



EU Type Examination Certificate No CH-W1-17023-01_EN

Translation

<i>Applicant</i>	HAENNI Instruments AG Industrie Neuhof 66 3422 Kirchberg BE Schweiz																												
<i>Requirements</i>	Ordinance of the FDJP of 16 April 2004 on Non Automatic Weighing Instruments (SR 941.213) and the Directive 2014/31/EU of the European Parliament and of the Council of 26. February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of non-automatic weighing instruments. Conformity standard: EN 45501:Edition 2015																												
<i>Type of instrument</i>	Non-automatic wheel, axle, partial or total load scale																												
<i>Type designation</i>	WL 108																												
<i>Accuracy class(es)</i>	III																												
<i>Specifications</i>	<table border="0"> <tr> <td>2000</td> <td>kg</td> <td>≤</td> <td>Max</td> <td>≤</td> <td>15'000</td> <td>kg</td> </tr> <tr> <td>5</td> <td>kg</td> <td>≤</td> <td>e</td> <td>≤</td> <td>100</td> <td>kg</td> </tr> <tr> <td>150</td> <td></td> <td>≤</td> <td>n</td> <td>≤</td> <td>500</td> <td></td> </tr> <tr> <td>50</td> <td>kg</td> <td>≤</td> <td>Min</td> <td>≤</td> <td>1000</td> <td>kg</td> </tr> </table>	2000	kg	≤	Max	≤	15'000	kg	5	kg	≤	e	≤	100	kg	150		≤	n	≤	500		50	kg	≤	Min	≤	1000	kg
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<i>Certificate valid until</i>	5 March 2027																												
<i>Notified body</i>	Conformity Evaluation Body METAS-Cert Nr. 1259																												

3003 Berne-Wabern, 23 April 2020

Approved by Gulian Couvreur, Head of sector
METAS-Cert



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1 Name and type of instrument

Portable, non-automatic electromechanical wheel, axle, part or total load weighing instrument, as an ordinary accuracy weighing machine for traffic monitoring of vehicles with pneumatic wheels, types WL 108/2 t, WL 108/3 t, WL 108/10 t and WL 108/15 t. The models WL 108/10 t and WL 108/15 t are also available in a XL version.

2 Type description

The WL 108 is a non-automatic, portable, low-profile wheel load scale, especially suited for rapid measurement of wheel, axle, part or total vehicle loads. It consists of a low-profile weighing platform and a display mounted on one side. The type meets the requirements of EN 45501:2015 and OIML R-76-1 (2006).

2.1 Construction

2.1.1 Mechanical

The weighing platform has a measuring element in the form of a tube spring system mounted between the base plate and the top plate. All bourdon tubes are interconnected with each other and the display. The entire system is filled with a fluid and tightly sealed. When a load is placed on the platform, the bourdon tubes are compressed, forcing out the fluid which is measured by a sensor. This consists of a rolling diaphragm-sealed piston that deflects the spiral spring with attached strain gauge mounted above it. This result in an electrical signal proportionate to the load applied.

The design of the weighing platform is especially suited for weighing vehicles with pneumatic tyres. Excessive surface pressure, such as may occur with solid rubber wheels or solid objects is not permitted.

In order to compensate for undesirable temperature influences, the platform incorporates a loop-shaped nickel wire with resistance characteristic as a temperature sensor.

2.1.2 Dimensions of the weighing surface

- | | |
|-------------------------------------|-------------------------------|
| - WL 108/2 t and WL 108/3 t | 498 mm x 393 mm, height 19 mm |
| - WL 108/10 t and WL 108/15 t | 660 mm x 393 mm, height 17 mm |
| - WL 108/10 t XL and WL 108/15 t XL | 1395 mm x 393 mm, height 17mm |

2.1.3 Electric

The electronics are distributed over three printed circuit boards. Each printed circuit board is located in a separate compartment. Two connector boards are used to join the three electronics boards together. These are firmly glued between the compartments. The printed circuit boards are joined together with adapter plugs.

