Hawkeye 1000 Series

The Hawkeye 1000 Series is a portable range of road survey equipment, designed to offer affordable solutions for road profiling and video data collection.

The Hawkeye 1000 range is the result of ARRB's extensive research into pavement and asset management.

The economic benefits of the 1000 Series and fit for purpose specifications make it an ideal solution for both video and road profiling applications. Most importantly, the 1000 Series is fully compatible with other Hawkeye products, enabling full data integration across the entire range.

Our advanced research and development program ensures we provide our clients the best products, utilising the latest research and technologies.

Collecting accurate, time stamped data is assured in Hawkeye through the use of our innovative development, Heartbeat. The Heartbeat module ensures that all data is accurately linked to a primary key and allows for the integration of current and future data acquisition modules, meaning seamless upgrades of your equipment.

All systems are manufactured in compliance with ISO 9001:2008 quality systems and are backed by ARRB's experienced customer support team and over 50 years of road and transport research.

HAWKEYE
SCALEABLE SURVEY SOLUTIONS

H1000 Digital Laser Profiler

The H1000 Digital Laser Profiler (DLP) measures longitudinal profile, roughness and macrotexture (MPD and SMTD).

A World Bank Class 1 profiler, the H1000 DLP measures road profile using accelerometers and precision laser sensors, to compensate for vehicle body movement.

The DLP is completely portable , utilising a detachable beam that comes complete with a tow-bar mounting kit, making it perfect for less frequent survey demands.

An accurate Distance Measuring Instrument (DMI) and the Heartbeat module are used to precisely link the data to distance measurements.

Used in conjunction with the Hawkeye Processing Toolkit, you have the ability to produce tables, graphs, reports and exports from your collected data.

The H1000 DLP is capable of supporting up to two digital imaging cameras, DGPS and a Gipsi-Trac Geometry system.

Features

- World Bank Class 1 profiler with a choice of one, two or three laser combinations to suit all budgets
- Simple turnkey operation
- Can be easily shipped for remote survey requirements and short-term vehicle installations
- Easily installed on a vehicle without special tools or technical personnel
- Lightweight aluminium beam with external weatherproof housing
- Data is linked to chainage and GPS coordinates
- Operational at highway speeds to reduce survey time and costs
- Results are independent of vehicle type

Applications

- Pavement condition assessment
- Accurate quality assessments
- Quality control
- Contract validation

Available outputs

- Longitudinal profile
- Roughness (IRI, NAASRA, Ride Number, HATI)
- Macrotexture (MPD and SMTD)
- Rit index
- GPS location / distance

Compliance with standards

- ASTM E950: Longitudinal profile
- AASHTO PP37: Pavement roughness
- ASTM E1845: Pavement macrotexture
- ISO 13473: Mean Profile Depth (MPD)
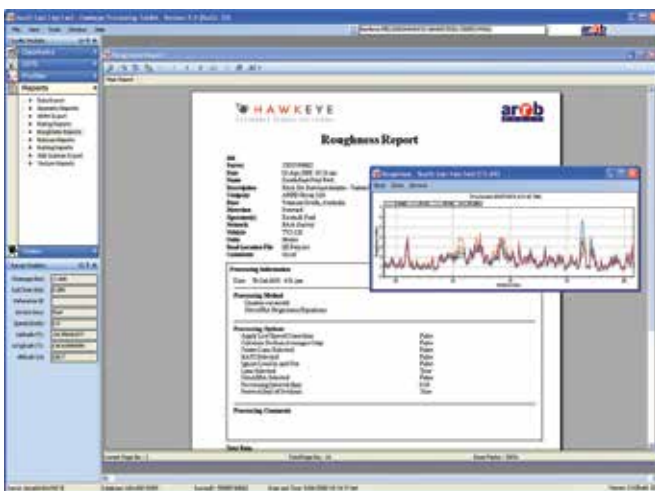
H1000 Digital Imaging System

The H1000 Digital Imaging System (DIS) is an imaging unit for visually capturing and locating roads and roadside features.

The single, full high definition (HD), colour camera can be mounted on a windscreen or vehicle dashboard.

The DIS is completely portable, using a suction mounted camera and transportable carry case, allowing for the system to be easily transferred between vehicles.

