



iWT4

Technical Capabilities

Cut-off frequency for measurement of vertical wheel/rail forces (Q)	20 ¹ - 100 Hz.
Cut-off frequency for measurement of lateral wheel rail forces (Y)	20 ¹ - 100 Hz.
Measurement of longitudinal creepage forces (X)	Steering as well as traction/braking forces are measured, currently this is an un-calibrated signal due to the difficulty in calibrating for this load case, this will be overcome in the near future.
Cut-off frequency for X	Not yet evaluated. Actual value will be variable depending on wheel geometry, but expected to be in excess of 10Hz.
Measurement of contact point position	Yes. +/- 1 mm accuracy is achievable, accuracy varies depending on wheel geometry. For all wheels, accuracy is lost during 2 point contact conditions.
Handling of two point contact	Creates equivalent, global values for the contact forces. The individual contact forces for each of the individual points of contact are not measured.
Temperature	-25°C to +50°C, may be increased after consideration of the specific application.
Special wheel disc design required?	No special requirements. Nearly all wheel sets can be used, although an examination of the wheelset drawings will be undertaken to confirm.
Modification of the wheelset	Can be re-used in traffic, however one must remember they are a sensitive measurement instrument so there is the risk of damaging the wheels instrumentation rendering them unusable for measuring wheel rail forces.
Signal transmission	Wireless signal transmission. No modification to the axle or wheel required.
Signal transmission Power Requirements	Battery Powered in standard form, 1 battery pack per wheel disc. 11 hour run time under normal conditions. Time required for changing batteries on two axles is approximately 5 minutes. Customised power supplies can be delivered on client request.
Requirements on wheel axle	Signals transmission equipment is mounted to the axle, two units per axle. In standard form each unit has a space requirement of 70 mm in the radial direction and 150 mm in the axial direction. Customised housings can be manufactured to meet other space requirements on client request.
Approvals	IWT4 has been tested as compliant to the relevant EN directives qualifying for CE marking. IWT4 has also been accredited by the German railway authority, Eisenbahn Bundesamt (EBA).
Permitted test speed	IWT4 is accredited for use by EBA for testing vehicles with a Vlim ≤ 300 km/h.
Traction/braking forces	Traction and braking forces may be applied with the exception of tread brakes and wheel mounted disc brakes. Care must be taken to avoid wheel flats.
Permitted cant deficiency and axle load	As the force/strain relation is linear, there is no reason to put an upper limit on the allowed cant deficiency or axle load.
Delivery time	Approximately 12-15 weeks.

¹ Guaranteed value, which is the requirement of EN14363/UIC518, for most wheels 100Hz is also possible but leads to a rise in the signal noise levels. Cut-off frequency should not be confused with the sampling frequency, which is much higher. The cut-off frequency is described from what frequency a useful signal can be created.