2.2 Software / Firmware

Legally regulated functions are verified by means of a checksum. Each time the scale is started, the checksum is calculated and compared with the stored checksum. Should there be a discrepancy between the two values, no weight is displayed and the scale switches into error mode. Adjustment values are secured with an adjustment counter. A change to the adjustment value results in a change to the adjustment counter. The value of the adjustment counter can be called up in the info window.

- The machine code for the legally relevant program sections is held in a separate part of the microcontroller flash memory.

- The firmware can only be changed via a JTAG interface, located on the main circuit board.
- When the WL 108 is switched on, all pixels in the LCD illuminate for an initial period of two seconds. They are then switched off for two seconds and displayed again for a further two seconds. The logo stored in the flash memory is then displayed, followed by the battery charge level and the current temperature.
- The legally relevant and the non-legally relevant program parts have a software version. Both software versions can be read out via the communication interface. The checksum (CRC), the adjustment counter (AC) and the software version can also be seen in the info window (Figure 9).

The approved software/firmware versions and the corresponding checksums are listed in following table:

Table 1 – Software/Firmware versions

Type	Version	Checksum	Revision Certificate ¹	Valid ² Y/N
WL 108	01.xx.xxxx	1871	00	Y

2.3 Permitted functions and devices

- Initial zero-setting device ($\leq 20\%$ of Max) (T.2.7.2.4)³
- Zero tracking device (T.2.7.3)
- Zero indication device (4.5.5)
- Semi-automatic zero-setting device (T.2.7.2.2)
- Indication of weighing results in SI-units (2.1)
- Error recognition: In start-up phase, all segments of the indicator are for some seconds on and off. (5.3.1)
- Error detection: The error message appears on the display (T.5.5.6)

2.4 Interconnection of multiple scales

Should the need arise, a number of WL 108 may be interconnected, whereby all displays will then indicate the sum of all WL 108, that is to say for two WL 108, the axle weight, for more than two WL 108, the total weight. Up to six sum groups may be created, identified by the letters A to F. The sum symbol sigma “ Σ ” appears in the display and the letter of the sum group to which the WL 108 belongs. To achieve this, each WL 108 sends its own weight value and receives that of each other WL 108 in the same sum group. The sum is calculated from all WL 108 in the same group and indicated on each WL 108. A maximum of 12 WL 108 can be interconnected per sum group. The number of scales in sum mode is also limited to 12.

Only scales with the same division and unit are permitted in the same sum group. The division for the sum group is calculated by summing the individual divisions and rounding up to the next higher calibration value. The minimum load of the sum group is 10 times the calculated division. The maximum load of the sum group is calculated by adding up the individual maximum loads.

¹ Revision number of the type examination certificate

² Only valid software/firmware versions can be used

³ Reference to EN45501:2015

If one scale is overloaded or underloaded, all scales in the sum group exit the sum mode.

2.5 “Verifiable long-term data storage” software

The WL 108’s verifiable long-term data storage is located as a hidden file on a computer hard drive. The handling of this file is dealt with by software by the name of S96 which is executed as a Windows DLL (Dynamic Link Library). There is a separate test certificate for the S96 software.

The data relevant to the verifiable long-term data storage are secured with a signature during the data transmission from the WL 108 to the computer. The S96 software routinely compares the data received with the signature and prevents storage in the event of a transmission error.

3 Technical data

3.1 Weighing instrument

The weighing ranges with Max, Min, verification scale intervals and number of verification scale intervals may be selected considering the limiting values of Table 2, in accordance with Nos. 2 and 3 of Appendix I to Directive 2014/31/EU.

