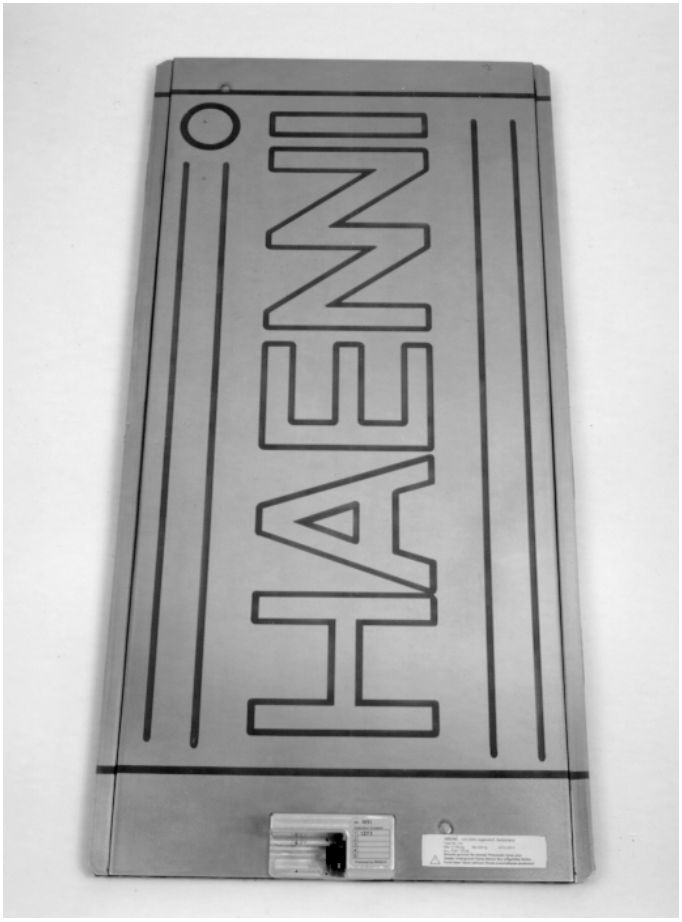
Dynamic Wheel Load Sensor WL 110

Application	Weighing in motion up to 10 km/h of wheel and axle loads of vehicles with pneumatic tires (LS-WIM).
Operating modes	Dynamic weighing. Depending on the used processing unit static weighing and calibration is possible.
Ranges	0...10t per sensor 0...20t per axle
Speed range	0.5...10 km/h. Depending on the used processing unit the speed range may be lower.
Temperature range	-30...+65℃
Accuracy	±2%
Errors due to external factors	up to 10 km/h additional errors in the range of ±2 to ±5% may occur due to vehicle oscillations.
Calibration factor	The accuracy may be improved by adjusting the calibration factor.
Execution	Stainless steel, water resistant IP 68 (IEC 144).
Supply	DC 9V from the processing unit.
Data in- and output	Frequency modulated signal on the supply line.
Electrical connection	Plug
Weight	17 kg
Platform height	11 mm



Selection Chart

Ordering example:		**WL 110 / 4 3 1 . 1 1 1 / 10Y / . . . .**
Temperature range	-20 . . . + 60℃	**4**
Accuracy	2%	**3 1**
Platform Size	1 m 1.25 m	**1 1 1** **4 1 1**
Ranges	0 . . . 10t	**10Y**
For official test	The ordering code is determined after the approval procedure	

Accessories

For accessories as levelling mats, cables, carrying cases etc. refer to data sheet W9.100.

Official Test

Depending on the relevant standards the wheel load sensor WL 110 may be approved for law enforcement use.

Operation

Because of its light weight, the wheel load sensor WL 110 is easy to transport and can be used at any time without the need of ramps. Measurements are made on firm and level ground using levelling mats to ensure that all wheels of multiple axle systems are on the same level. As an alternative the sensors may be placed into a recess in the pavement. The depth must be the same as the height of the sensor to ensure that the platform surface is perfectly level to the pavement. Preferably the specially designed mounting frame is used.

