AMBERG TECHNOLOGIES

EN 13848-4 CONFORMITY

Amberg Survey IMS 1000 / 3000

As-built track survey at its best

Extension of a revolutionary measuring principle

- Long-chord method with only one measurement trolley for as-built survey
- Combined survey of relative and absolute track geometry
- Unrivalled survey performance up to 5000 m/h
- Repeat accuracy ± 1 mm
- Up to 90% cost savings compared to traditional methods
- Unlimited use during day and night, rain and bright sunshine - no line of sight requirements
- Measurement of objects close to track

Modular system design

- Measuring trolley consisting of precision sensors for gauge, superelevation and distance and ruggedized notebook
- AMU 1030 (Amberg Measuring Unit) for unrivalled kinematic measurement precision
- Two different control point measuring devices:
  - Total station (IMS 1000, fully automatic measurement)
  - Profiler 110 FX (IMS 3000)
- Modular system upgrading possibilities

Front: Amberg IMS 3000 with Profiler 110 FX
Back: Total station for Amberg IMS 1000

Global 3D topographic track survey

- Measuring performance up to 4000 m/h, typically 2500 m/h
- Absolute 3D control points given in global coordinate grid and used as transformation references
- Distance between CP measurements up to 500 m
- Fully compatible with other geodetic 3D survey data

3D as-built survey with Amberg IMS 3000

Local 3D topographic track survey

- Measuring performance up to 4000 m/h, typically 2500 m/h
- Setup and survey of control points during initial track survey
- Track data available in local 3D coordinate grid
- Determination of local 3D coordinates for established control points
- Results can be used for local track design and track works as well as monitoring purposes

Relative track geometry survey

- Measuring performance up to 5000 m/h, typically 3500 m/h
- Stationing plates as references
- Measurement and calculation of track parameters horizontal versines (variable chord length), vertical versines (variable chord length), gauge, superelevation and twist
- Presentation and analysis of track data with sophisticated Track Geometry Record (TGR)

Relative track geometry survey with Amberg IMS 1000

Amberg Survey IMS 1000 / 3000

System performance and technical data

System configuration		
	IMS 1000	IMS 3000
Gauge (mm)	1000, 1067, 1435, 1520/24, 1600, 1668/76	
Gauge measuring range (mm) (re nominal gauge)	-25 to +65	
Cross level (cant) at 1435 mm (mm)	+/- 260	
CP measuring device	Leica total station MS50/60, TS50/60, TS30, TS15/16	Amberg Profiler 110 FX
Weight total system (kg) incl. batteries, notebook, all measuring devices	49	47

System accuracy			
	Relative	Absolute	
Measuring system	IMS 1000 IMS 3000	IMS 1000	IMS 3000
Track position and height [1]	not avail.	+/- 2	+/- 3
Track geometry (versine), 2 sigma			
▪ 30 m chord (mm)	+/- 0.7	+/- 0.7	+/- 0.7
▪ 300 m chord (mm)	+/- 3	+/- 3	+/- 3
Cross level (cant) (mm)	+/- 0.5	+/- 0.5	+/- 0.5
Gauge (mm)	+/- 0.3	+/- 0.3	+/- 0.3
CP measurement (mm)			
▪ relative to track axis	not avail.	+/- 1	+/- 3

Measuring frequency			
Track geometry			
▪ 3D track position, cross level (measurements/sec)	100	100	100
▪ Gauge (measurements/sec)	10	10	10

Performance			
Typical measuring speed (m/h) [2]	3500	2500	2500
Max. measuring speed (m/h)	5000	4000	4000

Environmental specifications	
	IMS 1000 / IMS 3000
Working temperatur range	- 10°C to +50°C
Humidity (non-condensing)	< 80 %

Measurement data (export)	
Supported data interfaces	ASCII DXF LandXML further formats on request

System approvals	
CE Conformity	EN 61326-1:2005 EN 61000-6-2:2005 EN 61000-6-4:2006 EN 13848-4 Directive 2004/108/EC Directive 2002/95/EC
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)

DB RiL 833.0050 Type approval as railway surveying device by DB AG. DB RiL 824.0050 Measurement and detection of long-wave track irregularities.

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.

[1] Depending on e.g. control point density, control point quality and project conditions.

[2] Typical experience, may depend on project conditions.

Amberg Technologies AG
Trockenloostrasse 21
CH-8105 Regensdorf
Switzerland

Phone +41 44 870 92 22
info@amberg.ch
www.amberg.ch/at

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