



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 down to 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 1030/2010/2030 (Amberg Measuring Unit) for unrivalled kinematic measurement precision
- Two different control point measuring devices:
 - Total station (IMS 1000)
 - Profiler 120 FX (IMS 3000)
- Modular system upgrading possibilities

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 300 m
- Fully compatible with other geodetic 3D survey data

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)



Front: Amberg IMS 3000 with Profiler 120 FX II
Back: Total station for Amberg IMS 1000

SYSTEM PERFORMANCE AND TECHNICAL DATA

System ⁽¹⁾ (2)		
	IMS 1000	IMS 3000
Gauge [mm]	1000, 1067, 1220, 1372, 1435, 1495, 1520/1524, 1600, 1668/1676	
Control point measuring device	Total station on trolley	Amberg Profiler 120 FX
Weight [kg] (re 1435 mm gauge, AMU 2030)	45.8	43.8
Gauge measurement		
Range [mm] (re nominal gauges)	-20 to +55	
Accuracy [mm]	±0.3	
Cant measurement		
Range [mm] (re 1435 mm gauge, range ±10°)	±260	
Accuracy [mm]	±0.5	
Track position measurement		
Track position accuracy [mm]	Single CP: ±1	Single CP: ±3
Track position accuracy with GNSS receiver [mm]	Hz. position: ±20 Height: ±40	
Trolley battery		
Type	Amberg GBS3100 Li-Ion, rechargeable	
Operating time [h]	>8	
Field computer battery		
Type	Panasonic FZ-G2 compatible	
Operating time [h]	>8 if connected to GBS3100	
Environmental specifications		
Working temperature range [°C]	-10 to +50	
Humidity [%] (non-condensing)	<80	

Performance on track ⁽¹⁾		
	IMS 1000	IMS 3000
Typical track survey speed [m/h] (re CP interval: 60 m)	Single CP: 2500	Single CP: 2500
Max track survey speed [m/h] (re CP interval: 60 m)	Single CP: 4000	Single CP: 4000

AMU models			
Repeat accuracy @	1030P	2030	2010
60 m CP interval [mm]	±0.8	±1	±3
120 m CP interval [mm]	±1.5	±2	±6
300 m CP interval [mm]	±3	±5	-

Amberg Profiler 120 FX ⁽²⁾	
Measuring range [m]	<30
Distance measuring accuracy @ 5 m [mm]	1

Positioning sensors & accessories			
	Leica	Topcon	Sokkia
Total station (≤1")	TS15/16, TS20, TS50/60, TS30, MS50/60	GT-1500/1200, MS AXII	ix-1500/1200, NET AXII
Prism	Round, Mini, 360, 360 Mini, Mini Zero	Prism-2, ATP1	AP01, ATP1
GNSS receiver	GPS1200, GS10/14/15/16/18	HiPer VR, XR	GRX3, GRX5

Measurement data (export)	
Supported data interfaces	ASCII DXF LandXML 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)	

- 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.