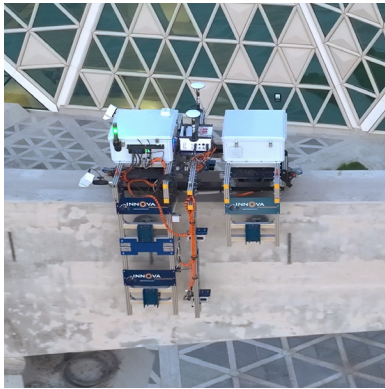


INNOVA BEAM MEASURING DEVICE (BMD)

Monorail Beam Automated Measurement Service

Innova provides guideway beam measurements by deploying the BMD, delivering fast, accurate, and adaptable quality verification. Post-processing produces a clear, simplified report for monorail contractors and owners, identifying out-of-tolerance areas and recommended corrective actions to improve guideway performance and ride quality.



WHY IT MATTERS

Monorail systems depend on perfectly aligned beams for ride quality and long-term service performance. The BMD ensures **construction, assembly consistency, and global compatibility**, helping owners and contractors deliver projects faster, safer, and consistent guideway beam tolerances.

BENEFITS	IMPACT
 Accelerates QA/QC	Reduces manual survey and inspection time by up to 80%. Improves turnaround by 40%
 Unmatched Accuracy	Achieves ± 0.15 mm vertical precision and 0.02° roll/pitch relative measurement accuracy.
 Autonomous Operation	Fully self-propelled and data-logging – minimal human intervention required. Scan up to 30 km of beams a day.
 Global Adaptability	Adjustable to multiple monorail beam geometries.
 Complete Traceability	Generates verifiable, export-ready as-built reports with GPS-referenced profiles.

HOW IT WORKS

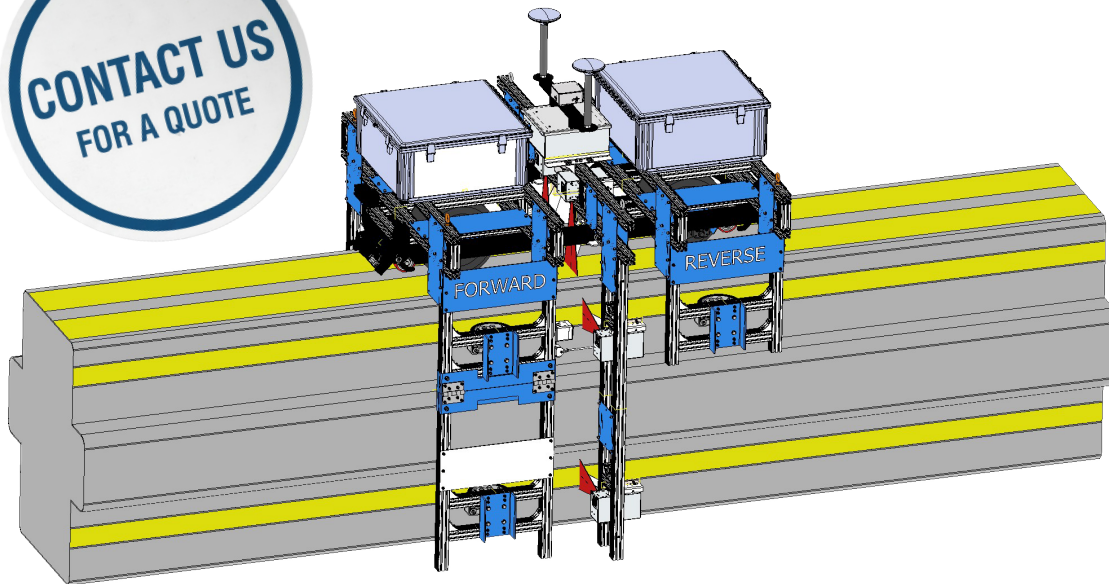
Multi-laser scanning, combined with **Internal Measuring Unit (IMU)** and **accelerometer sensors**, measures width, twisting, superelevation, and alignment with sub-millimeter precision. The onboard system processes and stores all data, allowing direct export to **Surface Systems & Instruments software** for analysis and reporting.

EFFICIENT SERVICE

Field operated and results processed by Innova's expert team.

WHEN IT WORKS

The BMD can be used immediately after construction or years into the service of a system.



See Device In Action



TECHNICAL SPECIFICATIONS

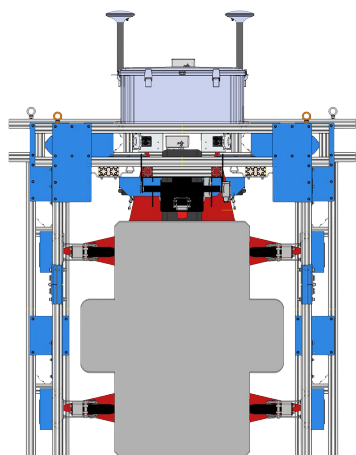
CATEGORY	SPECIFICATION / RANGE	PERFORMANCE
Operation Speed	2.2 m/s (8 km/h)	Continuous scan at 25.4 mm intervals
Laser Profiler Vertical Accuracy	±0.15mm	Verified using 100 mm laser array
Laser Profiler Pitch/Roll Accuracy	±0.02°	IMU and accelerometer-assisted
GPS-PPK Positioning	±10 mm horizontal / ±25 mm vertical	High Accuracy GNSS correction. Requires XYZ surveyed location for calibration and access to GNSS satellites along alignment
Sampling Frequency	100 Hz	6 synchronized LMI Gocator lasers
Laser Profiler Data Resolution	1280 pts per scan/ 1000 Hz	Real-time surface texture profiling
Operating Range	0-50° C	Field-tested under global conditions
Weight	350 kg	Modular, field-serviceable design
GPS-PPK Positioning Frequency	50 Hz	

MEASUREMENT CAPABILITIES

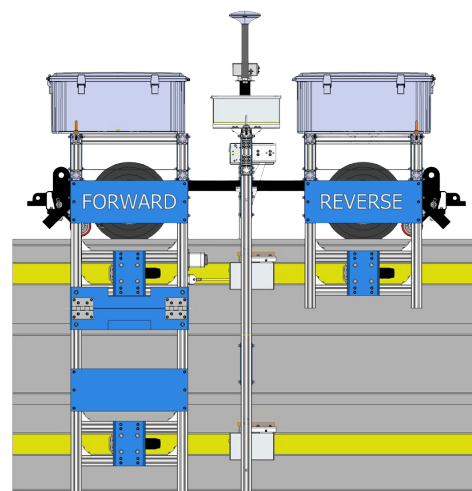
MEASURED PARAMETER	TOLERANCES	METHOD
Beam Width	±0.3 mm + flex*	Side Dual-laser projection comparison
Flatness	±0.15 mm + flex*	Dual-laser planar calibration
Superelevation	±0.02°	IMU roll reference
Beam Squareness	±0.02°	Orthogonal laser calibration
Beam Twisting	±0.02°	Laser & IMU correlation
Longitudinal Profile	±0.3 mm + flex*	Six-laser point-to-point analysis
Beam Joint Misalignment	±2 mm	Relative height analysis
Sampling Interval	25 mm	

*Isolated U-frame flexibility, which is typically less than 0.1 mm

UNIVERSAL ADAPTABILITY



ONE DEVICE. EVERY GEOMETRY
Alstom Innovia 200-300
CRRC
Hitachi Large, Standard, and Small
BYD
Scomi



OUTPUT & INTEGRATION

Generates data for automatized quality assurance reports, indicating areas to enhance. Data can be used to create 3D beam surface models

