Providers of Innovative Technology for Measuring and Managing Roads.

ROMDAS

Laser Crack Measurement System (LCMS)

Manufactured by Data Collection Ltd, a Moog Inc. company

8C Bentinck Street, New Lynn, Auckland 0600, New Zealand.

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ROMDAS System Overview

ROMDAS® (**RO**ad **M**easurement **D**ata **A**cquisition **S**ystem) is a comprehensive, cost effective and modular system for collecting asset and pavement information. Implemented in over 60 countries, it's flexible design allows for installation on locally sourced vehicles and meets widely accepted international standards.

Depending on your needs, a ROMDAS system can be easily customized with a variety of add-on modules to suit the specifications and budget of any project.

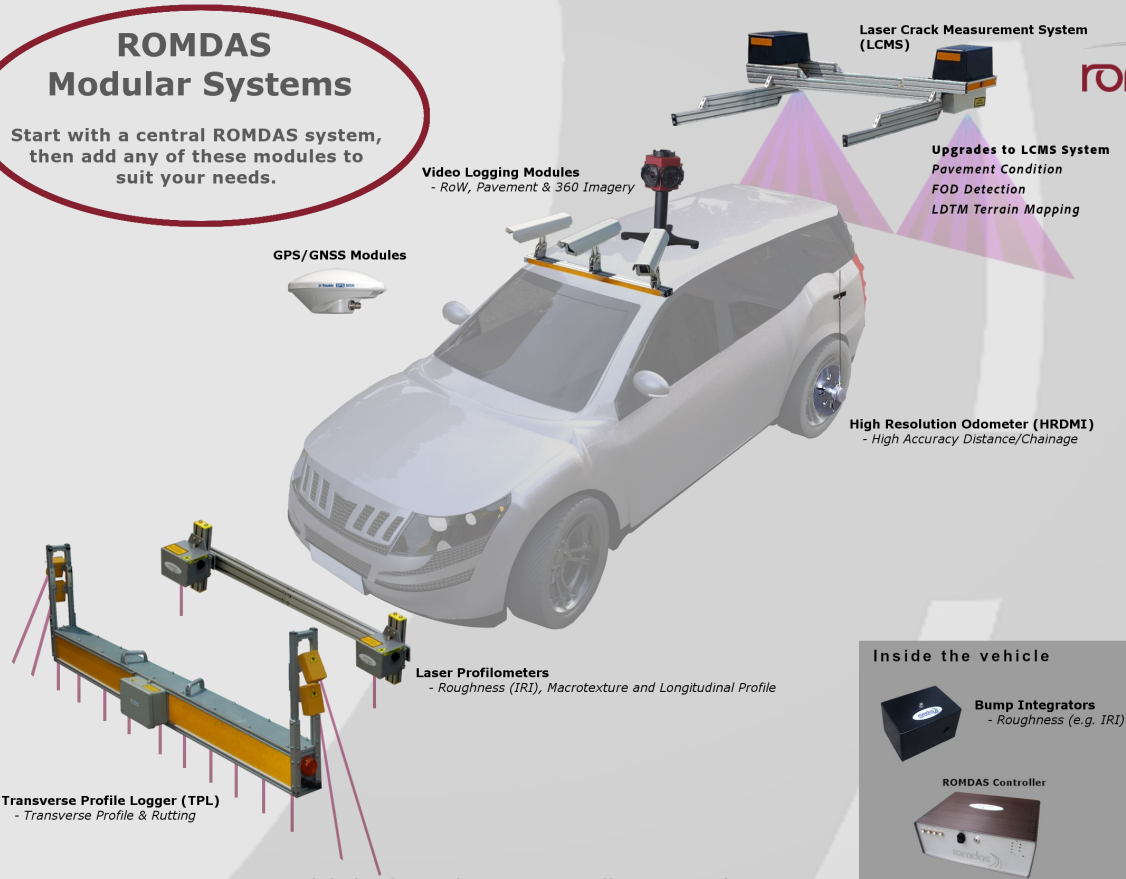
Whether a private consultant, government department or research institution, ROMDAS offers great reliability, flexibility and ease of use for anyone who needs to quickly and accurately collect asset data.