Table 2

Type	WL 108/2 t		WL 108/3 t	WL 108/10 t		WL 108/15 t
Accuracy class	(III)					
Max [kg]	2'000		3'000	10'000		15'000
e [kg]	5	10	10	5	50	50
n	400	200	300	500	200	300
Min [kg]	50	100	100	200	500	500
Temperature range [°C]	-20 / 60					
Power supply [VDC]	5...24					

Type	WL 108/10 t XL		WL 108/15 t XL	
Accuracy class	(III)			
Max [kg]	10'000		15'000	
e [kg]	50		100	
n	200		150	
Min [kg]	500		1000	
Temperature range [°C]	-20 / 60			
Power supply [VDC]	5...24			

3.2 Documentation

All the descriptive documents and drawings used for the conformity assessment are deposited with METAS-Cert and listed in the document "*List of essential reference documents for type examination*".

4 Interfaces and peripheral devices

4.1 Interfaces

- 2 CAN-bus (interconnection of wheel load weighers for measurement of the axle, part or total loads or to link the wheel load weighers with the PC)
- 1 Digi XBee® DigiMesh® 2.4 GHz Wireless Mesh Networking RF module (interconnection of wheel load weighers for measurement of the axle, part or total loads or to link the wheel load weighers with the PC)

All interfaces mentioned here are non-reactive within the meaning of EN 45501, No. 5.3.6.1 and WELMEC Guide 7.2, and do not need to be secured.

5 Conditions for market introduction

- The type examination certificate is valid only for non-automatic weighing instruments
- The operator must ensure that the load is correctly applied and must be able to see the scale(s) to ensure correct application of the load
- The scale may be set up in pits with effective drainage or at ground level
- The substrate must be even and firm
- The section over which a truck travels while being weighed should be straight, even and have a slope not exceeding 5%

5.1 Legends

The weighing instrument must bear following indications:

5.1.1 Type Plate

- Manufacturer's mark or name
- Manufacturer's address
- Legal representative's address⁴
- Type designation and serial number of the instrument
- Metrological CE conformity marking
- Number of the type examination certificate (CH-W1-17023-01)
- Accuracy Class
- Metrological data (Max, Min, e =)
- Temperature range

and further information as per 2014/31/EU Annex III, or the Ordinance on Non-automatic Weighing Instruments 941.213 Annex 5.

⁴ Only required if the manufacturer's address is outside of Switzerland, the EU or EEE

Annex to the EU Type Examination Certificate No CH-W1-17023-01_EN

The number of Type Examination Certificate on the descriptive plate can be written without the revision number as follows: **CH-W1-17023**

The type plate is made of aluminium and the inscription printed in durable form.

The type plate consists in a support that is auto destructive or that can be sealed by a securing sticker.

5.1.2 *Indication near the display*

Max

Min

e

The values only appear in the display if sum mode is activated and replace the information on the type plate.

6 Requirements for production, commissioning and utilization

6.1 Requirements for the conformity test

The following materials are required for the test

- Documentation required: EC type approval certificate, user manual, declaration of conformity and if applicable, copies of the module and peripheral device test certificates.
- The calibration test takes place on a dynamometer, whereby the individual wheel load scale is to be placed on a smooth, firm base (analogous to HAENNI W 12 509.0). The load must be applied via a tyre simulation cushion (HAENNI W 12 497.0).
- The weighing instruments can be tested at the place of use or on any other place, therefore the requirements of Annex II, point 7 of the Directive 2014/31/EU must be respected. If the weighing instrument is not tested at the place of use, the place or gravity zone must figure on the type shield.
- To simplify the calibration testing, the weight can be read with increased resolution via the interface.

The testing is performed in accordance with the requirements of the most recent version of EN 45501 Section 8.2.

7 Control of devices in operation

7.1 Test documents

See the assembly and operating instructions

7.2 Testing equipment

The same requirements as described under 6.1 apply.

7.3 Identification

The type designation should be taken from the type plate.

The legally relevant part of the software/firmware version displayed in the info window must agree with the details under section 2.2 in this certificate.

7.4 Metrological test

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

8 Official stamps and conformity markings

The scale is secured by means of a sealing wire or locking glue on the following screws

- Fixing screw for the type plate, left (Figure 6)
- A screw for the cover of the main circuit board and the volume sensor (Figure 6)

9 CE conformity mark and descriptive plate

The mark of CE conformity and the metrology marking (the metrology CE-marking signifies conformity with the essential requirements of Directive 2014/31/EU) have to be placed on the type plate.

