AMBERG TECHNOLOGIES

EN 13848-4 CONFORMITY

Amberg Survey GRP 1000

The configuration consists of

- Premium hardware GRP 1000
- High-performance software Amberg Survey Basic
- Optional: Amberg Track Geometry Record (TGR)
- Robust and guaranteed precision thanks to GRP Fidelity
- First-class customer support

Amberg Survey is integral part of the Amberg Technologies application modules Slab Track, Tamping and Clearance.

Technical data GRP 1000

System configuration	
Gauge (mm)	1000, 1067, 1435, 1520/24, 1600, 1668/76
TGS FX	
Gauge - for nominal gauges	- 25 mm to + 65 mm
Superelevation (Cant) - at 1435 mm	+/- 260 mm (+/- 10°)
Sensor performance	
Track geometry measurement (Position, Gauge, Superelevation)	
Measurement stop&go - duration	TPS: 5 s GPS: 1 s
Measurement kine-matic - data frequency	TPS: 7 Hz GPS: 10 Hz
System accuracy	
Determination of track position and height*)	
GRP with total station (TPS) - stop&go mode - kinematic mode	Pos./Height: +/- 1 mm +/- 5 mm
GRP with GPS - with reference station	Position: +/- 20 mm Height: +/- 40 mm

*)Typical project accuracy. Depending on e.g. atmospheric conditions, control point quality, positioning sensor and project conditions.

Cont. system accuracy	
Gauge	+/- 0.3 mm
Superelevation - stop&go mode - kinematic mode	 +/- 0.5 mm +/- 1.0 mm
Positioning	
Leica total stations - motorised, ATR - radio modem	TS15, TS30, TS50, MS50
Leica GPS	GPS1200, GS10/14/15
Power supply	
TGS FX – sensors Battery life*)	Leica GEB171, rechargeable > 8 h
Panasonic control computer Battery life*)	Li-Ion battery, rechargeable > 4 h
*) Depending on conditions.	
Environmental specifications	
Working temperature range	-10° to +50° C
Humidity - non-condensing	< 80 %
System weight	
GRP 1000 - ready to measure - incl. battery and computer	27 kg

System use and typical system performance

Survey applications	
Typical project applications	- As-built surveys for documentation and planning of railway line refurbishment and upgrading - Track as-built data acquisition for subsequent analyses and utilisation
System use	- Open track - Light rail - Industrial tracks
Typical surveying performance	
Track survey with total station	800 – 1200 m/h
Track survey with GPS - GPS receiver and reference station necessary	3000 m/h
As-built data (export)	
Supporting data interfaces - further formats on request	- ASCII - DXF - LandXML
System approval	
CE Conformity	EN 61326-1:2013 EN 61000-6-2:2005 EN 61000-6-4:2007/A1:2011 EN 60825-1:2014 EN 13848-4 Directives 2014/30/EU Directives 2014/35/EU Directives 2011/65/EU
GRP System FX approvals from	Network Rail / London Underground (UK), Deutsche Bahn (DE), SBB (CH), SNCF (FR), ÖBB (AT), RFI (IT), Adif (ES), ProRail (NL), Infrabel (BE)
Extract of references	
Amberg's railway surveying solutions have proven their high performance all over the world. Demanding projects have been successfully realised in e.g. Germany, Austria, Belgium, the Netherlands, Denmark, France, Italy, Spain, Greece, Turkey, Australia, United Kingdom, Saudi Arabia, UAE, Korea, USA, PR China.	

Amberg Survey GRP 1000

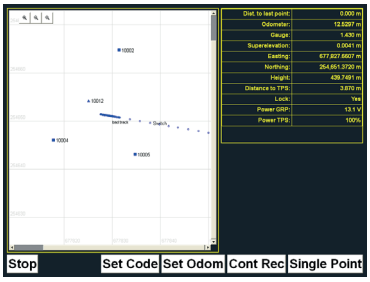
System performance and technical data

Amberg Survey

Map your line. Highly efficient system for as-built surveying of existing railway lines including powerful interfacing for selective data transfer to other applications and subsequent analyses.

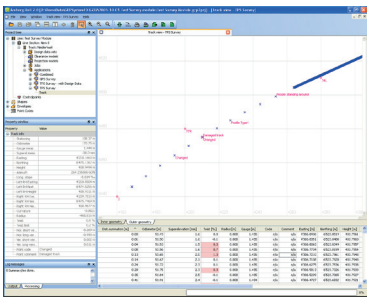
Project data management

- Line dedicated project data management as basis for structured inventory surveys, data processing and data transfer.
- Individual definition of coding schemes.
- Project cockpit for preparation of efficient and easy practicable fieldwork.



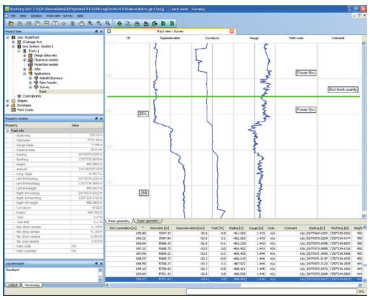
Surveying

- Powerful and integrated acquisition of current track coordinates and corresponding track parameter (gauge, superelevation).
- Direct assignment of codes and comments to single measurements as basis for efficient post-processing.
- Reliable control of ongoing measured values and progress of measurement.



Data evalutation

- Automatic analysis and merging of single measuring sections.
- Calculation of additional parameter e.g. versines, curvature, slope, twist and detailed track axis according to pre-defined reference parameter.
- Structured data export using the code information in LandXML, DXF and ASCII format, e.g. for further processing in Bentley Rail Track.
- Direct interface for further utilisation in other Amberg Rail applications.
- TGR option.



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