM data processor unit:

The processor unit consists of an industrial computer with the manufacturer's SW installed. The unit is an integral part of the CrossWIM unit. The processor unit downloads data from other cards via the Ethernet bus and CAN bus. From the input connectors, only the RJ-45 connector for connection to a computer network is used for the system function. Other connectors are inactive and are used for service purposes. Regarding buttons, there are buttons on the individual cards for restarting individual cards.

The data is stored in the WIM data processor unit memory for the following operations (indication, printing, data transfer, checksums, etc.) on the hard disk. The stored data is protected against intentional and unintentional changes during the transfer and/or storage process and contains all relevant information needed to reconstruct previous measurements. The data stored on removable storage media for storing measurement data are secured with a code key, and their identification, integrity and authenticity are ensured. The stored data can also be the subject of subsequent operations (indication, printing, transmission, checksums, etc.).

Induction loops + Feig VEK S4C:

The WIM FEIG unit is a four-channel loop detector for connecting inductive loops to detect transits of the vehicles. On the front there is a panel with a reset button and signalling diodes. It works on the principle of signal evaluation from a pair of inductive loops and the provided data are passed to superior systems.

Depth temperature sensor

These wired resistance temperature sensors are designed for measuring the temperature in the road and are installed to a depth of 5 to 10 cm, it is possible to use grooves of drain cables from different types of sensors or install them separately in the road according to the design documentation. The temperature sensor is connected directly to the WIM AD via a CrossWIM backplane, no additional external devices are required.

Power supply:

The supply voltage is 230 V AC, which is transformed and rectified by a suitable power supply to a voltage of 24 V DC. This is fed to the power input of the CrossWIM unit.

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 200 m upstream and 50 m downstream. The longitudinal slope must be negligible in any case less than 1%, while the transverse slope should be minimized to strictly what is needed for drainage.