10 Certificate history

Issue	Date	Description
CH-W1-17023-00	6 March 2017	- Initial type examination certificate
CH-W1-17023-01	23. April 2020	- XL type variants added

11 Pictures and drawings

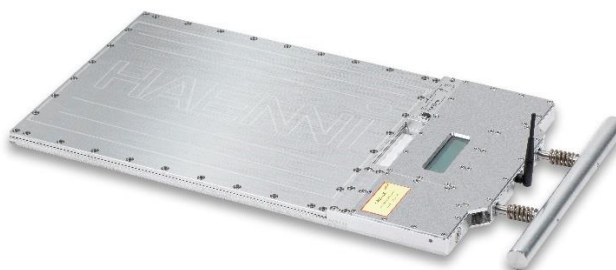


Figure 1 – WL 108 2 t or 3 t wheel load scale

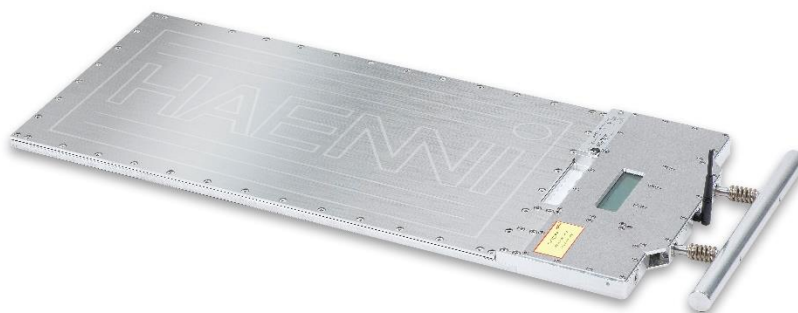


