Amberg Tamping IMS with Topcon accuracy

Survey-grade precision with maximum efficiency

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The Amberg Tamping IMS system combines survey-grade accuracy with the speed of continuous IMU-based measurement. It eliminates repeated total station setups and streamlines pre- and post-tamping workflows with fast analysis, correction file export, and reliable verification.

Hardware Configurations

- **IMS 1000:** Total station + IMU on trolley. Absolute positioning via onboard total station with continuous IMU-based track trajectory measurement
- **IMS 3000:** Profiler FX + IMU on trolley. Absolute positioning via lateral single control point measurement using Profiler FX
- Optional GNSS: For early tamping runs where ultra-high accuracy isn't required

Profiler FX Capabilities (IMS 3000)

- Lateral single control point measurement for post-tamping verification
- Lateral object capture
- Profile measurement
- Clearance model assessment via Amberg Rail – Clearance Module

Pre-Tamping Workflow

- **IMS 1000:** Absolute positioning via multiple control point measurement, lateral control point measurement or GNSS
- **IMS 3000:** Absolute positioning via lateral control point measurement or GNSS
- Continuous geometry capture via IMU
- Export correction files for Plasser, Matisa, Framafer, Harsco, and others

Post-Tamping Workflow

- Absolute positioning via single or multiple control points
- IMU-based track geometry recording
- Verification and acceptance reporting

Amberg Rail Software – Tamping Module

- Unified project management with design, measurement, and tamping parameters
- Streamlined workflows with real-time display
- Automated processing with graphical outputs
- Direct export of correction files
- Comprehensive tamping reports

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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)	43.5	40.9

Gauge measurement

Range [mm] (re nominal gauges)	-25 to +65
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: ±2 Multi CP: ±1	Single CP: ±3
Track position accuracy with GNSS receiver [mm]	Hz. position: ±20 Height: ±40	

Trolley battery

Type	Amberg GBS 3010 Li-Ion, rechargeable
Operating time [h]	>4

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 Multi CP: 1000	Single CP: 2500
Max track survey speed [m/h] (re CP interval: 60 m)	Single CP: 4000 Multi CP: 1500	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	±20

Amberg Profiler 120 FX [2]

Measuring range [m]	<30
Distance measuring accuracy @ 5 m [mm]	1

Topcon Positioning sensors & accessories

Total station	GT-1501/1201, MS05 AXII
Prism	Prism-2, ATP1
GNSS receiver	HiPer HR

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Tamping operations

Typical track applications	New construction, rehabilitation, renewal, maintenance, tamping only
Track type	Open track, turnout systems (incl. structural gauge enlargement, e.g. FAKOP®)
Tamping data preparation (correction data calculation incl. ramping)	<10 min per 500 m
Tamping data formats (further formats on request)	Plasser WinALC, DosALC, AGGS, CGV5, Framafer BAO3, Matisa, Harsco

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.

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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.

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