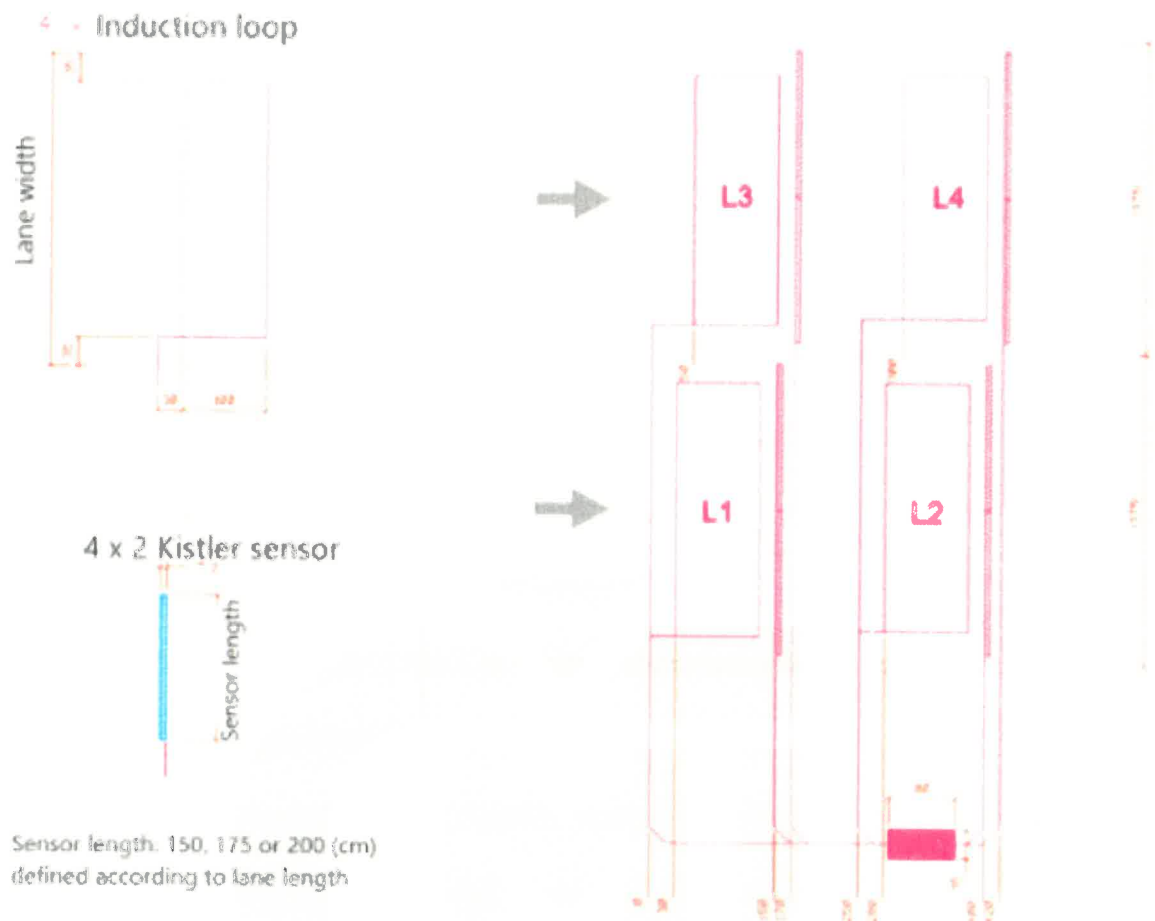


Figure 3 Example of geometric arrangement of Kistler sensors and induction loops in a two-row variant in one

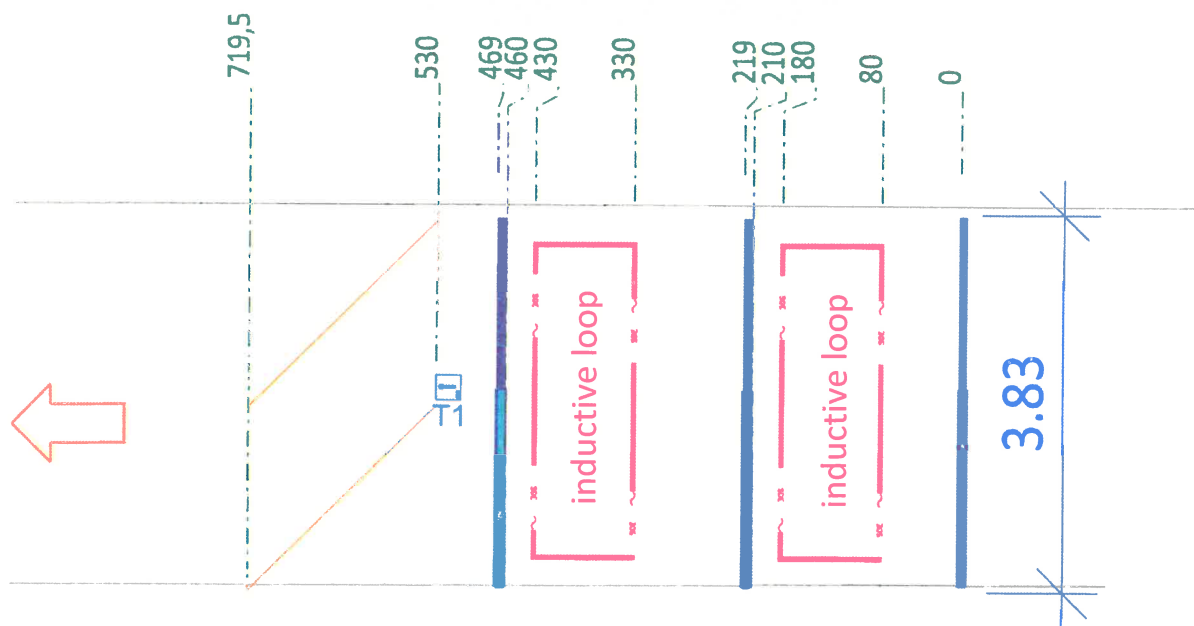


Figure 4 Example of geometric arrangement of Intercomp sensors and induction loops in a two-row variant in one

1.3 Principle of operation – KISTLER sensors

The sensor is installed permanently into the road. When a force is applied to the sensor surface, the quartz elements yield an electrical charge signal proportional to the applied force. The sensor Type 9195GC requires an external charge amplifier (Type 5163A). The charge amplifier converts the electric charge into a proportional voltage signal which then can be further processed.