ROMDAS CAN BE USED FOR...

- ✓ High-speed network level or project specific road surveying
- ✓ Road roughness surveys
- ✓ Transverse profile/rutting surveys,
- ✓ Macro-texture (MPD)
- ✓ Visual condition, environment or event rating
- ✓ Automatic crack and surface defect inspections
- ✓ Location referencing (spatial GPS/GNSS data or linear LRP data)
- ✓ GIS mapping of condition data and road alignment
- ✓ Video logging surveys (right of way, 360 and pavement view)
- ✓ Mobile mapping of roadside assets & inventory
- ✓ Road geometry surveying
- ✓ Travel time and congestion surveys
- ✓ iRAP road safety surveys

ROMDAS Modular Systems

Start with a central ROMDAS system, then add any of these modules to suit your needs.



For Global Sales and Support, email sms@romdas.com

Software Solutions

ROMDAS Data Acquisition
In Vehicle

DataView
Office Post-Processing

Mobile Mapping
Office Post-Processing

Inside the vehicle

Bump Integrators
- Roughness (e.g. IRI)

Event Rating Keyboards

ROMDAS Controller

Survey Computers

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ROMDAS Module:

Laser Crack Measurement System

SPECIAL POINTS OF INTEREST:

- Exceptional price for a system utilizing industry standard Pavemetrics™ lasers
- Pavement images with cracking and defects automatically overlaid
- 4m width profiles with +4,000 points per profile
- Detects cracking down to 1 mm
- Operates up to 100 kms/h
- Lane tracking feature for consistency
- Day or night operation
- Upgrade for airport FOD detection & LDTM available*
- Add ROW cameras, GPS and other modules to supplement LCMS™ data
- Real-time display during surveying
- Non-proprietary data formats and easily exportable to Excel, GIS mapping or asset management systems
- Reprocess data using different parameters without re-surveying
- Roof mounted, not bumper mounted, for increased maneuverability
- System powered by vehicle battery, with no need for additional generators

** Contact our Sales team for more information.*

3D PAVEMENT PROFILING WITH LCMS

The ROMDAS LCMS™ module is one of the most advanced multifunctional devices for measuring pavement condition. The LCMS™ is connected to a central ROMDAS system and controlled by the ROMDAS Acquisition Software. It uses high speed cameras, 2 laser line projectors from Pavemetrics™ and advanced optics to acquire high resolution 3D profiles of the road surface.

LCMS™ records more than 5,000 full 4 m wide profiles per second while travelling at normal traffic speeds. The high frequency of profiles allow for automatic identification of a range of critical pavement attributes.

It's custom optics and high-power scanning lasers mean the system is unaffected by light conditions and can operate in full daylight or night-time.

PROFILE ANALYSIS

Thanks to the exceptionally accurate transverse profiles, scan frequency and analysis algorithms, the LCMS™ is capable of automatically calculating datasets like:

- Cracking (including, width, depth, length, type and even sealed cracks),
- Rut depth, width and cross-sectional area,
- MPD Macro-texture,
- Pavement Type and Marking detection,
- Edge drop-off and curb detection,
- Ravelling detection,
- Bleeding,
- Pothole and Delamination detection,
- Shoving,
- Concrete joints and faulting,
- Water pooling depths,
- Sewer and storm-drain detection ,
- Pavement images automatically overlaid with defects.

Upgrades available also enable the collection of:

- Longitudinal profiles and roughness (IRI),
- Road geometry (slope, cross-fall, radius of curvature, super elevation),
- Airport Foreign Object and Debris (FOD) detection.
- Terrain mapping for CAD

The LCMS™ is ideal for network level surveys or for customers who require the high accuracy and variety of data needed to manage modern roads.

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ROMDAS Module:

Laser Crack Measurement System-4M

SPECIAL POINTS OF INTEREST:

- 100x the typical resolution of mobile LiDAR
- Automated cracking, rutting, potholes, manholes and more
- 1-10 PASER rating protocol output
- 95%+ repeatability
- High-resolution images with distresses
- ESRI SHP le output

A single sensor module, LCMS-4M is a an ideal budget solution for pavement condition data collection to meet specific data needs and project network length. This LCMS-4M sensor unit uses the LCMS technology and is a fully automated solution integrated with ROMDAS Acquisition Software to collect the required pavement condition data.