An accurate Distance Measuring Instrument (DMI) and the Heartbeat module are used to precisely link the data to distance/chainage.

Used in conjunction with the Hawkeye Processing Toolkit software, the acquired images can be reviewed quickly and efficiently with the ability to locate assets, assess their condition and export the individual images to asset management systems.

The H1000 DIS is capable of supporting a profiler with up-to three lasers, two digital imagery cameras, DGPS and a Gipsi-Trac Geometry system.

Features

- Up to two full HD cameras can be supported
- Simple turnkey operation
- Can be shipped for remote survey requirements and short-term vehicle installations
- Uses .AVI storage files
- Data is linked to chainage and GPS coordinates
- Operational at highways speeds to reduce survey time and costs
- Ideal for use on a variety of vehicles
- Georeferencing and measurement capabilities

Applications

- Visual identification of roadside features and assets
- Right of way assessment
- Asset location for GIS applications
- Road safety assessment

Available outputs

- Digital imagery
- GPS location / distance
- Shapefiles
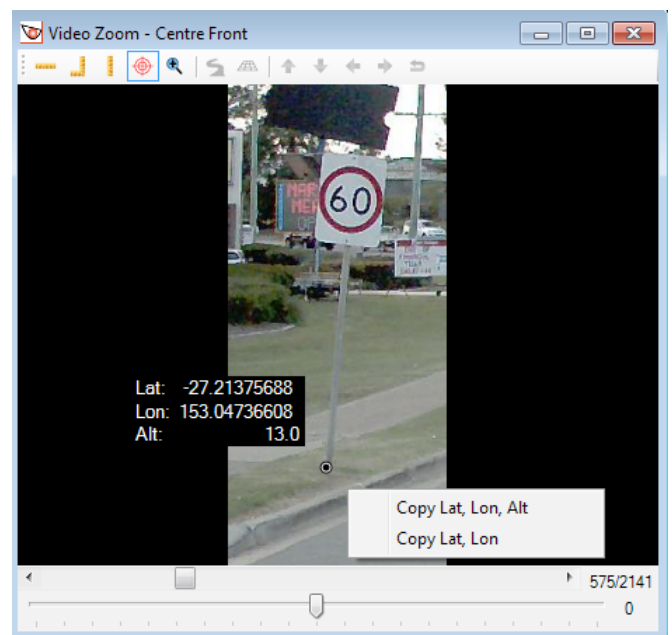
Hawkeye 1000 DUO

The first completely portable road and asset data collection system, with multiple configuration options.

The H1000 DUO is perfect for project level data collection demands, as well as larger scale network surveys. The system is capable of collecting longitudinal profile, roughness and macrotexture (MPD and SMTD), whilst providing fully-linked video images.

An accurate Distance Measuring Instrument (DMI) and the Heartbeat module are used to precisely link the data to distance/chainage.

Used in conjunction with the Hawkeye Processing Toolkit software, operators can produce a wide range of reports to review network condition and performance. This information can then be simply exported to CSV, or applications such as HDM-4 and GIS tools.

