Static/Dynamic Wheel Load Scale WL 104

Application	Static weighing and weighing in motion up to 20 km/h of wheel and axle loads of vehicles with pneumatic tires (LS-WIM). Two or more scales may be lined up to a seamless weighing strip.
Operating modes	Selectable by command: static: 2 weight values per second. dynamic: After the wheel has passed the scale, its weight and velocity are calculated and prepared for output.
Ranges	0...10t per scale 0...20t per axle
Speed range	0...20 km/h
Temperature range	-20...+60°C
Accuracy	Static: OIML No. 76 Class 4, Dynamic ±0.5%. Optionally with HAENNI works test report or intended for official test.
Errors due to external factors	static: small external errors. dynamic: up to 10 km/h additional errors in the range of ±2 to ±5% may occur due to vehicle oscillations.
Execution	Al alloys, water resistant IP 65 (IEC 144).
Supply	DC 12V
Interface	CANopen
Electrical connection	Plug
Weight	20 kg
Platform height	17 mm

Selection Chart

Ordering example:	WL 104 / 4 1 1 . 1 1 1 / 10Y /	
Temperature range and standard	- 20 . . . + 60°C OIML No. 76 Cl.4 **4 1 1 . 1 1 1**	
Ranges	0 . . . 10t	**10Y**
For official test	The ordering code is determined after the approval procedure	

Operation

Because of its light weight, the wheel load scale WL 104 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 scales may be placed into a recess in the pavement. The depth must be the same as the height of the scale to ensure that the platform surface is perfectly level with the pavement. Preferably the specially designed mounting frame is used.

In the normal case two scales 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 no problems to pass the scale within the active area. Another possibility is to line up three or more scales to a seamless weighing strip across the lane. This configuration enables to measure easily heavy haulage having different tracks compared to the tractor. In case that the scales are used for pre selection only, it is possible to work with one scale 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 scale. The measured weights and the speed are accessible via the interface. The further processing, visualisation and printout is performed by the connected processing unit EC 101 or by a personal computer with the software EC 200.

Official Test

The wheel load scale WL 104 complies with all relevant standards for an official approval.

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Dimensions
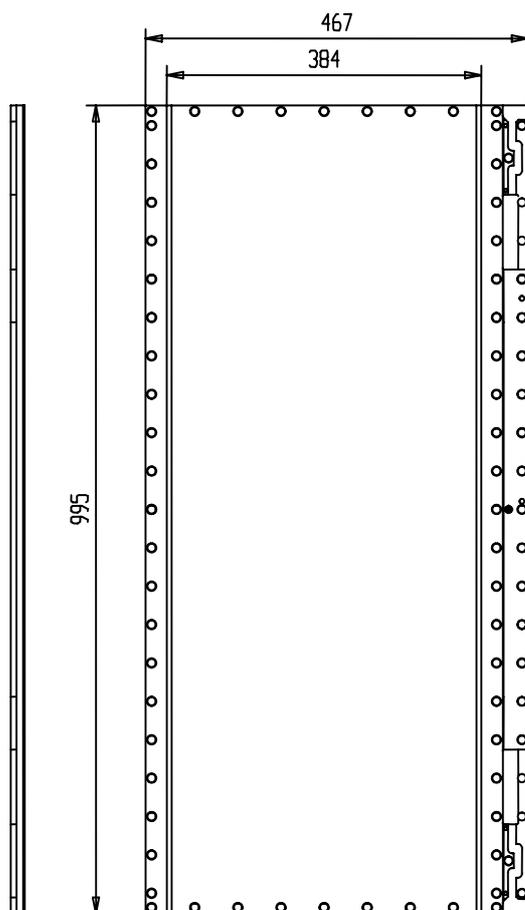
Construction and Function

The wheel load scale WL 104 comprises of a flat weighing platform with an integrated micro controller system.

The measuring system in the form of a grid of tubular sensing elements is mounted between the base and the cover plate of the weighing platform. Each element changes its resistance proportionally to the applied load. The resulting signal is amplified and converted to digital.

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 micro controller. It calculates the weight and, in the dynamic mode, also the speed which are accessible via the data bus.

At switch on of the scale a self test routine is activated and the weight is set to zero. In service the weight is kept at zero automatically as long as the platform is not loaded, so there is no need for an external zero setting device.

The weighing mode (static or dynamic) is selected by configuring the firmware correspondingly. If the static mode is selected the actual weight is calculated twice per second and sent via the data bus. In the dynamic mode the weight and the speed are calculated and sent together with the time after a wheel has passed.

Depending on the abilities of the used processing unit 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 and axle spacings.

Technical Data

Range		0...10 t
Speed (dynamic weighing)		0...20 km/h
Division		50 kg
Accuracy static weight[2]	at first calibration	±25 kg (up to 2,5 t)
		±50 kg (2,5 t...10 t)
	in operation	±50 kg (up to 2,5 t)
		±100 kg (2,5 t...10 t)
Accuracy dyn. weight[3]	at first calibration	± 0.5 % of the measured weight
	in operation	± 1 % of the measured weight
	speed	± 2 km/h
Loading limit		15 t
Permissible load per area		12 kg/cm2
Loading limit per area		24 kg/cm2
Operating temperature		-20°C .... +60°C
Storage temperature		-30°C .... +60°C
Electromagnetic susceptibility		according OIML No. 76 1)
Zero tracking, test etc..		automatic according OIML No. 76 1)
Type of protection (IEC 144)		IP 65
Overrunable		completely overrunable incl. cable
Operating site		Firm and level ground, max. 10 mm bend through, max. 5% slope (≈3°)
Active surface		995 x 384
Over all dimensions		995x467x17
Power supply / consumption		DC 11.5...16 / 1.5W V@12V
Interface		CANopen

1) OIML is the abbreviation for Organisation Internationale de Métrologie Légale.
2) The given values are intrinsic errors (difference between the measured weight and the real applied load) Additional errors in the range of 1...3% may occur depending on various external factors: quality of the levelling and the site. Refer to P1196.
3) Same as 2), but 2 to 5% for speeds up to 10 km/h. at higher speeds up to 20 km/h even 10% are possible!