

# Amberg Tamping VMS 1000

The long-chord track survey system for precise track works



## Proven measuring principle – optimized for track works

- Long chord method
- Combined survey of inner track geometry and absolute position in one run
- Absolute track accuracy 1 mm
- Correction data in real-time
- Fully automatic control point measurement
- Best survey performance
- More than 80% cost savings compared to traditional methods

## Modular system design – optimized for toughest project conditions

- Flexible system operation: twin-trolley mode or tripod mode
- Modular system upgrading
- Safe digital data handling – from measurement to final transfer of correction data
- Easy handling, simple transportation
- Flexible measuring mode
- No geodetic skills required
- LED-lighting for secure work at night

## Twin-trolley mode: High performance for long track sections

- 1st choice for measurements during track closures
- Measuring performance up to 2500 m/h
- Length of reference chord of up to 250 m
- Measuring system GRP 1000 consisting of precision sensors for gauge, superelevation and distance, prism column and ruggedized notebook
- Measuring system GRP TSC+ with precision sensors and tachymeter on automatic self-levelling tribrach
- Extendable to two independent single trolley systems (for alternate operation in tripod mode)



## Tripod mode: Greatest flexibility under demanding project conditions


- Ideal for shorter track sections, e.g. turnouts, multi-track sections and projects with limited track access
- Length of reference chord of up to 400 m
- Measuring system GRP 1000
- Tachymeter on tripod (optional with automatic self-levelling tribrach)
- Flex-Stop-Function for immediate measurement interruption and track release
- Upgradable with second measuring trolley at any time



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## System performance and technical data

| System configuration   |   |
|--|---|
| Gauge  | 1000, 1067, 1435, 1520/24, 1600, 1668/76 mm |
| Amberg GRP 1000  |   |
| Gauge measuring range<br>▪ for nominal gauges                  | -25 to +65 mm                               |
| Cross level<br>(cant/superelevation)<br>▪ at 1435 mm           | +/- 260 mm                                  |
| Weight<br>▪ incl. batteries, notebook                          | 27 kg                                       |
| Amberg GRP TSC+ (twin-trolley mode)                            |   |
| Gauge measuring range<br>▪ for nominal gauges                  | -25 to +65 mm                               |
| Cross level<br>▪ at 1435 mm                                    | +/- 260 mm                                  |
| Self-levelling tribrach<br>▪ time                              | < 5 s                                       |
| Weight<br>▪ incl. total station, batteries, automatic tribrach | 33 kg                                       |
| Total station on tripod (tripod mode)                          |   |
| Manual levelling or with optional automatic tribrach<br>▪ time | < 5 s                                       |
| Total station  |   |
| Leica total station<br>▪ motorised, ATR                        | MS50, TS50, TS30, TS15                      |
| System accuracy  |   |
| Survey track position and height <sup>1)</sup>                 |   |
| ▪ Stop & Go mode   | +/- 1 mm                                    |
| ▪ Kinematic mode   | +/- 3 mm                                    |
| Cross level  |   |
| ▪ Stop & Go  | +/- 0.5 mm                                  |
| ▪ Kinematic  | +/- 1 mm                                    |
| Fixed-point measurement<br>▪ relative to track axis            | +/- 1 mm                                    |
| Measuring frequency  |   |
| Track geometry<br>▪ 3d track position, gauge, cross level      |   |
| Stop & Go mode   | < 5 sec/ measurement                        |
| Kinematic mode   | < 7 measurements/ sec                       |

| Environmental specifications  |                         |  |             |
|---|-------------------------|--|-------------|
| Working temperature range   |                         | - 10° to +50°  |             |
| Humidity<br>▪ non-condensing  |                         | < 80 %-  |             |
| Typical performance <sup>2)</sup>   |                         |  |             |
| Mode  | accuracy track position | twin-trolley mode  | tripod mode |
| Precision   | +/- 1 mm                | 1200 m/h   | 850 m/h     |
| Performance   | +/- 3 mm                | 1900 m/h   | 1150 m/h    |
| Quick   | +/- 10 mm               | 2300 m/h   | 1250 m/h    |
| Tamping data  |                         |  |             |
| Tamping data preparation<br>▪ Correction data calculation incl. ramping   |                         | < 15 min/500 m   |             |
| Tamping data formats  |                         | Plasser WinALC, ALC<br>CGV5<br>Framafer BAO3<br>Matisa<br>Harsco   |             |
| System approval   |                         |  |             |
| CE Conformity   |                         | EN 61326-1:2005<br>EN 61000-6-2:2005<br>EN 61000-6-4:2006<br>EN 13848-4<br>Directive 2004/108/EC<br>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. |                         |  |             |

<sup>1)</sup> Depending on e.g. chord length, atmospheric conditions, control point quality, positioning sensor and project conditions.

<sup>2)</sup> Typical experience values, may depend on project conditions.