The H1000 DUO is capable of supporting a profiler with up-to three lasers, two digital imagery cameras, DGPS and a Gipsi-Trac Geometry system.
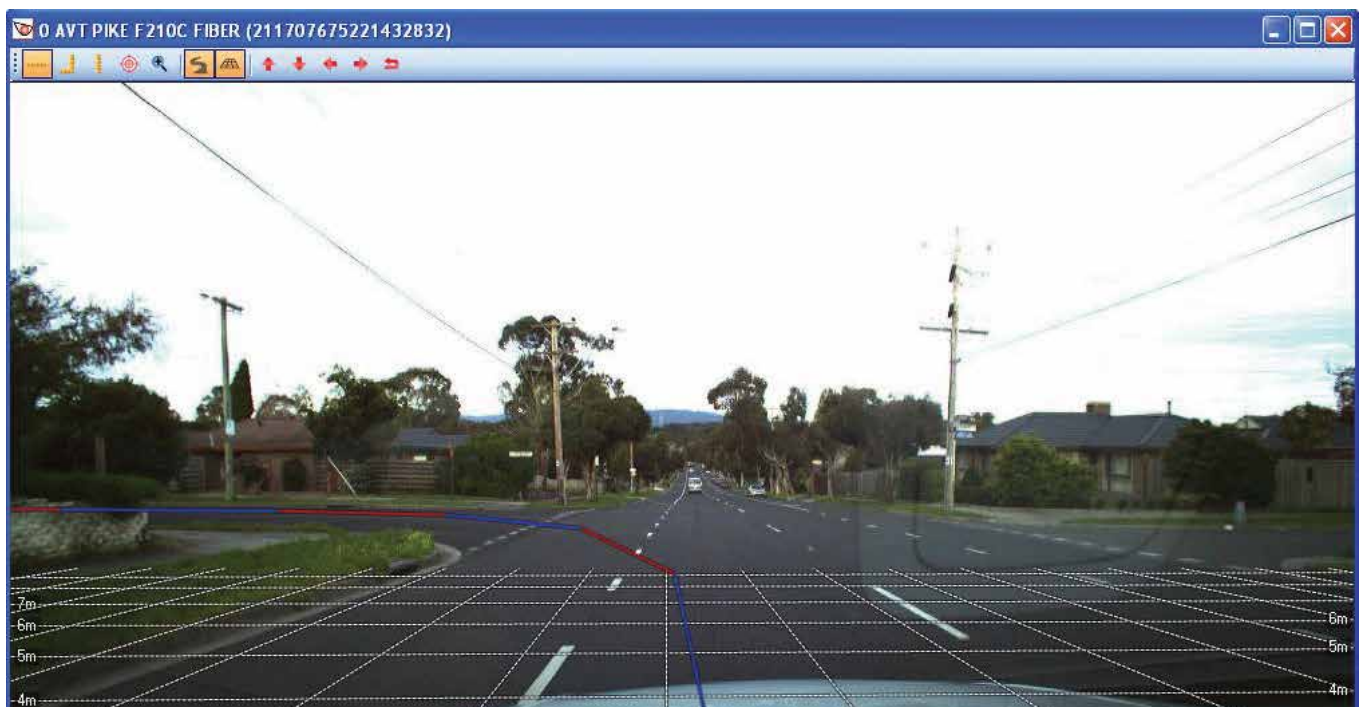
Features

- World Bank Class 1 profiler with a choice of one, two or three laser combinations to suit all budgets
- Outputs of roughness, longitudinal profile and macrotexture (MPD and SMTD)
- Up to two full HD cameras can be supported
- Simple turnkey operation
- Can be shipped for remote survey requirements and short-term vehicle installations
- Uses .AVI storage files
- Data is linked to chainage and GPS coordinates
- Operational at highway speeds to reduce survey time and costs
- Ideal for use on a variety of vehicles
- Georeferencing and measurement capabilities

Applications

- Pavement condition assessment
- Identification of roadside features and assets
- Infrastructure condition assessments
- Road safety assessment
- Pavement construction quality control

Available outputs

- Longitudinal profile
- Roughness (IRI, NAASRA, Ride Number, HATI)
- Macrotexture (MPD and SMTD)
- Digital imagery
- GPS location / distance
- Shapefiles and KML

Compliance with standards

- ASTM E950: Longitudinal profile
- AASHTO PP37: Pavement roughness
- ASTM E1845: Pavement macrotexture
- ISO 13473: Mean Profile Depth (MPD)
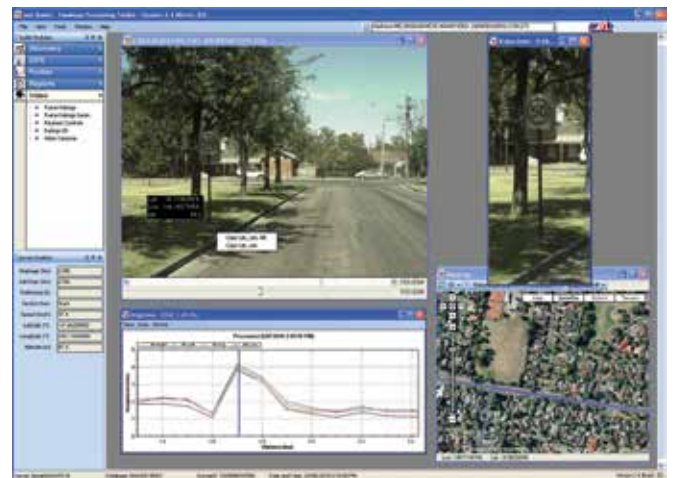
H1000 Gipsi-Trac Geometry

The Gipsi-Trac Geometry System uses a combination of inertial sensors to collect road geometry information.