Figure 2 – WL 108 10 t or 15 t wheel load scale



Figure 3 – WL 108 10t XL or 15 t XL wheel load scale



Figure 4 – WL 108 10 t display

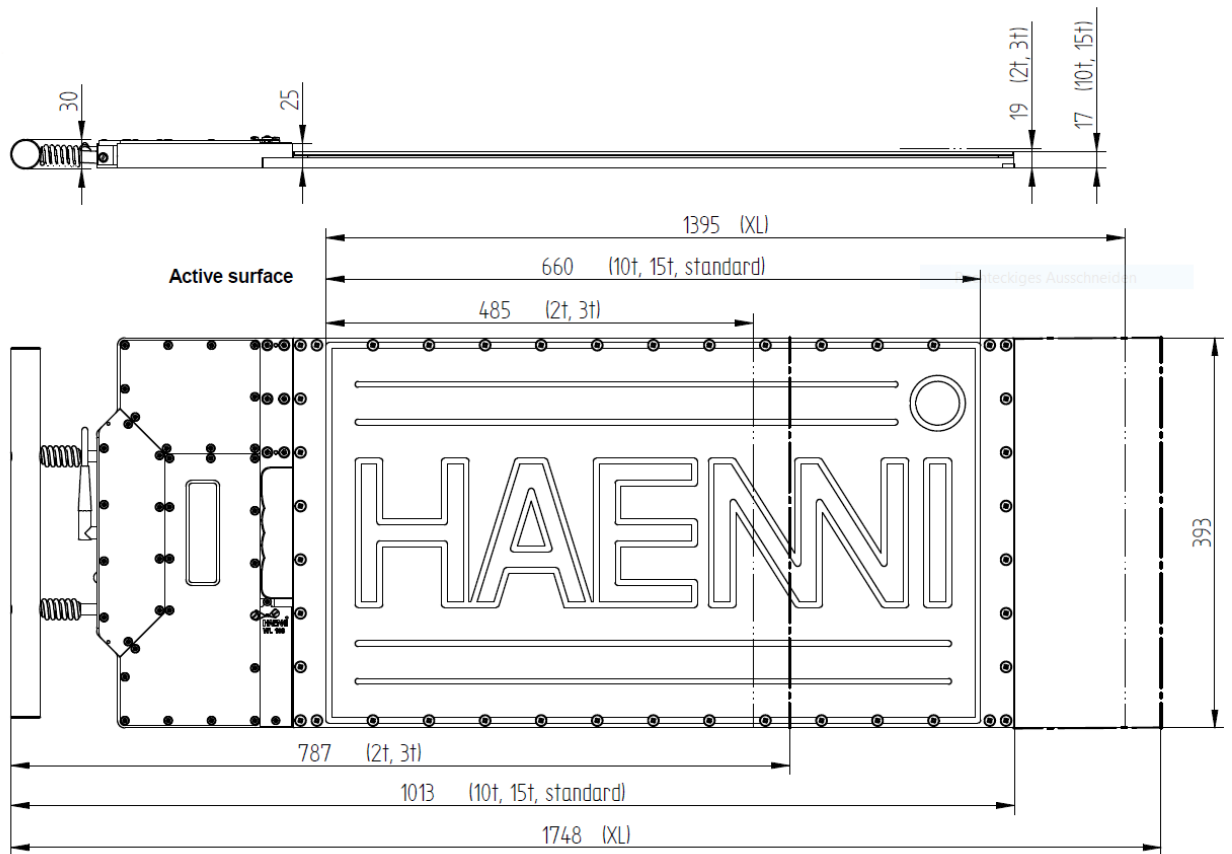


Figure 5 – WL 108 Dimensions

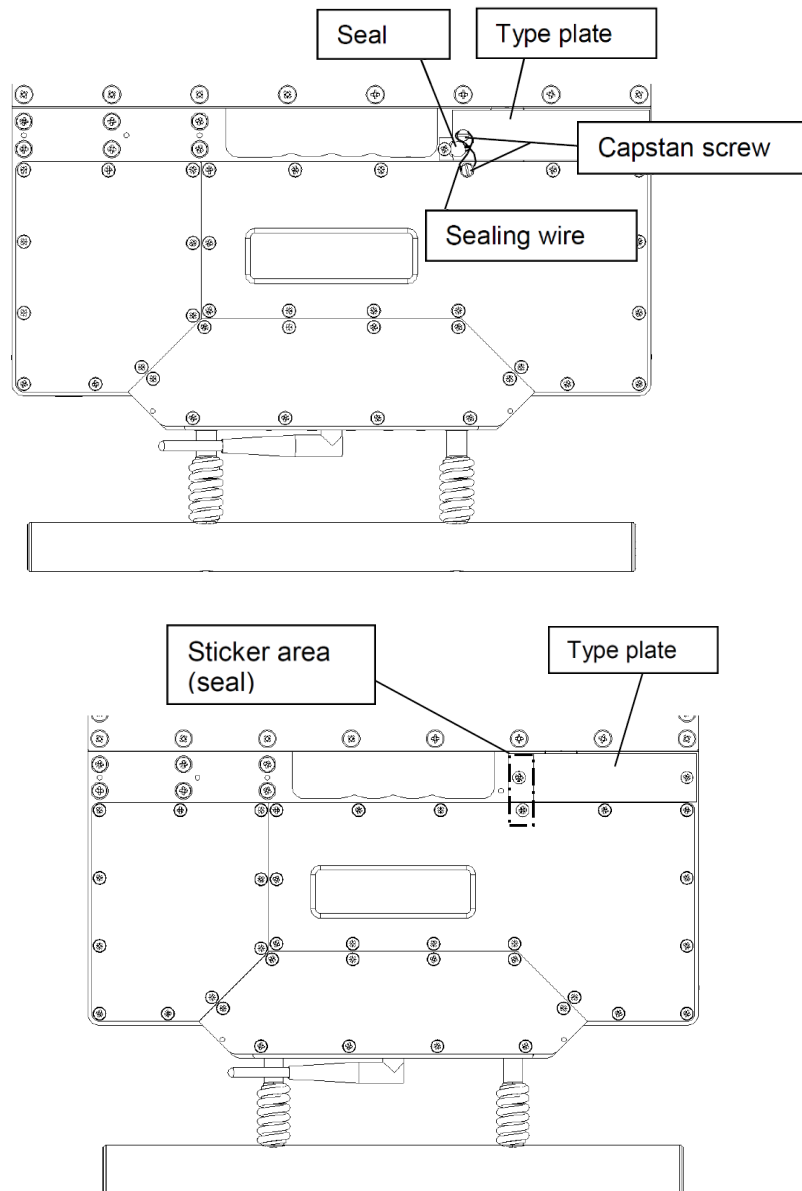


Figure 6 – Security seal diagram and identification plate WL 108