1.4 Principle of operation – Intercomp sensors

The sensor is installed permanently in the roadway too. When a wheel or axle load is applied to the sensor surface, the sensing element undergoes a slight elastic deformation. Strain gauges embedded within the sensor detect this deformation as a change in electrical resistance proportional to the applied force. This resistance change is then processed by CrossWIM unit.

2 MAIN METROLOGICAL CHARACTERISTICS

Accuracy class for Vehicle mass	10
Accuracy class for Axle load and Axle group load	F
Max _{GVW}	900 000 kg
Min _{GVW}	3 500 kg
Max _{axle}	30 000 kg
Min _{axle}	1 000 kg
Maximum number of axles A _{max}	30
Scale interval d	50 kg
Operating speed range	30 km/h – 100 km/h
Temperature range	-40°C - +60°C
Temperature range (Intercomp -sensors only)	-20°C - +65°C
Number of sensor rows	2, 3, 4

Table 1: CrossWIM metrological characteristics

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}).

$$\text{Max}_{\text{GVW}} = \text{Max}_{\text{axle}} * A_{\text{max}}$$

3 SOFTWARE

The legally relevant software of the scales and its security meet the requirements of the OIML R134-1:2006 and WELMEC 7.2:2023 software guide.

3.1 Interfaces and optional peripheral devices

Device for optical identification of vehicles

The weighing system is equipped with an image documentation unit, which is used for generating a photo documentation of the situation during weighing with reliable identification of the weighed vehicle. The image documentation unit operates in automatic mode. It is possible to set limit weight and speed parameters for acquiring an image document. The situation when the vehicle is weighed is captured by a digital camera. The outputs form individual digital images, which are stored in a data memory. Image document processing is performed using the CrossWIM application.

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

Securing the Kistler amplifier unit

With the help of official marks (self-adhesive labels) the heads of at least two screws are secured against removing.