The unit includes the Gipsi-Trac microprocessor-based system, which records and combines inertial data from a gyroscope, accelerometer and distance sensor with GPS position. The built in dead-reckoning capability allows for position data to be recorded when in tunnels, under bridges and locations with little or no GPS coverage.

It outputs data in a variety of customisable geographic projection systems that allow the user to export the data in their GPS native format, with no conversions necessary.

The Hawkeye Processing Toolkit software ensures that the survey data can be reviewed and processed quickly and efficiently. The data from each module can then be compared against other results and exported to most pavement and asset management systems.

The H1000 Gipsi-Trac system is capable of supporting a profiler with up-to three lasers, two digital imagery cameras and DGPS.
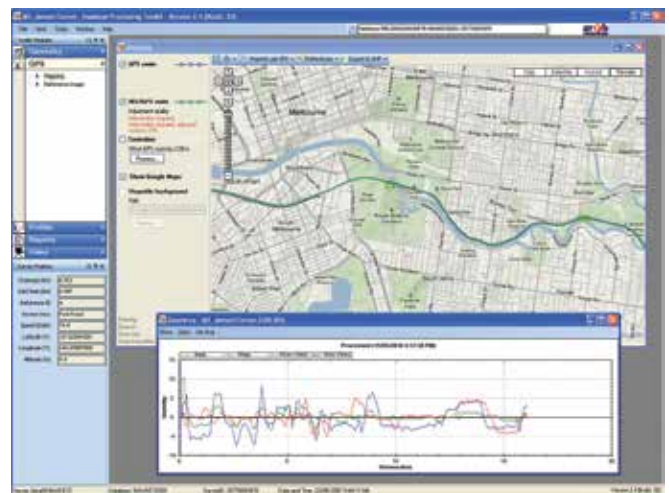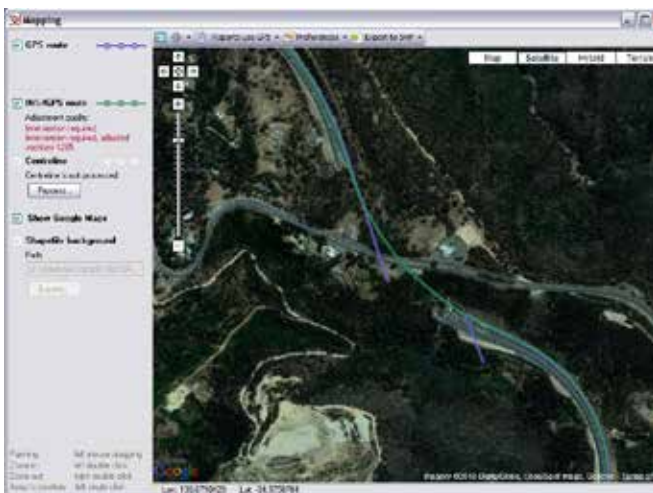
Features

- Uses an integrated GPS receiver and dead-reckoning sensors
- Typical mapping accuracy of 1m after processing
- Improved gyroscope provides higher accuracy results
- Exports to CSV and point or polyline shapefiles
- Readily interfaces with a number of GIS packages
- Operational at highway speeds to reduce survey time and costs
- Fully customisable GPS projection methods (Lat, Long, Easting, Northing and a range of datums)
- Supports Universal / Transverse Mercator, geodetic projection

Applications

- Road geometry and position for 3D mapping
- Operates in all locations:
  - Inside tunnels
  - Under bridges
  - Around highly vegetated or mountainous regions
- Locate potential sites for rainfall ponding
- Conformance to design specifications