In the normal case two sensors are used, one for the left, the other for the right track of the vehicle. The platform size is large enough so that the driver encounters little problems to pass the sensor within the active area. In case that the sensors are used for pre selection only, it is possible to work with one sensor measuring one side of the vehicle. The full weight is determined by doubling the results. Additional errors up to 5% may occur.

There is no display on the sensor. Its frequency signal is sent to the processing unit via the rugged cable. The further processing, visualisation and printout is performed by the connected processing unit EC 110 or by a personal computer with the software EC 200.

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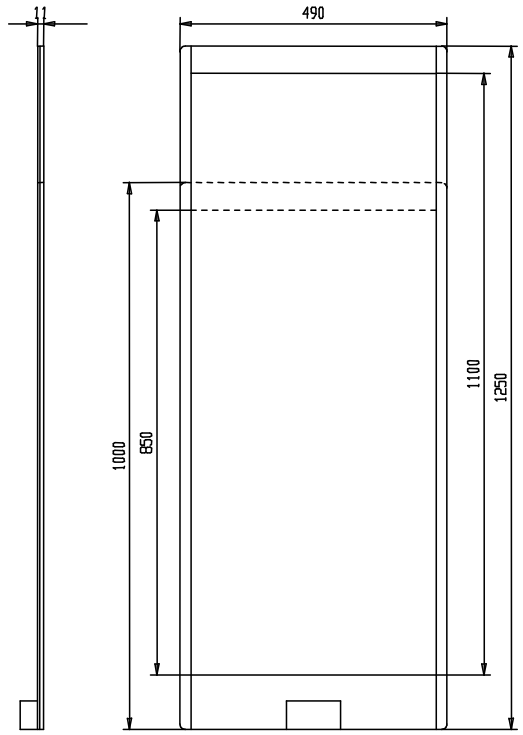
Dimensions



Construction and Function

The wheel load sensor WL 110 comprises of a flat weighing platform with an integrated electronic signal processing unit.

The measuring system is a sandwich of three layers: ground plate, top plate and middle electrode. These elements are bonded together with a high strength adhesive. When loaded, the platform gets compressed slightly causing a change of its capacitance. Because the platform is part of the electronic circuit, it produces a frequency signal proportional to the applied load.

For compensation of all kind of temperature effects the platform is equipped with a temperature sensor.

The signals of the measuring system and of the temperature sensor are processed by the electronic circuit and sent to the connected processing unit.

Depending on the abilities of the used processing unit a different output is possible. In the minimum configuration only the weight is indicated on the display. A full evaluation comprises of automatic classification and weighing of the vehicle including the determination of the speed.

Technical Data

Execution		1 m platform	1.25 m platform
Range		0...10 t	
Accuracy (sensor only)[1]			
dyn. weight	at first calibration	± 2 % of the measured weight or ± 60 kg, whichever is more	
	in operation	± 3 % of the measured weight or ± 100 kg, whichever is more	
static weight[2]	at first calibration	±2% of the measured weight or ± 60 kg, whichever is more	
	in operation	±3% of the measured weight or ± 100 kg, whichever is more	
Speed range		0.5...10 km/h	
Minimum load		500 kg	
Loading limit		15 t	
Permissible load per area		10 kg/cm^2	
Loading limit per area		12 kg/cm^2 (Hard rubber wheels not allowed)	
Operating temperature		-20℃ .... +60℃	
Storage temperature		-30℃ .... +60℃	
Electromagnetic compatibility		EN 55022 class A, EN 61000-4-3 10V/m	
Zero tracking		automatic by the processing unit	
Type of protection (IEC 144)		IP 68	
Overrunable		completely overrunable incl. cable	
Operating site		Firm and level ground, max. 10 mm bend through, max. 5% slope (≈3°)	
Active surface		850mm x 400mm	1050mm x 400mm
Over all dimensions		1000mm x 490mm x 11mm	1250mm x 490mm x 11mm
Power supply		DC 9 V, 10mA	
Data port		frequency modulated weight signal	

[1] The stated values are intrinsic sensor errors (difference between the measured and the applied load), Additional errors in the range of 2...5% may occur depending on various external factors like levelling, pavement quality, vehicle quality and speed.
[2] Only for short time loading (less than 5 minutes) in conjunction with a appropriate processing unit with creep compensation e.g. the EC 200.