The "4M" here denotes the 4m lane width it covers even with a single sensor to create high resolution 3D road profiles. LCMS-4M automatically detects and quantifies select pavement condition defects such as cracking (including sealed), rutting, potholes, patches, pavement markings, and manholes and storm drains. It fully complies with industry best practice for pavement condition rating of one pass per direction to provide industry standard condition ratings according to the PASER and PSCI standards.

LCMS-4M comes in different variants

FULL LCMS-4M

This is a complete system with no km restrictions to collect select pavement condition defects, rutting, and roughness (IRI)outputs.

LCMS4M RUTTING ONLY

This option collects high resolution transverse profile to calculate rut depth, length and area for unlimited kms. You can upgrade this add-on module to collect Roughness (IRI) data, and/or other pavement condition data.

PRICE PER KM MODULE (PPKM)

Upgrade the LCMS-4M Rutting Only module with this "pay as you use" subscription solution to measure pavement condition defects as per your network length. You have a choice from multiple economical packs starting from 100km up to 7500+ kms and pay only for the required kms to suit your project needs.

Talk to our Sales team to know more about LCMS-4M and PPKM packages.

Single Scanner LCMS - 4M

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ROMDAS Module:

Laser Crack Measurement System

OVERCOMING TRADITIONAL LIMITATIONS

Traditionally survey systems relied on several single-point lasers mounted at bumper height to record longitudinal and transverse profiles. This approach has inherent limitations when surveying in the real-world, including:

- Reliance on the driver to follow an exact driving line
- Curbs or drop-off affecting rut depth calculations
- Inability to accuracy measure rut width or area
- Large spacing between sensors can distort transverse profiles by missing high or low points

The operational principle of LCMS™, with its scanning lasers and lane tracking feature, overcomes all these limitations to ensure high accuracy and repeatable data is collected from year to year.

We believe the LCMS™ is the next evolution for pavement analysis on developing and modern road networks.

Specifications

Sampling Rate	28,000 Hz (profiles per second)	
Vertical resolution	+/- 0.10 mm	
Laser Type Classification	Class 4	
Laser Safety Classification (Complete System)	Class 1 (as defined in IEC 60825-1:2014)	
Outputs	**Standard outputs:**	
	• Cracking (Longitudinal, transverse, alligator, multiple, sealed cracks), • Rut depth, width & cross-sectional area for each wheel path, • Macro-texture (MPD, MTD) across whole lane width in 5 AASHTO band, • Potholes & Delamination, • Edge drop-off and curb detection, • Pavement type detection, • Pavement marking detection,	• Raveling, • Bleeding, • Shoving, • Concrete joint/faulting, • Water pooling, • Sewer and storm –drain, • Geotagged Pavement images (.JPEG).
	Optional Upgrades: • Longitudinal profile/Roughness (IRI in both wheel paths), • Geometry (slope, cross-fall, radius of curvature, super elevation).	• Airport Foreign Object & Debris (FOD) detection, • LDTM Terrain Mapping (export of .LAS files for CAD)
Survey Speed	Up To 100 Km/h	
Transverse Range	4m nominal (4160 points per profile)	
Output File Format	Microsoft Access Files, JPEG Image files with Defect Overlay.	
Environmental Protection	IP—65 (NEMA 4)	
Power Consumption	150 Watts (240 VAC)	
Applicable standards	ASTM E950, ASTM E965, ASTM E1703, ASTM E1845, ASTM E1926, ASTM D5340, ASTM D6433, AASHTO PP37, AASHTO PP38, AASHTO PP67, AASHTO PP68, AASHTO PP69, AASHTO PP70, AASHTO R56, AASHTO R85, AASHTO R86, AUSTROADS Guidelines (where applicable), ISO 13473, NCAT Profiler Certified (longitudinal profiler), LCPC Methode d'essai No 40, World Bank Technical Paper 46.	

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