

Amberg Clearance Plus

GRP 5000



The configuration consists of

- Premium hardware GRP 5000
- Application specific software Clearance Plus
- Robust and guaranteed precision thanks to GRP Fidelity
- First-class application support

Technical Data GRP 5000 for Amberg Clearance Plus

System configuration		Cont. system accuracy	
Gauge (mm)	1000, 1067, 1435, 1520/24, 1600, 1668/76	Profile accuracy - relative to track axis - at a distance of 5 m	+/- 10 mm
Profiling unit	Amberg Profiler 5002 Profiler 5003	Object point accuracy*) - GRP with Totalstation	+/- 1.5 cm
Compatible	Leica HDS6000/ 6100, Z+F Imager 5006/ 5006i	*) Typical project accuracy. Depending on e.g. atmospheric conditions, control point quality, positioning sensor and project conditions.	
Positioning			
Profiler 5002 / 5003		Leica total stations - motorised, ATR - radio modem	TS30 TPS1200 TPS2000
Scanner type	Infrared phase shift	Leica GPS	GPS1200
Range (Ambiguity interval)	79 m	Power supply	
Sensor performance			
Profile surveying (Lateral offset and height to track axis)			
Max. data acquisition rate - Pixels/sec	500'000 px/s		
Amberg Profiler Max. scan speed - Rotations/sec	5002 100 rps	5003 50 rps	
Track geometry measurement (Position, Gauge, Superelevation)			
Kinematic measurement - data frequency	TPS: 7 Hz GPS: 10 Hz		
System accuracy			
Track coordinate*) - GRP with total station	+/- 5 mm		
Superelevation	+/- 1.0 mm		
Gauge	+/- 0.3 mm		
Environmental specifications			
Lighting conditions	Darkness to daylight		
Working temperature range	-10° to +45° C		
Humidity	Non-condensing		
System weight			
GRP 5000 - ready to measure - incl. battery and computer	56 kg		

System use and typical system performance

Clearance Plus applications		
Typical project applications	<ul style="list-style-type: none"> - Clearance surveying - Clearance gauging - Structure gauging - Compliance checks of lineside installations - Structure condition assessment 	
Typical project performance		
Application	Clearance surveying	Variant studies
Project section, lengths	1'000 m	1'000 m
Required point density	10 x 10 mm	20 x 20 mm
Surveying		
Typical measuring speed *) GRP with total station / **) GRP with GPS	3.0 km/h	1.0 km/h*) / 3.0 km/h**)
Track occupation	20 min	60 min *) / 20 min**)
Track geometry data	Stationing, Gauge, Superelevation	Stationing, Gauge, Superelevation, 3D track position
Analysis		
Working time interactive (operator) / automatic (PC)	1.5h / 6h	1.5h / 6h
Results		
	2D clearance map, cross-sections	3D point cloud 3D track axis cross-sections
System approval		
Unlimited electro-magnetic compatibility (PET wheels)	Approved by (extract): Network Rail (UK), Deutsche Bahn (DE), RFI (IT)	
Amberg Clearance reference extract		
Amberg's Clearance solution has proven its high performance all over the world. Demanding projects have been successfully realised e.g. in Great Britain, Germany, France, Switzerland, Slovakia, Spain, Greece, United States, Canada, Japan.		

Amberg Clearance Plus

Amberg Rail 2.0

Amberg Clearance

Speedy and definite clearance assessments with real time results. Modular system solution for automatic clearance surveying completed by typical railway analyses and documentation.

Project data management

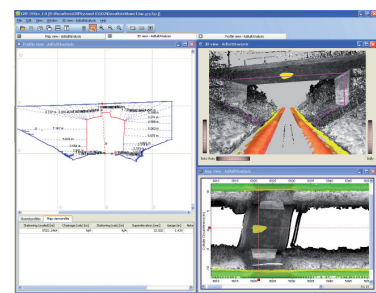
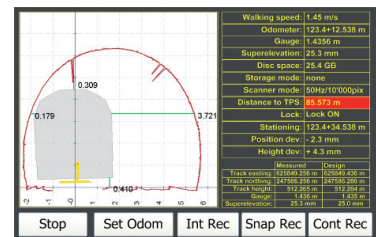
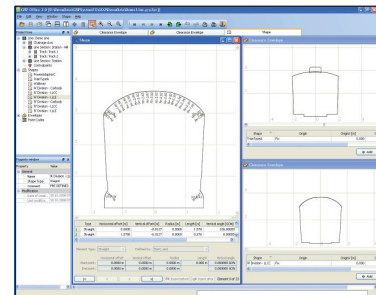
- Central database for input, visualisation and management of clearance envelopes, clearance models, track project data including route data chronology, control points and measuring epochs.
- Flexible and user friendly clearance envelope editor.
- Provision of all clearance specifications for subsequent surveying tasks and evaluations.

Surveying

- Profile measurements in 2D clearance envelope mode or 3D coordinate mode with combined collection of all relevant track geometry data. (Stationing, gauge, superelevation, 3D track coordinates (with TPS, GPS only)).
- User-definable data registration mode depending on project requirements:
 - Continuous point cloud registration
 - Definable interval profile recording
 - Targeted individual profile surveying
- Comparison and display of profile distances between measured object and selected theoretical clearance envelope in real-time directly on site – including alarm function for clearance envelope violation.

Evaluation

- Fully automatic evaluation by comparing clearance surveys with a predefined clearance model for given section – either relative to the current track position or (for 3D data) in terms of a predefined, theoretical track position.
- Comprehensive, automatic reporting:
 - Traditional profile plot including clearance distances.
 - Extensive clearance mapping – stored with scaled image documentation for clear identification of potential encroachments.
 - 3D visualisation including colouring of all critical clearance objects and including an option for creating videos of the surveyed section.
- Established interfaces for third party clearance and design applications including 3D point cloud export for post-processing in common planning software tools (e.g. Cloudworx).



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