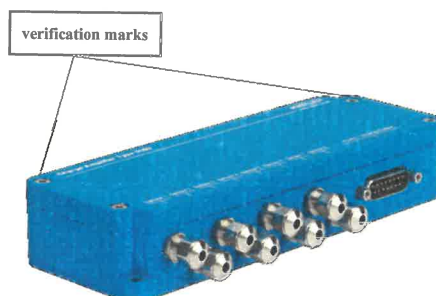


Figure 5 Sealing of charge amplifier

Securing the Intercomp sensor connector

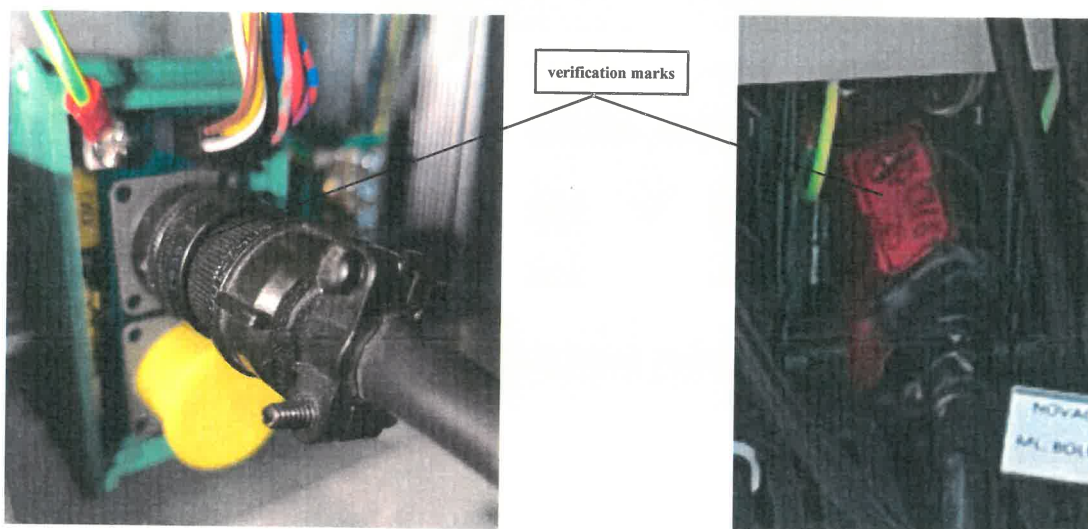


Figure 6 Sealing of Intercomp sensor connector

Securing of other components

From the point of view of data processing, it contains three basic types of components - main processor unit, cards for reading analogue signals from sensors and loop detectors.

Due to metrological security, a protective cover is installed in front of the front panels, preventing the replacement of components, connection of other devices and change of the firmware of individual cards.

The protective cover of the front panel can be secured against its disassembly on the sides with an official mark in the form of a hanging seal, or with self-adhesive labels on its edges.

Placement of seal (label)

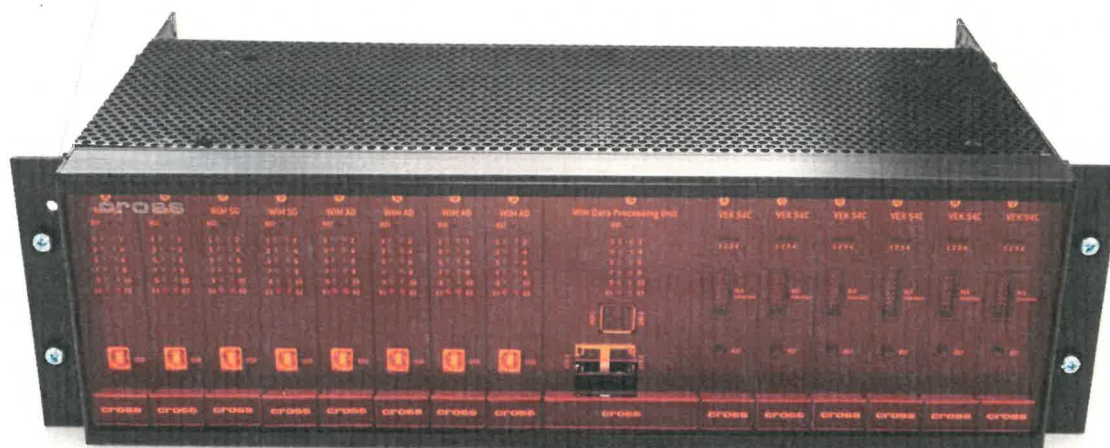


Figure 7 Sealing of CrossWIM unit

Depending on the method of securing the integrity of individual measuring systems and the design of the load cell input boards/cards, another suitable method of securing them can be chosen using official marks, provided that it sufficiently protects their integrity and the metrological properties of the measuring instrument from being influenced.

4.1.1 Main instrument label

Manufacturer	CROSS Zlín a.s.
Type designation	CrossWIM
Serial number	xxx/yyyy
Maximum transit speed	255 km/h
Direction of weighing	(if applicable)
Electrical power supply voltage	230 VAC
Electrical power supply frequency	50 Hz
Temperature range	- 40 °C ; + 60 °C
Temperature range (Intercomp – sensors only)	- 20 °C ; + 65 °C
Software version	3.9.2
Accuracy class vehicle mass	10
Accuracy class single-axle (where applicable):	F
Accuracy class axle-group (where applicable):	F
Maximum capacity (axle):	Max = 30 000 kg
Minimum capacity (axle):	Min = 1 000 kg
Maximum capacity (vehicle):	Max = 900 000 kg
Minimum capacity (vehicle):	Min = 3 500 kg
Scale interval:	d = 50 kg
Maximum operating speed:	v _{max} = 100 km/h
Minimum operating speed:	v _{min} = 30 km/h
Maximum number of axles per vehicle:	n _{max} = 30
OIML certificate number	R134/2006-A-CZ1-26.01
Type approval sign in accordance with national regulations	

Table 2: Main label of the weighing instrument

The main label is secured with a verification mark.