Available outputs

- Grade
- Cross-slope
- Horizontal and vertical curvature
- Inertially corrected GPS location
- Distance
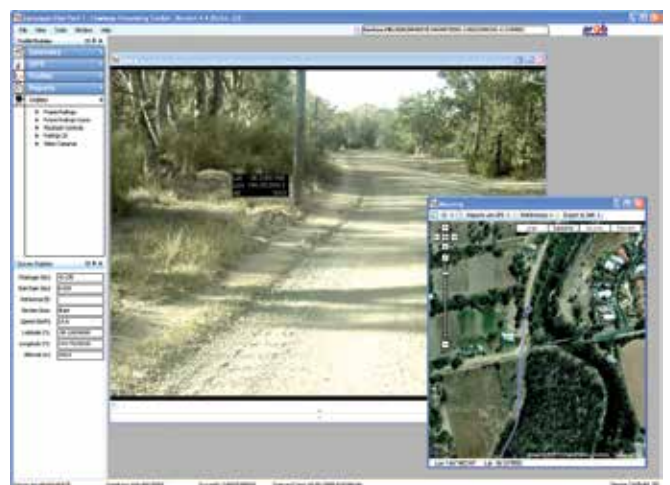
Hawkeye Software Suite

The Hawkeye software suite is a professional and powerful acquisition and data analysis combination.

Onlooker Live - Acquisition software

Hawkeye Onlooker Live software is an interactive, real-time acquisition control interface that is capable of simultaneously controlling all inputs from any Hawkeye system, from a single software application. The software runs on a dedicated computer in the vehicle or on a laptop-based system, with a fully customisable layout. The network control interface enables real-time result reporting and the capability to progressively add new Hawkeye modules, without the need for additional software.

Features

- Real-time Windows graphical user interface for management of multiple computer systems
- Customisable screen layouts to suit individual operator requirements
- Multiple language support: English, Chinese, Spanish, Arabic and Russian
- Survey navigational tools such as compass, location reference points, maps and recording of events
- Computer generated speech for system warnings and other items requiring attention
- Supports a range of road reference formats

Software capability

- Digital display of:
  - profilometry,
  - video imagery,
  - speed and distance
  - geometry
- Graphical display of:
  - GPS maps
  - inertial geometry mapping
  - road profile information
  - user defined survey notes tool

Processing Toolkit - Analysis software

The easy-to-use interface of Hawkeye Processing Toolkit features an integrated image viewer and centralised database to review all collected survey parameters. The software can be used to review and rate individual video frames against chainage and GPS, save images to file and zoom-in to inspect areas of interest. Multiple images can be assessed simultaneously and the road can be 'driven' at a rate selected by the operator.

Features

- Extensive analysis and reporting capability
- Advanced mapping interface that supports Google background maps
- Centralised databases to allow multiple users to process and view the same survey data simultaneously
- Multiple language support: English, Chinese, Spanish, Arabic and Russian
- Metric and Imperial measurement systems supported
- Windows launching allowing for cross reference of data between applications
- Batch rubber banding and editable reference points
- Survey search filter
- Export to most PMS and GIS applications
- Batch processing and exporting
- Data export to CSV, PDF, MS Word, MS Excel, RTF, KML and SHP formats
- Windows (32 and 64 bit) compatible

Software capability

- Calculation of:
  - International Roughness Index (IRI)
  - MPD and SMTD macrotexture
  - Rut index
  - Faulting
  - Longitudinal profile
  - Geometry
- Image area / length / height measurement
- Image stitching, zoom and resizing
- Asset location
- Profilometry analysis
- Graphical inertial / GPS mapping
- Shapefile imports
- User configurable rating forms
- Advanced HDM-4 exporting

Hawkeye Data Viewer, viewing only software, is also available.

The Hawkeye software suite is maintained by a large team of software developers and testers, with new releases occuring approximately every 8 weeks. ARRB prides themselves on integrating features based on customer feedback, and we encourage all of our clients to submit their comments or suggestions for improvements.

About ARRB

ARRB Group Ltd (ARRB) provides research, consulting and information services to the road and transport industry. ARRB applies research outcomes to develop equipment that collects road and traffic information and software that assists with decision making across road networks. ARRB is the leading provider of road research and best practice workshops in Australia. ARRB Group Ltd | ABN 68 004 620 651

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