



COMPLETE RAILWAY INFRASTRUCTURE DATA IN NO TIME

Fast and precise – high performance made simple

The **Amberg Clearance IMS 5000** is a state-of-the-art, modular railway surveying system that excels in real-time data acquisition and dynamic clearance analysis. It precisely measures both relative and absolute track geometry, generating accurate 3D point clouds for comprehensive infrastructure assessments, ensuring unmatched performance.

Advanced Railway Scanning

- **Modular Design with IMU:** Combines reliable GRP 5000 with advanced IMU technology for flexible configurations.
- **Comprehensive Surveys:** Captures both relative and absolute track geometry.
- **High-Resolution Data:** Produces detailed 3D point clouds for clearance analysis and BIM workflows.
- **Efficient Operation:** Captures track geometry and point cloud data at walking pace, scanning up to 5000 m/h with real-time data display, reducing costs and personnel needs.

Modular System Design

- **Precision Trolley:** Equipped with sensors for gauge, cant, and distance, adaptable to specific needs.
- **High-Resolution Scanning:** Amberg Profiler 6020 captures complete infrastructure data with exceptional accuracy.

- **Kinematic Precision:** AMU 2010/2030 ensures precise measurements.
- **Scalable System:** Allows for easy upgrades and customization.

Absolute Track Survey

- **Maximum Productivity:** Capture in absolute mode at up to 4000 m/h.
- **Accurate 3D Control Points:** Utilizes absolute points for precise data referencing.
- **Versatile Operation:** Reliable day and night without requiring line-of-sight.

Relative Track Survey

- **Focused Measurement:** Captures relative track geometry and surrounding objects.
- **Comprehensive Calculation:** Measures key track parameters for dynamic clearance analysis.



Absolute track geometry and infrastructure survey



Relative track geometry and infrastructure survey

SYSTEM PERFORMANCE AND TECHNICAL DATA

System configuration	
Gauge [mm]	1000, 1067, 1220, 1372, 1435, 1495, 1520/1524, 1600, 1668/1676
Gauge measuring range [mm] (re nominal gauges)	-25 to +65
Cant [mm] (re 1435 mm gauge)	± 260
Profiling unit	Amberg Profiler 6020
Track alignment measurement	AMU 2010/2030
System weight [kg] (re 1435 mm gauge, AMU 2030, no stabilization kit)	54

Sensor performance ⁽¹⁾	
	Amberg Profiler 6020
Profiles / second	up to 267
Million scan points / second	up to 2.188
Range [m]	0.3 to 182

Sensor performance ⁽¹⁾		
	Relative	Absolute
Typical measuring speed [m/h]	3500	2500
Max. measuring speed [m/h]	5000	4000

System accuracy ⁽²⁾		
	Relative	Absolute
Track position and height [mm]	NA	± 3
Gauge [mm]	± 0.3	± 0.3
Cant [mm]	± 0.5	± 0.5
Profile accuracy @ 5 m distance [mm] (re track axis)	± 3	± 3
Object point accuracy @ 5 m distance [mm]	± 3	± 5

AMU models ⁽²⁾		
	AMU 2010	AMU 2030
Repeat accuracy @ 60 m CP interval [mm]	± 3	± 1
Repeat accuracy @ 120 m CP interval [mm]	± 6	± 2
Repeat accuracy @ 300 m CP interval [mm]	± 20	± 5

Environmental specifications	
Lighting conditions	Darkness to daylight
Working temperature range	-10 to +45 [°C]
Humidity (non-condensing)	< 80 [%]

Data export options	
Track data	ASCII, DXF, LandXML, Further formats on request
Profiles (cross-sections)	ASCII DXF ClearRoute TopoRail Lira Further formats on request
Point cloud	ASCII PTS LAS/LAZ Further formats on request

System approvals	
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 EN 13977:2011 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)

References	
Amberg's railway surveying solutions have demonstrated high performance globally. They have been successfully implemented in demanding projects across Germany, Austria, Belgium, the Netherlands, Denmark, France, Italy, Spain, Greece, Turkey, Australia, the United Kingdom, Saudi Arabia, the UAE, South Korea, the USA, and China.	

⁽¹⁾ Typical performance may vary depending on project conditions.

⁽²⁾ Results depend on factors such as control point density, control point quality, and overall project conditions.