

# Amberg Clearance Basic GRP 3000



### The configuration consists of

- Premium hardware GRP 3000
- Application specific software Clearance Basic
- Robust and guaranteed precision thanks to GRP Fidelity
- First-class application support

### Technical Data GRP 3000 for Amberg Clearance

System configuration		Cont. system accuracy	
Gauge (mm)	1000, 1067, 1520/24, 1600, 1668/76	Control point accuracy - relative to track axis - at a distance of 5 m	+/- 3 mm
Profiling unit	Amberg Profiler I10FX	Object point accuracy*) - GRP with total station	+/- 1.5 cm
TGS FX		*)Typical project accuracy. Depending on e.g. atmospheric conditions, control point quality, positioning sensor and project conditions.	
Gauge - for nominal gauges	-25 mm to +65 mm	Positioning	
Superelevation(Cant) - at 1435 mm	+/- 260 mm (+/- 10°)	Leica total stations - motorised, ATR - radio modem	TPS30 TPS1200 TPS2000
Profiler I10 FX		Leica GPS	GPS1200
Measuring range - on natural surfaces	0.3 – 30 m	Power supply	
Sensor performance		TGS FX – sensors	Leica GEB171, battery, rechargeable
Profile surveying (Lateral off-set and height to track axis)		Battery life*)	> 8 h
Single point measurement - depending on object surface	1 s	Panasonic control computer	Li-Ion battery, rechargeable
Automatic profile measurement - depending on object surface	up to 60 points/min	Battery life*)	> 4 h
Track geometry measurement (Position, Gauge, Superelevation)		*) Depending on conditions.	
Measurement stop&go - duration	TPS: 5 s GPS: 1 s	Environmental specifications	
System accuracy		Working temperature range	-10° to 50° C
Track coordinate*) - GRP with total station	+/- 1 mm	Humidity - non-condensing	80 %
Superelevation	+/- 0.5 mm	System weight	
Gauge	+/- 0.3 mm	GRP 3000 - ready to measure - incl. battery and computer	30 kg

### System use and typical system performance

Clearance applications	
Typical project applications	- Clearance surveying - Clearance gauging - Structure gauging - Compliance checks of lineside installations
Typical project performance	
Clearance gauging – Single profile measurement relative to track axis	
Measuring duration of single object (e.g. signal, bridge, platform) - 10 measuring points - manual targeting	60 s
Measuring duration of cross section (e.g. tunnel) - 50 measuring points - automatic measuring	60 s
Clearance surveying – cross section profile measurement with absolute 3D object coordinates	
Cross section interval	10 m
Measuring points per profile	30
3D track axis, every - GRP with total station	10 m
Resulting performance	350 m/h
System approval	
Unlimited electro-magnetic compatibility (PET wheels)	Approved by (extract): Network Rail (UK), Deutsche Bahn (DE), ÖBB (AT), RFI (IT)
Amberg Clearance reference extract	
Ambergs' Clearance solution has proven its high performance all over the world. Demanding projects have been successfully realised e.g. in Great Britain, France, Switzerland, Italy, Spain, Greece, Russia, Canada, Taiwan.	

# Amberg Clearance Basic

## Amberg Rail 2.0

### Amberg Clearance

Modular system solution for automatic clearance surveying completed by typical railway analyses and documentation.

#### Project data management

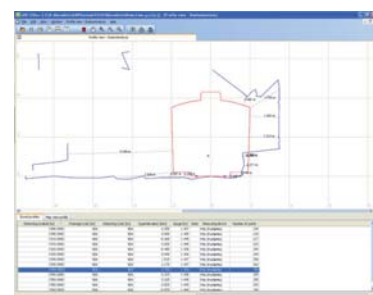
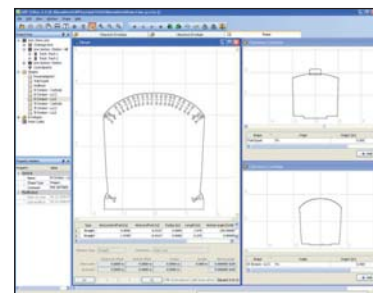
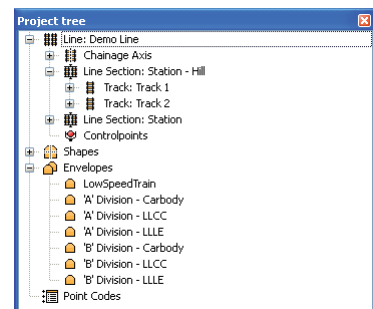
- Central database for input, visualisation and management of clearance envelopes, clearance models, track project data including route data chronology, control points and measuring epochs.
- Flexible and user friendly clearance envelope editor.
- Provision of all clearance specifications for subsequent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

#### Surveying

- Profile measurements in 2D clearance mode or 3D coordinate mode with combined capturing of all relevant track geometry data (stationing, gauge, superelevation, 3D track coordinates (with TPS, GPS only)).
- Profile data collection:
  - Either with manual object point targeting.
  - Or automatic profile measurement with definable point density on the object surface.
- Display of profile distances between measured object and selected theoretical clearance envelope in real time directly on site.

#### Evaluation

- Complete surveyed data management including automatic incorporation of subsequent re-measurements.
- 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.
  - Profile plot including clearance distances.
  - Coordinate list with additional gauging information.
- Established interfaces to third party clearance and design applications like DXF, ASCII, SC0 (ClearRoute).



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