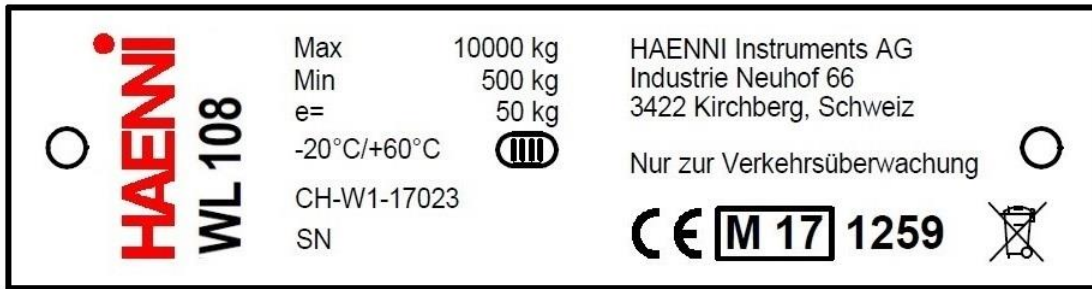


Figure 7 – Sample type plate WL 108

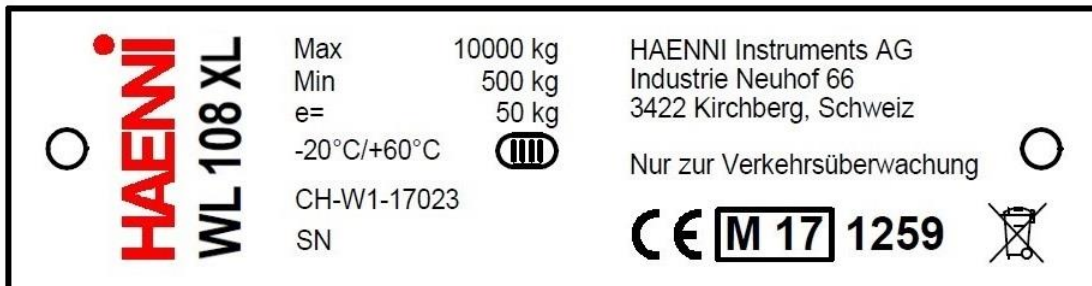


Figure 8 – Sample type plate WL 108 XL

* Nur zur Verkehrsüberwachung = Only for traffic monitoring

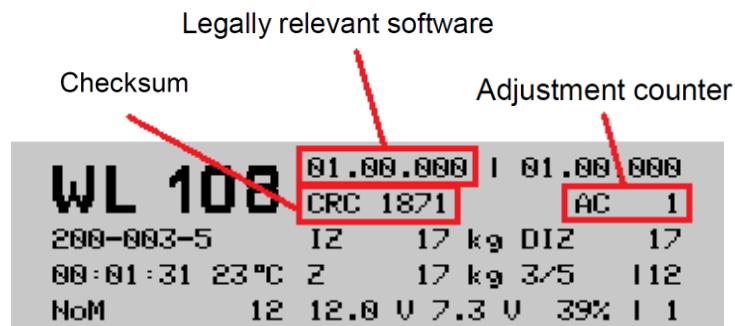


Figure 9 – WL 108 Info window